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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Emergency Disaster Relief Program.	Rulemaking 18-03-011 (Filed March 22, 2018)

OPENING COMMENTS OF THE UTILITY REFORM NETWORK, ACCESS HUMBOLDT, CENTER FOR ACCESSIBLE TECHNOLOGY, NATIONAL CONSUMER LAW CENTER, AND COMMUNICATIONS WORKERS OF AMERICA, DISTRICT 9 ON THE ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING COMMENTS ON WIRELINE PROVIDER RESILIENCY STRATEGIES

[PUBLIC VERSION – REDACTED]

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I. INTRODUCTION

Pursuant to the July 22nd Assigned Commissioner and Administrative Law Judge's Ruling and the August 7th Administrative Law Judge's e-mail Ruling, ("Ruling" or "ACR"), The Utility Reform Network (TURN), Access Humboldt, the Center for Accessible Technology (CforAT), the National Consumer Law Center (NCLC), and Communications Workers of America, District 9 (CWA) (hereafter the Joint Consumer Advocates and CWA) hereby submit these Opening Comments on the July 22 Ruling Requesting Comments on Wireline Provider Resiliency Strategies. Our comments are supported by the attached Declaration of Andrew Afflerbach, Ph.D., P.E. (confidential and public versions).

Generally, the Ruling asks for comment on whether the wireless network resiliency strategies adopted in D. 20-07-011 should also be applied to wireline providers and whether backup power requirements should apply to customer premises equipment.[1] Joint Consumer Advocates and CWA strongly believe that resiliency requirements based on, and similar to, those adopted for wireless providers should be applied to wireline providers, including Incumbent Local Exchange Carrier (ILEC) TDM and VoIP networks, resellers and cable VoIP networks; and that the Commission should adopt backup power requirements for customer premises equipment. The resiliency requirements should also address the backhaul service that is needed to transport voice and data for wireline, wireless and other communications services.

The multiple, extensive de-energization events and associated telecommunications outages in October 0f 2019 provided a clear indication of the need for backup power for telecommunications, including wireline as well as wireless communications networks. This need was well articulated in statements by California Senators at the January 8, 2020 Oversight

[1] Ruling at p. 3.

Hearing on Telecommunications Service Outages: Ensuring a Reliable Lifeline for Californians.[2] During the hearing, Senator Bradford stressed that while Legislators hear from industry about customer migration away from landline, "landline is still critical to everything that we do, whether it's wireless service, whether it's VoIP…."[3] Senator William Monning stated that he represents constituents who are dependent on their landlines, and landlines are their only connection in times of emergency.[4] Senator Brian Dahle emphasized that in counties such as Siskyou, Alpine and Nevada most people rely on landlines because they do not have cell service.[5] Senator Mike McGuire echoed Senator Dahle's point, indicating that the same concern applies to the Mendocino Coast and that when landlines went out of service during the power shutoffs last October, over 450 thousand landline customers lost service and could not contact 911.[6] For those customers who did not have alternative forms of communications access through wireless service, they lost all access to 9-1-1, 2-1-1 and the ability to receive emergency alerts.[7] Senator McGuire's landline outage figure was directly from an FCC status report reflecting data obtained through the FCC's Disaster Information Reporting System (DIRS).[8] DIRS contains data *voluntarily* reported by carriers. Thus, the actual landline outages are likely greater than the numbers contained in these FCC status reports.

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[2] California Senate, Committee on Energy, Utilities and Communications Committee Oversight Hearing on Telecommunications Service Outages: Ensuring a Reliable Lifeline for Californians, January 8, 2020. Archived hearing Available at https://www.senate.ca.gov/media-archive?page=1

[3] *Id.*, Senator Steve Bradford, at 45:40.

[4] *Id.*, Senator Bill Monning, at 1:26.

[5] *Id.*, Senator Brian Dahle, at 42:20.

[6] *Id.*, Senator Mike McGuire, at 55:04.

[7] *Id.*, Senator Mike McGuire, at 55:04.

[8] Federal Communications Commission, Communications Status Report for Areas Impacted by California Public Safety Power Shutoffs, October 28, 2019, at p. 4. Retrievable at https://docs.fcc.gov/public/attachments/DOC-360482A1.pdf

At the same Oversight Hearing, in testimony on behalf of the Commission, President Batjer and Commissioner Rechtschaffen acknowledged the importance of landline service and made it clear that the Commission would address wireline reliability. Commissioner Rechtshaffen noted that "there are millions of customers in California who depend on traditional landlines. We see what a vital role they play in emergencies, in 911, when power is off and those networks need to be maintained."[9] President Batjer stated that the Commission would "make sure people have the ability to call 911 whether they are wireless or landline."[10]

Joint Consumer Advocates and CWA echo the views of the Senate committee members and CPUC Commissioners about the importance of reliable and resilient wireline networks. In order to achieve this, the Commission should adopt requirements similar to those that were previous adopted for wireless service,[11] recognizing that by necessity, some of the requirements adopted for wireless providers will need to be modified to address differing circumstances and characteristics of various wireline networks. Additionally, the Commission should also address the issue of back-up power at the customer premises.

At the Oversight Hearing, President Batjer was asked by Senator Dahle about what tools the CPUC would need to ensure service is reliable. She replied that "[w]e need information. We need data. We need to know where the outages are. We need to know why they are."[12] The resiliency plans adopted in the Wireless Decision and proposed in the Ruling for wireline carriers are key to the effort to obtain this information. As was done for wireless carriers, the Commission should adopt requirements for submission and regular updates of wireline provider

[9] January 8, 2020 Senate Oversight Hearing at 47:23.
[10] *Id.* Senate Oversight Hearing at 54:55.
[11] Decision Adopting Wireless Provider Resiliency Strategies (D.20-07-011, July 16, 2020) ("Wireless Decision").
[12] January 8, 2020 Oversight Hearing, CPUC President Batjer at 44:22.

network resiliency plans to provide the Commission with crucial information, including: the identification of facilities that rely on backup power, the type and extent of backup power that is currently in place, and the reasons why more (or any) backup power is either not required or not feasible. These plans should also include information about backhaul, including the backup power available to support backhaul.

In addition to requiring regular resiliency plans, the wireline carriers should be subject to the same requirements as were previously adopted for wireless carriers regarding operations. It is equally important for wireless and wireline providers to have emergency operations plans, designated trained personnel to work with emergency officials, and robust public information plans.

II. SUMMARY OF RECOMMENDATIONS

While these comments by the Joint Consumer Advocates and CWA do not directly restate and respond to the questions put forward in the Ruling, we provide recommendations on the various issues put forward for comment. Our key recommendations include the following:

Resiliency:

- The Commission should adopt a resiliency requirement for wireline providers based on that previously adopted for wireless carriers in the wireless decision, but with modifications based on the different needs of various wireline network configurations, including support for all facilities (including remote terminals) needed to maintain service in high fire risk areas, whether owned by facilities-based operators or by resellers.

Backup Power Requirements:

- The backup power requirement for wireline providers should be the same 72-hour duration as was previously adopted for wireless carriers, and should apply to critical network locations serving high fire risk areas.
- Service must be sufficient to support access to 9-1-1, 2-1-1, and the ability to receive emergency alerts and notifications.
- Limited access to backup power in customers' homes does not undermine the need for wireline backup power, but does indicate the need for the Commission to revisit requirements for battery backup power in the customer premises, in addition to network backup power requirements.
- While deployment of backup generation may be challenging, existing efforts show that it can be done even in difficult terrain.

Communications Resiliency Plans:

- Wireline providers should be required to submit resiliency plans like those required by wireless carriers, with modifications to reflect the differences in network structure. As part of their resiliency plans, wireline providers should be required to include information on backhaul routes and the steps the provider will take to ensure reliability during a backhaul failure, including use of diverse routing.

Waivers

- The Commission should adopt an approach similar to its process for wireless providers. However, wireline providers should not have the opportunity to request a waiver for backup power or backhaul facilities supporting a central office or headend. This

recommendation is in the attached Public (and confidential) Declaration of Andrew Afflerbach, Ph.D., P.E. on Wireline Resiliency.[13]

Emergency Operations Plans

- Wireline carriers should be subject to the same requirements as were previously adopted for wireless carriers regarding operations.

Wireline Industry Proposal

- The Joint Consumer Advocates and CWA oppose the wireline industry proposal. We agree that support for critical facilities (as defined by the Commission in the De-Energization proceeding, not the more limited definition offered by the carriers) and for wireless carrier customers are vital, service for residential customers cannot be sacrificed. Additionally, the limitations the industry tries to place on their proposal, such as the assertion that service can only be maintained if the IOUs provide extensive notice of a power shut-off, are not reasonable.

Communities without Wireless Coverage

- Remote communities without wireless coverage exist and must not be neglected in the Commission's work to support resiliency in the communications network. Efforts must be made to maintain service for these communities, including backup power for remote terminals.

Backup Battery Requirements at the Customer Premises

- The Commission should revisit its prior decision regarding backup battery requirements, which was issued before the FCC authorized carriers to charge a fee for installation of

[13] Declaration of Andrew Afflerbach, Ph.D., P.E. on Wireline Resiliency at pp. 10-11.

backup power in customer premises. This should be done in a new phase of this proceeding.

III. APPLYING BACKUP POWER REQUIREMENTS TO WIRELINE PROVIDERS

Wireline networks come in different configurations with different needs for backup power. For example, ILECs operate both legacy TDM networks, with copper distribution plant, that are supported by robust backup power at central offices. However, even these networks must rely on backup power to support longer copper loops served off of remote terminals in rural areas. ILECs also operate VoIP networks that rely on commercial power and require backup power, in the network and on the customer premises, to ensure continued service. Cable VoIP landlines also rely on commercial power. Resellers of wireline service depend on reliable service from other facilities-based wireline carriers, but they also own and operate equipment necessary for providing service that requires its own backup power.

Due to these different network architectures, wireline backup power requirements are less straightforward than those for wireless providers, and one size does not necessarily fit all. However, that does not mean that it is impossible to mitigate the potential for outages similar to those that occurred in October 2019, nor does it militate against adoption of back-up power requirements. As with wireless requirements, the Commission should view any adopted requirements for wireline provider resiliency strategies as a first step in an evolving process in which backup power and resiliency of wireline networks will improve as networks evolve and better powering solutions become available.

For such a first step, there are concrete actions the Commission can and should take to bolster resiliency of wireline networks, including the following;

- The Commission should address backup power for remote terminals and other powered equipment in the field serving customers in Tier 2 and Tier 3 high fire threat areas, many of which lack wireless service.
- The Commission should require 72 hours of backup power to support telecommunications service at the critical locations described in Dr. Afflerbach's declaration, and other areas that the Commission deems to be critical.
- The Commission should require wireline carriers to submit network resiliency plans with the same type of data as that required for wireless carriers. For wireline carriers, in addition to information about network equipment, these resiliency plans should include information on backhaul routes, explanations of the steps taken to harden these facilities, and information about how the provider will ensure reliability when the backhaul is out, including the use of diverse routing. A list of the elements that should be included in a wireline provider's Resiliency Plan is described on p. 8 of Dr. Afflerbach's Declaration.

A. Backup Power for Remote Terminals

Robust back-up power at remote terminals is crucial for ensuring continuity of legacy ILEC landline service during power outages.[14] Remote terminals are typically deployed in rural areas, many of which have no wireless service at all, or only limited wireless service that is not available to many customers.[15] In these areas, including many locations that are in Tier 2 or Tier

[14] TURN, CforAT and NCLC commented on the importance of backup power at remote terminals in a prior pleading in this docket, responding to Carriers' responses to the August 9, 2019 *Assigned Commissioner's Ruling Requesting information on Hardening Communications Infrastructure and to Ensure Customer Access to 911 at All Times*.[14]

[15] At the California Senate Committee on Energy, Utilities and Communications January 8, 2020 Oversight Hearing on Telecommunications Service Outages: Ensuring a Reliable Lifeline for Californians, Senator Brian Dahle stated that most customers in Siskyou, Alpine and Nevada counties

3 high fire threat areas, the remote terminals are essential for providing emergency alerts and access to 9-1-1 and 2-1-1 service. Remote terminals provide a termination point for copper loops coming from homes and businesses, that are then combined and transported via a high capacity line to the telephone company central office. If a remote terminal loses power during an outage, phone service for the customers served by the terminal will not function.

There is evidence that power failures at remote terminals caused landline service to fail in high fire threat areas during the October, 2019 PSPS events. *The San Jose Mercury News* reported that customers served by Frontier remote terminals in the Santa Cruz Mountains lost telephone service due to the power outages.[16] Separately, TURN received information from an AT&T landline customer in San Gregorio, also in the Santa Cruz Mountains, describing a landline outage caused by loss of power.[17] San Gregorio, like many communities in the Santa Cruz Mountains, is located in a high fire threat area.

Other areas of the state have been similarly affected. *The Santa Rosa Press Democrat* reported that a copper landline customer located in the hills above Glen Ellen in the Sonoma Valley (a Tier 3 high fire threat area[18]), and other copper landline customers, lost communications service during a de-energization event after the power had been out for approximately 24 hours.[19] In an October 28, 2019 letter to the President of Frontier, the Southern Humboldt Fire Safe Council documented significant landline telephone outages that occurred in the Southern Humboldt County region during the multiple power shutoffs, including

have landlines because they don't have cell services. Oversight hearing at 42:20. https://www.senate.ca.gov/media-archive?page=1

[16] *Why is your landline phone dead?*, San Jose Mercury News, October 29, 2019, updated October 30, 2019, https://www.mercurynews.com/2019/10/29/why-is-your-landline-phone-dead/

[17] See, the e-mail exchange between TURN staff and the customer, Attachment C to these comments. The remote terminal in question in located across from the San Gregorio General Store and Post Office.

[18] CPUC FireMap https://ia.cpuc.ca.gov/firemap/

[19] https://www.pressdemocrat.com/article/news/pge-blackouts-knock-landline-telephones-out-of-service-in-sonoma-county/

one on October 9 and others later in the month.[20] The letter describes significant, ongoing outages that shut down service to entire communities. Based on the letter's description of the outages and direct knowledge of Access Humboldt and TURN staff about Southern Humboldt County (including a visit to a then-Verizon remote terminal located in the mountains West of Garberville, as part of a July 6, 2015 workshop in Docket No. A.15-03-005), it appears that these telephone outages were caused by the lack of adequate backup power at remote terminals.

In prior comments on network reliability, Frontier stated that investments made by the carrier in 2018 "included enhancements to battery backup mechanisms…."[21] As discussed in Dr. Afflerbach's declaration, discovery provided by Frontier indicates that many remote terminals do have robust backup power supplied by equipment tailored to the area where the remote terminal is located. However, the reports of landline outages in Humboldt County and the Santa Cruz Mountains indicate that not all of Frontier's remote terminals are adequately supported. These problems notwithstanding, if Frontier can provide robust backup power to the remote terminals indicated in its discovery response, some of which are located in very rugged and remote terrain (including high fire threat areas), it is appropriate to ensure that Frontier and other ILECs bolster their power for RTs in critical locations. In conjunction with such an order, the Commission needs sufficient information to understand what equipment a carrier is deploying and how it is deployed. To support a requirement for the carrier to provide back up power to remote terminals, the Commission should adopt the proposal that TURN and Access Humboldt presented in previous comment regarding the Assigned Commissioner's Proposal.[22] The

[20] October 28, 2019 letter from Jeana Herbst, Southern Humboldt Fire Safe Council, Redway, CA to the Office of the President, Frontier Communications Inc., Attachment B to these comments.
[21] Frontier Opening Comments on Hardening ACR at p. 4.
[22] TURN/Access Humboldt April 17, 2020 Reply, Attachment A., Declaration of Andrew Afflerbach at pp. 5-6.

Commission can take basic steps necessary to address this problem as quickly as possible. Specifically, the wireline provider strategies should include requirements pertaining to remote terminals. ILECs should be required to:

1. Identify and report the size of the problem (e.g., how many customers require an operational remote terminal or Video Ready Access Device (VRAD) to receive service; are they located in cities, suburbs, or rural areas, and how many lines are served from an individual remote terminal or VRAD)
2. Provide 72 hour backup power for remote terminal equipment in Tier Two and Tier Three High Fire Threat Districts.
3. Identify and report backup power alternatives that have been deployed at remote terminals, including changes to network architecture and technology, to allow the Commission to analyze technical approaches to extend the duration of backup power, such as updating or modifying remote terminal equipment. The Commission should verify data provided by the carriers.

It is important that the Commission understand how the technology is evolving. For example, an optical network terminal in a fiber-to-the-premises network draws less power and can operate for an extended period with only the telephone line operational—perhaps the same is true for a remote terminal that could use less power in an emergency if temporarily operated in a reduced mode. It is clear that ensuring sufficient power for extended outages in telephone networks is a is an issue that must be addressed. A thoughtful and targeted approach,

accompanied by conscientious inspections and adequate staffing and maintenance, can make a substantial difference, especially in the areas that may be hardest-hit by fire or PSPS.[23]

B. Backup Power Requirements for ILEC and Cable VoIP Networks

The network architectures for VoIP networks operated by ILECs and cable companies differ from legacy landline network architecture. Compared to the legacy network, there are more locations in the ILEC and Cable VoIP networks that rely on commercial power, are not supported by the large generators that provide backup power to ILEC central offices and will fail during prolonged power outages.[24] Currently it may be difficult to put robust backup power at every single piece of equipment in ILEC and cable VoIP networks. However, it is still vitally important that Commission strive to bolster backup power and network reliability in every reasonable way possible, including requiring more robust backup power of at least 72 hours to ensure continuity of service in critical locations. As discussed below, by "critical location" we mean both key institutional customers such as hospitals, fire and police stations and also equipment serving customers in locations where wireless service is not available.

The power outages in October 2019 demonstrated the need to bolster backup power in these networks. As referenced earlier, the FCC's October 28 Communications Status report stated that over 454 thousand landline customers had lost power. The report did not provide data by type of landline service or by County.[25] However, the fact that the outages for VoIP customers were widespread is reflected in the *Background* document prepared by legislative staff

[23] *Id*.
[24] See, e.g., Reply Declaration of Andrew Afflerbach on behalf of Joint Advocates and CWA, Attachment A to Reply Comments, April 17, 2020 at pp. 3-4.
[25] Federal Communications Commission, Communications Status Report for Areas Impacted by California Public Safety Power Shutoffs, October 28, 2019, at p. 4.

for the November 18, 2019 California Senate Committee on Energy, Utilities and Communications Oversight Hearing on Electric Utility Power Shutoffs. The document stated:

> In news reports, representatives for Comcast acknowledged that outages extended beyond the PSPS duration and geographic footprint, and data from DIRS shows that even after electric Utilities completed power restorations, large telecommunications outages persisted. Comcast representatives also stated that the company did not deploy generators except in a limited number of circumstances, such as a request by the Federal Emergency Management Agency (FEMA).[26]

TURN received outage reports from VoIP customers in Lafayette, California, served by Comcast and Sonic, with the Sonic network affected by power being out to AT&T's network. Portions of Lafayette are in Tier 2 and Tier 3 fire threat areas. A Lafayette customer reported that Comcast's service did not come back on until several hours after the power was restored.[27] This customer had purchased a battery backup system that was "useless" because Comcast's network was out of service. Another Lafayette customer, who subscribes to service from Sonic, which the customer states "has a contract with AT&T," reported that the Sonic service did not come back on after power was restored. The customer contacted Sonic and was told by their personnel that the continued outage was "due to problems with AT&T's network and that Sonic staff indicated that AT&T has had a huge outage problem for home phone/internet service due to a cascade effect from their battery back-up system failing."[28] This customer subsequently provided the following statement (to her knowledge, from the City of Lafayette) that was posted to the Lafayette Nextdoor web site:

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[26] November 18, 2019 California Senate Committee on Energy, Utilities and Communications Oversight Hearing on Electric Utility Power Shutoffs: Identifying Lessons Learned and Actions to Protect Californians, Background. Available at November 18, 2019 California Senate Committee on Energy, Utilities and Communications Oversight Hearing on Electric Utility Power shutoffs

[27] See, Attachment C, October 31 e-mail from Kathy Marshall.

[28] See, Attachment C, October 31, 2019 e-mail from Lyn Lazar, and October 30, 2019 e-mail in the same string.

Update on AT&T Service in Lafayette

> The City received this update today from AT&T: In checking with my network team, they indicated that once PG&E power was restored, a piece of equipment in a number of our neighborhood cabinets that provide Internet and phone services was affected and needs to be replaced. They're having to locate the replacement cards and expect to have some of them re-installed later today and this evening."[29]

These customer experiences demonstrate the importance of requiring improved backup power for ILEC and Cable VoIP services. Parties were asked to comment on the wireline industry plan that would involve requirements to provide 72 hour back-up power to support service to critical customer locations.

We commend industry for suggesting this idea, but the plan does not go far enough. The industry list of critical locations should be expanded. Rather than trying to create a separate or new list of critical facilities, the Commission should rely on the list of critical facilities and critical infrastructure that it established in Decision 19-05-042, issued in the De-Energization proceeding (R.18-12-005) and then expanded in D.20-05-051. By relying on its previously established list of what constitutes "critical facilities," the Commission will retain consistency and help advance efforts to provide increased resiliency for key locations and services. At the same time, in recognition that the list of critical facilities may evolve, it will also increase efficiency and effectiveness for a single list to be the point of reference for critical facilities going forward.

Further, as with our recommendations regarding backup power for remote terminals, the Commission should identify areas in Tier 2 and Tier 3 fire threat areas that are dependent on Cable or ILEC VoIP networks, and where wireless service is nonexistent or unreliable. For these

[29] *Id.*

areas, the Commission should require Cable companies and ILECs to provide additional backup power to facilities necessary to maintain customer access to 9-1-1, 2-1-1 and emergency alerts. For the critical facilities identified above, and for areas where no wireless service with 72 hour backup is available, 72 hour backup power should be required for cable headends, cable hub buildings and central offices. For high fire threat/non-wireless locations and areas, where feasible, backup power should be bolstered for powered field components located outside of the central office, such as DSLAMs and cable network power supplies.[30]

While it may not be possible to provide backup power to every single piece of equipment in VoIP networks, it should be possible to target the critical locations and areas where there is high fire threat and a lack of wireless service and take steps to improving backup power and reliability.

C. Backup Power Requirements for Resellers

In establishing resiliency requirements for wireline networks, the Commission should apply the requirements to resellers as well as facilities based operators. As explained in Dr. Afflerbach's declaration, key components of a wireline reseller's network operations are owned and controlled by the reseller.[31] This equipment, which can include core routers and voice switches, relies on commercial power and must operate in order for the customers of resellers to receive service. Even if the facilities based operator maintains power to its network, without backup power for the reseller's equipment, a reseller's customers will be unable to reach 9-1-1,

[30] Id., at p. 4-6.
[31] Afflerbach Wireline Declaration, at pp. 1-2.

2-1-1 or receive emergency alerts during a power outage. Therefore, resellers should be included in the Commission's wireline Resiliency rules.

IV. WIRELINE PROVIDER RESILIENCY PLANS

The Ruling asks whether the commission should apply the requirement previously adopted for wireless carriers to wireline providers regarding development of resiliency plans; the Commission also asks if the wireless requirements should be modified and tailored for wireline providers.[32] The Joint Consumers and CWA recommend that a modified requirement be adopted for wireline carriers, and that it should specifically address route diversity and backhaul.

A. Route Diversity

In adopting requirements for wireline service, he Commission should modify the definition of redundancy adopted for wireless networks to specifically include route diversity. The federal Department of Homeland Security (DHS) identifies Route Diversity as one of three critical elements to ensure the resilience of a communications network, defined as the ability to withstand damages and thus minimize the likelihood of a service outage.[33] DHS defines "Route Diversity" as "Communications routing between two points over more than one geographic or physical path with no common points."[34] To accomplish true "route diversity," it is not enough to have "redundant" equipment or to route traffic over two distinct lines, but then combine those lines into the same cable, leaving both lines at risk if the single cable is damaged. Nor is it

[32] Ruling at p. 5.
[33] *Id*.
[34] Department of Homeland Security Route Diversity Project, https://www.dhs.gov/sites/default/files/publications/Route Diversity Project Fact Sheet 6-9-16 Final 508.pdf. *See also*, DHS, Public Safety Communications Resiliency: Ten Keys to Obtaining a Resilient Local Access Network (July 2017) at p. 1. Available at: https://www.dhs.gov/sites/default/files/publications/07202017_10_Keys_to_Public_Safety_Network_Resiliency_010418_FINAL508C.pdf.

adequate to place multiple microwave dishes all located on the same tower, exposing those dishes to failure due to damage to a single tower. These designs still allow for a single failure or natural disaster to damage a facility (equipment, or cable, or tower) and cause a complete outage. As DHS recognizes, route diversity involves having a separate physical path such that if one "path" is damaged, traffic can be routed to an alternative path that is physically distant enough that it likely would have escaped the damage. We strongly believe that route diversity should be explicitly identified as a separate resiliency plan component.

Route diversity supporting fiber optic and microwave facilities used to provide wireline service is particularly important because, there are areas in California where damage to a single fiber cable can wipe out all communication for a large region.[35] This communications risk was identified and discussed at length in the Commission's prior docket addressing Rural Call Completion (I.14-05-012), including at the July 16, 2016 public participation hearing held in Ukiah ("Ukiah PPH"). Participants at the Ukiah PPH described two major communication disruptions in Mendocino County due to fiber cuts in 2014 and 2015. The Chair of the Communications Committee for the Mendocino County Fire Chief's Association stated that earlier in 2016, AT&T representatives gave a presentation to the Mendocino County Board of Supervisors "in which they stated that in response to the 2014 and 2015 fiber outages, they had made software changes to improve resiliency. They said it is not necessary to do anything physical other than the software change."[36] The Fire Chief's Association representative asked whether the CPUC or another independent entity had "tested these fixes to see if they actually

[35] TURN, CforAT and NCLC have previously discussed the importance of Route Diversity in our prior reply comments on the Network Hardening ACR. TURN, CforAT, NCLC, Reply Comments on the Hardening ACR, September 13, 2019 at pp. 9-12.
[36] I.14-05-012, Workshop/Public Participation Hearing, WS-4, Ukiah, California, July 16, 2016, TR. 440: 3-10.

work."[37] Several speakers, including the Mendocino County Sheriff, called for diverse routing.[38] Following the 2017 fires, Humboldt County supervisors expressed their frustration that AT&T's "resiliency" effort had failed, and called for "'the more solid solution'" which "would be the diverse routes of redundant broadband fiber lines."[39]

During the Wine Country Fires in October of 2017, which wreaked havoc in Mendocino, Sonoma, Lake and Napa Counties, approximately 2 miles of a fiber optic cable owned by AT&T was burned in Mendocino County. The damage to the fiber cable knocked out all wireline service that relied on AT&T facilities as well as wireless service to the north of the damaged portion of the line. Areas without service included portions of Mendocino, Humboldt and Del Norte Counties; radio stations (which rely on wireline telecommunication lines) were also impacted, and the city of Arcata experienced a 9-1-1 outage.[40] In contrast, in Humboldt County, two communication networks remained in service; these were Suddenlink and Humboldt County-based 101Netlink, both of which reportedly utilize fiber facilities along Hwy 36 (a line running East-to-West), owned by PG&E and operated by Level 3 as a redundant line to complement their facilities thus creating route diversity. A spokesman for 101Netlink stated that the company also uses microwave towers along the Hwy 101 corridor in Mendocino County, and

[37] I.14-05-012, Workshop/Public Participation Hearing, WS-4, Ukiah, California, July 16, 2016, TR. 440:11-12.
[38] I.14-05-012, Workshop/Public Participation Hearing, WS-4, Ukiah, California, July 16, 2016, TR. 447: 9 - TR. 449:11 (Sheriff Allman).
[39] *Op. cit*. Eureka Times-Standard, *AT&T outage renews calls for diverse, redundant fiber lines into Humboldt County (*Oct. 12, 2017) Updated July 30, 2018.
[40] Redheaded Blackbelt, News, Nature and Community Throughout the Emerald Triangle, *[UPDATE 12:16 P.M.] TV and Phone Services Down On the West Coast*, October 9, 2017. Available at: https://kymkemp.com/2017/10/09/tv-and-phone-services-down-on-the-west-coast/.

that those towers did not burn, but if they had, service to the Humboldt County region would not have been impacted because of the PG&E/Level 3 redundant line.[41]

The Humboldt County experience during the 2017 fires begs the question -- if Suddenlink and 101Netlink could utilize physically diverse routing to continue to provide essential telecommunications service, why can't companies like AT&T and Frontier do it today?

These examples of past situations where there was insufficient physical route diversity highlight the importance of this network resiliency element and demonstrate the need for the definition of resiliency to be modified to specifically mention route diversity, and for the Commission staff to receive data on physical route diversity in the carriers' networks today.

B. The CPUC's Wireline Provider Resiliency Strategies Plan Must address the Backhaul Required to Support Wireline, Wireless and Broadcast Services.

Reliable backhaul is absolutely critical to reliable landline service (and virtually all telecommunications and information services). If a backhaul route fails, and a wireline provider whose network relies on that route does not have an alternative source of backhaul, the wireline service will fail. If a network in a region has a single point of failure that affects many locations, then the impact of failed backhaul can be greater than lack of backup power—leading to service failure in many areas, not just one single location. Going forward, the Commission should not only require wireline providers to submit regular resiliency plans, but it should also use these

[41] Eureka Times-Standard, *AT&T outage renews calls for diverse, redundant fiber lines into Humboldt County* (Oct. 12, 2017) Updated July 30, 2018. Available at https://www.times-standard.com/2017/10/12/atampt-outage-renews-calls-for-diverse-redundant-fiber-lines-into-humboldt-county/ . Eureka Times-Standard, Humboldt County declares local emergency after fires down communication systems (Oct. 11, 2017) Updated August 30, 2018. Available at: https://www.times-standard.com/2017/10/11/humboldt-county-declares-local-emergency-after-fires-down-communications-systems-2/.

resiliency plans to study provider infrastructure, identify potential points of failure including insufficient alternatives to backhaul, and establish a benchmark structure to prioritize the need to improve redundancy based on the population affected. If providers show that the cost and lack of resources make it impossible to provide backhaul redundancy, it should become a priority for the industry and the Commission to address the issue, through mandates to providers or through coordinated broadband planning and deployment.

The Commission should require Wireline Resiliency Plans to include maps and logical diagrams of network facilities, including, especially, backhaul routes.[42] The information should be sufficient for the Commission to be able to analyze where "a single fiber cut could result in widespread outages," which would disrupt many wireless, wireline and broadband services.[43] The requirement that providers provide the Commission with "GIS information with specific location of network facilities and backhaul routes" was included in the Assigned Commissioner's Proposals[44] and should be included in the wireline provider resiliency plans.

V. BACKUP POWER REQUIREMENTS FOR CUSTOMER PREMISES EQUIPMENT

Based on the comments provided by wireline telecommunications carriers in response to the Assigned Commissioner's Ruling and Proposal issued on March 5, 2020, which sought input from parties on various questions regarding backup power for communications services providers, Joint Advocates and CWA anticipate that the carriers will argue against the need for

[42] TURN/Access Humboldt April 3, 2020 Opening, Attachment A, Declaration of Andrew Afflerbach, pp 9-11; TURN/Access Humboldt April 17, 2020 Reply, Attachment A, Declaration of Andrew Afflerbach, p. 7.
[43] Rural Counties April 3, 2020 Opening at p. 11; TURN/Access Humboldt April 17, 2020 Reply, Attachment A, Declaration of Andrew Afflerbach, p. 11.
[44] Assigned Commissioner's Ruling and Proposal, issued on March 6, 2020 (ACR Proposal), Attachment A at p. 9-11.

adequate backup power for the wireline network based on the fact that many customers do not have adequate backup power in their premises to maintain connectivity for their wireline devices.[45] This argument seeks to bring the entire network down to the lowest common denominator, which is exactly the opposite of what the Commission should be seeking to accomplish in this proceeding. Instead, the Commission should use this opportunity to re-evaluate the need for backup power in the customer premises. Right now, the carriers are correct that most households lack backup power, which is not provided as a matter of course when a customer's system is installed, but instead is offered for an additional fee. For all the reasons that the Commission has recognized with regard to the need for backup power in an emergency it should recognize that the current structure of offering customers of wireline service access to backup power in their homes for a fee, or else allowing them to forgo such backup power, has failed to ensure that customer have the access to services that they need in a disaster. In order to enhance customer connectivity during an emergency, something different must be done.

The last time the Commission directly engaged on the issue of backup power in customer premises was in R.07-04-015, a Rulemaking on reliability standards for telecommunications emergency backup power systems and emergency notification systems, which was initiated pursuant to Assembly Bill 2393, passed in 2006. That proceeding resulted in a report to the state Legislature, which was adopted by the Commission in D.08-09-014.[46] As part of its analysis, the report considered the number of customers in California affected by power outages lasting over

[45] Ruling at p. 4; *See e.g.* CCTA Comments on the Assigned Commissioner's Proposal at pp. 3-4; Cox Comments on Assigned Commissioner's Ruling and Proposal, filed on April 3, 2020, at pp. 14-15; [more]

[46] *See* Final Report Pursuant to California Assembly Bill 2393 (Final Report), dated May 9, 2008, available at https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Communications_-_Telecommunications_and_Broadband/Reports_and_Presentations/FinalAnalysisReportMay92008.pdf

four hours;[47] at that time, there was no consideration given to multi-day extended power outages caused by utilities deliberately de-energizing portions of the grid.

The Commission Decision adopting the Final Report provided a summary of the analysis, beginning by recounting how legacy telephone networks maintained power throughout their systems by providing battery systems that maintained service over copper wires, but that newer technologies require distributed backup power systems, both in the network and at the customer premises, in order to maintain service.[48] At the time the Report and Decision were issued, most broadband service providers installed battery backup of 4-20 hours (of available time, not talk time) at their customer premises.[49] At that time, prior to the widespread use of deliberate de-energization by the electric utilities, the Final Report and Decision found power outages and emergencies created risk to customers who could lose access to the emergency network during such emergencies and outages, but that eight hours of backup power was sufficient for the majority of emergencies associated with power loss.[50] A further decision addressed the need for ongoing customer education, based on the assumption that customers had backup battery service available, to ensure that backup power remained operational.[51] There was no expectation at that time that customers would not be served with battery backup power.

Subsequent to the issuance of the Report and Decision, the FCC authorized wireline telecommunications providers to charge a direct fee for providing battery backup power in customer premises.[52] Virtually all carriers began to assess such a charge on their customers, and

[47] Final Report at p. 5
[48] Decision at p. 12.
[49] Id. At p. 14.
[50] Id. at pp. 16.
[51] D.10-01-026, issued in R.07-04-015.
[52] In the Matter of Ensuring Continuity of 911 Communications, PS Docket No. 14-174, REPORT AND ORDER, Adopted: August 6, 2015 Released: August 7, 2015, paras. 44-47.

as a result, the installation of backup power in customer premises dropped to a tiny fraction of customers served. To this day, as noted by the carriers, most customers do not have backup power in their homes to support their devices, even as the implementation of de-energization by the utilities raises the likelihood of extended power outages, and as the risk of devastating wildfires throughout the state has grown.

Now, based on the increased risk of harm to consumers who lose access to communications services during extended power outages, as demonstrated in the record of this proceeding, and in exercise of its police powers, the Commission should revisit its prior evaluation of the need for backup power in customer premises as a vital component of ensuring access to emergency services during a disaster. The Joint Consumers recommend that the Commission adopt a requirement that carriers offer a back up battery for the customer premises that would provide 24 hours of power to the equipment at the premises. The Commission should further address this issue, including rates charged for the backup, consumer education and maintenance of the backup power unit in a subsequent phase of this proceeding, allowing for input from all interested stakeholders to develop a record.

VI. CONCLUSION

For the foregoing reasons, the Joint Consumer Parties and CWA urge the Commission to adopt Wireline Provider Resiliency Strategies consistent with those adopted in D. 20-07011, with the modifications recommended in these Comments.

Respectfully submitted,

/s/ Regina Costa
Regina Costa
Telecommunications Policy Director

August 12, 2020

Attachment A

Public Declaration of Andrew Afflerbach, Ph.D., P.E. on Wireline Network Resiliency

Public Declaration of Andrew Afflerbach, Ph.D., P.E., on Wireline Network Resiliency

Prepared on behalf of The Utility Reform Network
CPUC Docket R. 18-03-011
August 11, 2020

Need to apply requirements to wireline resellers

The Assigned Commissioner's and Administrative Law Judge's Ruling request comments on wireline provider resiliency strategies.[1] I recommend applying rules to wireline providers as defined in D.19-08-025, but not to exclude resellers of services, as the Commission has done when applying these rules to wireless communication providers.[2] In a wireline network, the reseller takes a larger role in its network management and the provision of its end user services, often only relying on the facilities-based provider for access to the copper line. The wireline reseller role is therefore fundamentally different from that of most wireless resellers.

In a wireline network, the reseller may operate the electronics serving its customers. The reseller's electronics are collocated in the central office belonging to the facilities-based provider. In most cases, the reseller, not the facilities-based provider, is responsible for the connection of the line to the internet or the voice network, and therefore also the connection to 2-1-1 and 9-1-1. The reseller does this handoff even when the facilities-based provider provides both the copper line and the IP transport back to the handoff point to the collocation point. All of these

[1] "Assigned Commissioner and Administrative Law Judge's Ruling Requesting Comments on Wireline Provider Resiliency Strategies," July 22, 2020 ("Ruling").
[2] Decision Adopting Wireless Provider Resiliency Strategies (D.20-07-011, July 16, 2020) at p. 55, O.P. 1, 2, 3 ("Wireless Decision").

components are managed by both the reseller and the facilities-based provider and are essential infrastructure, without which the customer cannot dial 2-1-1 or 9-1-1 or obtain internet access. While all the components in the facilities-based provider's central office rely on the power in that provider's building, including the small routers and switches collocated in the central office and owned by the reseller, the core routers and voice switches—the real "brains" of a reseller's network operations—belong to the reseller and are more likely located in a separate facility owned or leased by the reseller.[3]

Therefore, the wireline reseller needs to be included in requirements for backup power, redundancy, and any other resiliency.

Definition of resiliency

I agree with the Commission's definition of resiliency as, "the ability to recover from or adjust to adversity or change" with the strategies as delineated.[4] But, as in earlier comments by TURN, I recommend that the Commission also incorporate components from the U.S. Department of Homeland Security (DHS) concept of resiliency. Beyond what is in the Commission's definition, the DHS definition explicitly calls out route diversity and duplicate/additional components as key strategies rather than sweeping them into redundancy as a single category.[5] This broader definition of resiliency is even more critical here given the high impact on wireline networks that

[3] Another option is that these facilities are hosted by a cloud provider under a contract with the reseller where the reseller could specify requirements for back up power and resiliency.
[4] Ruling at p. 3; D.20-07-011 at p. 59.
[5] April 1 Declaration of Andrew Afflerbach at p. 3. See, Department of Homeland Security, "Public Safety Communications Resiliency: Ten Keys to Obtaining a Resilient Local Access Network," p. 1, https://www.dhs.gov/safecom/blog/2018/02/07/public-safety-communications-resiliency-ten-keys-obtaining-resilient-local, accessed March 24,2020; and "Public Safety Communications Network Resiliency Self-Assessment Guidebook," November 2018, p. 1, https://www.dhs.gov/safecom/blog/2018/12/11/public-safety-communications-network-resiliency-self-assessment-guidebook, accessed March 24, 2020.

can be caused by a single fiber failure, making the degree of route diversity an especially important element of resiliency in wireline networks. As noted in the accompanying comments to this Declaration of the Joint Advocates and CWA, failure of a single cable led to outages in multiple counties during the October 2017 fires[6]—whereas the failure of backhaul to a single wireless site would have a more localized impact.

Backup power- Network

For a wireline network, I recommend that backup power be provided at all locations where there is powered equipment—including, in a telecommunications network, at central offices, remote terminals, and DSLAMs; and in a cable network, at headends, hubs, and field power supplies.

A class of device (such as a remote terminal or cable power supply) or cable route has a different level of criticality depending on where it is and its intended function in the network. I propose that a "Critical Area" is defined as an area where there is no wireless service[7], or where the device feeds a critical location (e.g., fire stations, police stations, hospitals, emergency command and dispatch centers, emergency shelter facilities, or wireless sites). Because any device or cable serving these locations is also critical, backup power requirements for this equipment should be included in these requirements. My definition of Critical Area is aligned

[6] Opening Comments of The Utility Reform Network, Access Humboldt, Center for Accessible Technology, National Consumer Law Center, and Communications Workers of America, District 9, on the Assigned Commissioner and Administrative Law Judge's Ruling Requesting Comments on Wireline Provider Strategies, p. XX, Citing to Redheaded Blackbelt, News, Nature and Community Throughout the Emerald Triangle, [UPDATE 12:16 P.M.] TV and Phone Services Down On the West Coast, October 9, 2017. Available at: https://kymkemp.com/2017/10/09/tv-and-phone-services-down-on-the-west-coast/.

[7] Ruling at p. 8 (Lack of wireless services leave customers reliant on wireline services with no substitute when power is out).

with the definition in the "Wireline Industry Proposal,"[8] except where the wireline industry defines critical facilities as fire stations, police stations, hospitals, emergency command and dispatch centers, or wireless sites, I add emergency shelter facilities, both to enable emergency staff in those facilities to coordinate, and to enable Californians taking shelter to connect.[9]

Importantly, the Wireline Industry Proposal does not speak to the cost of connecting critical facilities. It is important that the Commission and wireline providers seek a cost framework that does not make the resilient service unaffordable to critical sites that serve remote and underserved communities and seeks to more broadly apportion the costs. Carriers should not be allowed to charge high tariffed rates to first responders and governments in remote and underserved communities to cover the costs of the work. I recommend the Commission give further consideration of an equitable framework to ensure all parts of California have affordable access to services offered over these resilient networks.

As recommended in my Declaration of April 17, "wireline providers should identify target areas in Tier Two and Tier Three High Fire Threat Districts… where mobile service does not exist, and address backup power by reinforcing remote terminals and power supplies and, as proposed by the cable companies, ensuring they are able to provide continuous service to critical facilities."[10] I recommend the Commission identify those areas unserved by wireless and those serving critical locations and anchor institutions as Critical Areas and designate the wireline

[8] Ruling at p. 6, citing CCTA comments at p. 12-15.
[9] In its Phase 1 Guidelines on Public Safety Power Shutoffs and De-energization (D.19-05-042, p. A5, modified by D.20-05-051), the Commission defines "critical facilities" and "critical infrastructure" more broadly than the wireline industry proposes here. I note that the broader definition adopted by the Commission would already include emergency shelters in many cases, since it includes schools and healthcare facilities.
[10] April 17 Declaration of Andrew Afflerbach at p. 1.

infrastructure in these areas as warranting a required, specific level of backup power. Therefore, the Commission should extend its backup power requirements for wireless providers to wireline providers—which would mean a 72-hour power backup for central offices, cable headends, and cable hub buildings serving Critical Areas in High Fire Threat regions.

Furthermore, in Critical Areas in High Fire Threat regions, there should be 72-hour backup power to infrastructure beyond the central offices and cable headends and hub buildings, farther out in the network for powered field components such as remote terminals, DSLAMs and cable network power supplies. And, as with the wireless requirements, the Commission should allow for alternative approaches that can lead to the same outcome, such as fiber upgrades in key areas which may enable the network to operate without powered field components, or collaboration with the community or power company on microgrid deployment or a clearly actionable and verifiable strategy to place temporary generation.

My interpretation of the material provided by wireline providers leads me to conclude that, for telecommunications providers, this duration of backup power may be a relatively modest upgrade of the existing infrastructure. For example, Frontier indicates that at least [BEGIN CONFIDENTIAL] XXX [END CONFIDENTIAL] of its central office and remote facilities have generators, and that at least [BEGIN CONFIDENTIAL] XXX [END CONFIDENTIAL] of those have a [BEGIN CONFIDENTIAL] XXX [END CONFIDENTIAL] battery reserve and [BEGIN CONFIDENTIAL] XXX [END CONFIDENTIAL] hours of fuel.[11]

[11] Frontier's Response to R.18-03-011, Supplemental Response to PAO DR 3, Revised February 10, 2020.

The required duration of backup power and other resilience design requirements should take into account the physical footprint and the environmental, aesthetic, and noise impacts of adding backup power generators and batteries at different locations, as well as the criticality of the device. A shorter period of backup power could be considered for field components that do not feed Critical Areas whether or not in High Fire Threat areas, which include most cable power supplies, some remote terminals, and some DSLAMs. This requirement should still be at least six hours of back up battery capability for the cable power supplies and 24 hours for voice service through remote terminals and DSLAMs, plus the ability to attach remote generators. Additionally, there should be an ongoing effort to require providers to increase this time and service level as technology evolves and improves. I recommend the Commission continue to require study and discussion of the evolving state of the art of all associated technologies—including batteries, backup generation, and use of architectures such as fiber-to-the-premises that do not require amplification and thus reduce or eliminate the need for remote terminals, DSLAMs and cable power supplies.

Backup Power- Premises

Premises power is also critical, and many homes and businesses do not have backup generators (although generators are becoming more common and as recommended in my Declaration of April 17, should be encouraged by the Commission.)[12] However, many consumer electronics such as laptops and mobile phones will not require continuous commercial power and thus will be able to operate during an outage using their own, albeit limited, battery power.

[12] April 17 Declaration of Andrew Afflerbach at p. 1-2.

And, very importantly, non-cordless landline telephones will not require power at the premises and can place calls, including to 2-1-1 and 9-1-1; non-cordless phones can be attached either to plain-old telephone service (POTS) lines or to VoIP terminal equipment provided by the telecommunications providers, cable companies, resellers, and third-party providers (as long as the VoIP terminal equipment has backup power as discussed below). Therefore, telecommunications and cable providers and telecommunications service resellers should be required by the Commission to address the problem of premises power by providing customers with onsite battery backup power as part of the terminal equipment on premises (e.g., DSL routers, cable modems, and VoIP terminal equipment)— providing the ability to make voice calls 24 hours after failure.

As recommended in my April 1, 2020 Declaration submitted in this docket, regardless of the battery backup capabilities on the premises, if a service relies on field electronics with less than 72 hours of backup power (as is currently the case for most cable and many telecommunications services), the provider should be required to inform customers that the service will not continue to function for more than a few hours during an extended outage and that the customers will need to ensure they can charge their cell phones to rely on wireless service in an emergency.[13]

Redundancy

Redundancy of backhaul connectivity is as critical as power. Redundancy must include fully diverse physical paths[14] where individual paths are critical, either because of the volume of use

[13] April 1 Declaration of Andrew Afflerbach at p. 9.

[14] It is important to distinguish between redundancy that is not fully diverse, such as use of multiple fiber strands in the same cable or use of "collapsed" routes that use the same overlapping routes, or redundancy of portions of the electronic network without physical path redundancy. Fully diverse physical paths have diverse electronics and

or the significant negative impacts that could result if communications are interrupted. Therefore, there should be diverse physical paths to all telecommunications central offices, cable headends, and cable hub facilities. In the few instances where this level of redundancy is not feasible due to geography, redundancy for these key network components should be provided through other technical options, including point-to-point wireless and satellite.[15]

Temporary facilities

Temporary generators should be part of the solution for providers to meet the backup power requirement, but only where providers can demonstrate it is not possible to fulfill a 72-hour requirement through other more permanent network design measures.

Backhaul can also be provided through temporary wireless or satellite connections in the event of fiber failure, although backhaul should ideally be in a permanent diversely-routed configuration that automatically fails over to the secondary route in the event of a failure.

Resiliency Plan

The requirement for wireline providers to submit Communications Resiliency Plans should be similar to those required in the Commission's Wireless Decision.

The Plan should include a list of the locations and CLLI codes of the central offices, cable headends, hubs, and powered field equipment (remote terminals, DSLAMs, and cable power

diverse routes end-to-end. While this level of diversity is generally not required to individual homes and businesses, it should be provided to critical facilities and in all backhaul and backbone routes to all central offices, cable headends and cable hub facilities.

[15] See discussion in this docket of mass outages caused by failure of critical AT&T backhaul routes in northern California and ways in which Suddenlink and 101Netlink have created redundancy and physical path diversity in REPLY COMMENTS OF THE UTILITY REFORM NETWORK, THE CENTER FOR ACCESSIBLE TECHNOLOGY, AND THE NATIONAL CONSUMER LAW CENTER ON THE HARDENING ACR, filed September 13, 2019, p. 9-12.

supplies) in the provider's network, and whether there is backup power, the type of backup power, and the backup time for each of the listed facilities. The Plan should state whether these locations are connected over diverse physical paths and provide a map of the routes connecting the facilities.

The Plan should also include a description of the staff resources, materials, and procedures for repair of damaged facilities, especially those responsible for restoring service to Critical Areas.

Deployment

I recommend the Commission adopt a deployment requirement for wireline providers identical to the requirement in its Wireless Decision—12 months to implement backup power in Tier 2 and Tier 3 High Fire Threat Districts, and six months to establish a Communications Resiliency Plan via a Tier 2 Advice Letter.

Service level coverage

Service levels experienced by end users will decrease if wireline equipment is put into a reduced function mode to save power, or if fiber backhaul needs to be temporarily replaced by wireless or satellite.

The recommended minimum service level in an emergency should be the ability to make telephone calls and do simple internet browsing. This is a reasonable requirement in all emergencies, even where capacity is reduced by a backhaul failure and service is carried over satellite or wireless, assuming that the premises still has power.

However, for customers who have lost power and do not have a home generator, the recommended service level should be the ability to make telephone calls, including but not

limited to 2-1-1 and 9-1-1. Backup battery power for home terminal equipment (including DSL routers, cable modems, and VoIP terminal equipment), either built into the devices or in a separate connected power supply equipment, can support a caller using a standard, non-cordless phone even without home power for 24 or more hours. That backup battery power typically will not support data use.

As discussed above, under "Backup power," wireline providers should be required by the Commission to address the problem of premises power by providing customers with the option of onsite battery backup power as part of terminal equipment on premises—thus providing the ability to make voice calls 24 hours after failure.

Waivers

I recommend the Commission adopt an approach similar to that in its Wireless Decision, in which providers must identify in their Resiliency Plan why sufficient backup power at a particular location is objectively impossible or infeasible and to identify attempts to find a solution prior to requesting the waiver, so that providers are held accountable.

However, carriers should not have the opportunity to request a waiver in the case of a backup power or backhaul at a central office or cable headend as these are all robust brick and mortar facilities that that carriers have already identified to the Commission can support robust back up power capabilities.[16]

[16] Cox notes that all of its master telecommunications centers (headends) and secondary telecommunications centers (hubs) in California have two fixed, redundant, diesel-fueled AC generators on site; *November 18, 2019 Cox Response to President Batjer Nov. 13 letter*, Attachment 1, p. 1. Comcast has a similar level of backup power at its headend and hub facilities; *November 18, 2019 Comcast Response to President Batjer Nov. 13 Letter*, Attachment A.

If it is infeasible to provide redundant fiber to a central office, headend or hub facility because of geography, the provider shall design and describe in its Plan the wireless or satellite service used to provide the minimum service standards including access to 9-1-1 and 2-1-1 and basic internet browsing for all customers.

Emergency operations plan

I recommend wireline providers provide the same material as the wireless providers to the Commission's Communications Division Director, CalOES, and local emergency response managers within their service territory.

As in the Commission's Wireless Decision, wireline providers should be required to provide emergency contact information and "provide personnel who will be able to serve as the State Operations Center SOC, when requested by CalOES, during emergency response events."[17] At the discretion of the Commission, very small providers may be exempted from being physically present, as long as they provide emergency contact information and coordinate virtually.

AT&T has a similar level of backup power at all of its central offices; *November 18, 2019 AT&T's Response to Pres. Batjer's Letter*, Attachment 2.

[17] Wireless Decision, p. 107.

Andrew Afflerbach, Ph.D., P.E. | CEO and Chief Technology Officer

Andrew Afflerbach specializes in the planning, designing, and implementation oversight of broadband communications networks, smart cities strategies, and public safety networks. His expertise includes state-of-the-art fiber and wireless technologies, the unique requirements of public safety networks, and the ways in which communications infrastructure enables smart and connected applications and programs for cities, states, and regions.

Andrew has planned and designed robust and resilient network strategies for dozens of clients, including state and local governments and public safety users. He has delivered strategic technical guidance on wired and wireless communications issues to cities, states, and national governments over more than 20 years. He has advised numerous cities and states, including New York City, San Francisco, Seattle, Atlanta, Washington, D.C., and Boston, and served as a senior adviser to Crown Fibre Holdings, the public entity directing New Zealand's national fiber-to-the-home project.

In addition to designing networks, Andrew testifies as an expert witness on broadband communications issues. And he is frequently consulted on critical communications policy issues through technical analyses submitted to the Federal Communications Commission (FCC) and policymakers. He has prepared white papers on:

- Streamlining deployment of small cell infrastructure by improving wireless facilities siting policies
- Limiting interference from LTE-U networks in unlicensed spectrum
- Developing technical frameworks for wireless network neutrality
- Estimating the cost to expand fiber to underserved schools and libraries nationwide
- Conducting due diligence for the IP transition of the country's telecommunications infrastructure

As CTC's Chief Technology Officer, Andrew oversees all technical analysis and engineering work performed by the firm. He has a Ph.D. and is a licensed Professional Engineer.

Wireless Network Planning and Engineering

Applying the current state of the art—and considering the attributes of anticipated future technological advancements such as "5G"—Andrew has developed candidate wireless network designs to meet the requirements of clients including the cities of Atlanta, San Francisco, and Seattle. In a major American city, Andrew led the team that evaluated wireless broadband solutions, including a wireless spectrum roadmap, to complement potential wired solutions.

In rural, mountainous Garrett County, Maryland, Andrew designed and oversaw the deployment of an innovative wireless broadband network that used TV white space spectrum to reach previously unserved residents. To enhance public internet connectivity, Andrew provides technical oversight on CTC's Wi-Fi-related projects, including the design and deployment of Wi-Fi networks in several parks in Montgomery County, Maryland.

Andrew also advises local and state government agencies on issues related to wireless attachments in the public rights-of-way; he leads the CTC team that supports the Texas Department of Transportation (TxDOT) and many large counties on wireless attachment policies and procedures.

Public Safety Networking

Andrew leads the CTC team providing strategic and tactical guidance on FirstNet (including agency adoption and other critical decision-making) for the State of Delaware and Onondaga County, New York. In the District of Columbia, he and his team evaluated the financial, technical, and operational impact of building the District's own public safety broadband network, including the design of an LTE system that provided public-safety-level coverage and capacity citywide. This due diligence allowed the District to make an informed decision regarding opting in or out of the National Public Safety Broadband Network.

Andrew currently is working with the State of Delaware to evaluate LTE coverage gaps throughout the state to assist agencies in their choice of public safety broadband networks. On the state's behalf, he and his team are also conducting outreach to AT&T and other carriers to evaluate their public safety offerings. He is performing similar work as part of CTC's engagement with El Paso County, Colorado.

Earlier, Andrew led the CTC team that identified communications gaps and evaluated potential technical solutions for the Baltimore Urban Area Security Initiative (UASI), a regional emergency preparedness planning effort funded by the U.S. Department of Homeland Security (DHS).

He previously served as lead engineer and technical architect for planning and development of NCRnet, a regional fiber optic and microwave network that links public safety and emergency support users throughout the 19 jurisdictions of the National Capital Region (Washington, D.C. and surrounding jurisdictions), under a DHS grant. He wrote the initial feasibility studies that led to this project for regional network interconnection.

Fiber Network Planning and Engineering

Andrew has architected and designed middle- and last-mile fiber broadband networks for the District of Columbia (Washington, D.C.); the city of San Francisco; the Delaware Department of Transportation; the Maryland Transportation Authority; and many large counties.

He oversaw the development of system-level broadband designs and construction cost estimates for the cities of Atlanta, Boston, Boulder, Palo Alto, Madison, and Seattle; the states of Connecticut and Kentucky; and many municipal electric providers and rural communities. He is overseeing the detailed design of the city-built fiber-to-the-premises (FTTP) networks in Westminster, Maryland; Alford, Massachusetts; and Holly Springs and Wake Forest, North Carolina.

In Boston, Andrew led the CTC team that developed a detailed RFP, evaluated responses, and participated in negotiations to acquire an Indefeasible Right of Use (IRU) agreement with a fiber vendor to connect schools, libraries, public housing, and public safety throughout the City. This approach was designed to allow the City to oversee and control access and content among these facilities.

Smart Grid

Andrew and the CTC team provided expert testimony and advisory services to the Public Service Commission of Maryland regarding Advanced Metering Infrastructure (AMI). CTC provided objective guidance to the staff as it evaluated AMI applications submitted by three of the state's investor-owned utilities (IOUs). This contract represented the first time the PSC staff had asked a consultant to advise them on technology—a reflection of the lack of standards in the Smart Grid arena.

Broadband Communications Policy Advisory Services

Andrew advises public sector clients and a range of policy think tanks, U.S. federal agencies, and non-profits regarding the engineering issues underlying key communications issues. For example, he:

- Provided expert testimony to the FCC in the matter of the preparation of the **national broadband plan** as a representative of the National Association of Counties (NACo) and the National Association of Telecommunications Officers & Advisors (NATOA).
- Served as expert advisor regarding broadband deployment to the U.S. Conference of Mayors, NACo, National League of Cities, Public Knowledge, New America Foundation Open Technology Institute, and NATOA in those organizations' filings before the FCC in the matter of determination of the deployment of a **national, interoperable wireless network in the 700 MHz spectrum**.
- In connection with the FCC's ongoing **Open Internet proceeding**, advised the New America Foundation regarding the technical pathways by which "any device" and "any application" regimes could be achieved in the wireless broadband arena as they have been in the wireline area.
- Provided expert technical advice on the **700 MHz broadband and AWS-3 proceedings** at the FCC for the Public Interest Spectrum Coalition (including Free Press, the New America Foundation, Consumers Union, and the Media Access Project).
- Served as technical advisor to the **U.S. Naval Exchange** in its evaluation of vendors' broadband communications services on U.S. Navy bases worldwide.
- Advised the **U.S. Internal Revenue Service** regarding the history of broadband and cable deployment and related technical issues in that agency's evaluation of appropriate regulations for those industries.
- Advised the Stanford Law School Center for Internet and Society on the technical issues for their briefs in the ***Brand X*** **Supreme Court appeal** regarding cable broadband.

Broadband Communications Instruction

Andrew has served as an instructor for the U.S. Federal Highway Association/National Highway Institute, the George Washington University Continuing Education Program, the University of Maryland Instructional TV Program, ITS America, Law Seminars International, and the COMNET Exposition. He developed curricula for the United States Department of Transportation.

He taught and helped develop an online graduate-level course for the University of Maryland. He developed and taught communications courses and curricula for ITS America, COMNET, and the University of Maryland. His analysis of cable open access is used in the curriculum of the International Training Program on Utility Regulation and Strategy at the University of Florida.

Andrew has also prepared client tutorials and presented papers on emerging telecommunications technologies to the National Fire Protection Association (NFPA), NATOA, the National League of Cities (NLC), the International City/County Management Association (ICMA), and the American Association of Community Colleges (AACC). He taught college-level astrophysics at the University of Wisconsin.

EMPLOYMENT HISTORY

1995–Present	CEO/Chief Technology Officer, CTC
	Previous positions: Director of Engineering, Principal Engineer, Senior Scientist
1990–1996	Astronomer/Instructor/Researcher
	University of Wisconsin–Madison, NASA, and Swarthmore College

EDUCATION

Ph.D., Astronomy, University of Wisconsin–Madison, 1996

- NASA Graduate Fellow, 1993–1996. Research fellowship in astrophysics
- Elected Member, Sigma Xi Scientific Research Honor Society

Master of Science, Astronomy, University of Wisconsin–Madison, 1993
Bachelor of Arts, Physics, Swarthmore College, 1991

- Eugene M. Lang Scholar, 1987–1991

PROFESSIONAL CERTIFICATIONS/LICENSES

Professional Engineer, states of California, Delaware, Georgia, Illinois, Maryland, and Virginia

HONORS/ORGANIZATIONS

- Disaster Response and Recovery Working Group, FCC's Broadband Deployment Advisory Committee (BDAC)
- Association of Public-Safety Communications Officials (APCO)
- Board of Visitors, University of Wisconsin Department of Astronomy
- National Association of Telecommunications Officers and Advisors (NATOA) Technology and Public Safety Committees
- Armed Forces Communications and Electronics Association (AFCEA)
- Society of Cable and Telecommunications Engineers (SCTE)
- Institute of Electrical and Electronic Engineers (IEEE)
- Charleston Defense Contractors Association (CDCA)

SELECTED PUBLICATIONS, PRESENTATIONS, and COURSES

- "Small Cell Standards and Processes: Protecting Community Assets, Interests, and Public Safety," prepared for NATOA, Feb. 2019
- "SB 937: Wireless Facilities – Installation and Regulation," Testimony before the State of Maryland Senate, Feb. 2019
- "HB 654: Wireless Facilities – Installation and Regulation," Testimony before the State of Maryland General Assembly, Feb. 2019
- "The Three "Ps" of Managing Small Cell Applications: Process, Process, Process," Dec. 2018
- Declaration in Response to FCC's Order, "Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment," prepared for the Smart Communities and Special Districts Coalition, filed with the FCC, Sept. 2018
- Declaration in Response to the Proposed T-Mobile/Sprint Merger, prepared for the Communications Workers of America, filed with the FCC, Aug. 2018
- "A Model for Understanding the Cost to Connect Anchor Institutions with Fiber Optics" (co-author), prepared for the Schools, Health & Libraries Broadband Coalition, Feb. 2018
- "How Localities Can Prepare for—and Capitalize on—the Coming Wave of Public Safety Network Construction," Feb. 2018
- "Network Resiliency and Security Playbook" (co-author), prepared for the National Institute of Hometown Security, Nov. 2017
- "Mobile Broadband Service Is Not an Adequate Substitute for Wirelines" (co-author; addressing the limitations of 5G), prepared for the Communications Workers of America, Oct. 2017
- "Technical Guide to Dig Once Policies," April 2017
- "Streamlining Deployment of Small Cell Infrastructure by Improving Wireless Facilities Siting Policies," prepared for the Smart Communities Siting Coalition, filed with the FCC, March 2017
- "How Localities Can Improve Wireless Service for the Public While Addressing Citizen Concerns," Nov. 2016

- "LTE-U Interference in Unlicensed Spectrum: The Impact on Local Communities and Recommended Solutions," prepared for WifiForward, Feb. 2016
- "Mobile Broadband Networks Can Manage Congestion While Abiding by Open Internet Principles," prepared for the New America Foundation's Open Technology Institute – Wireless Future Project, filed with the FCC, Nov. 2014
- "The State of the Art and Evolution of Cable Television and Broadband Technology," prepared for Public Knowledge, filed with the FCC, Nov. 2014
- "A Model for Understanding the Cost to Connect Schools and Libraries with Fiber Optics," prepared for the Schools, Health & Libraries Broadband Coalition, filed with the FCC, Oct. 2014
- "The Art of the Possible: An Overview of Public Broadband Options," prepared jointly with the New America Foundation's Open Technology Institute, May 2014
- "Understanding Broadband Performance Factors," with Tom Asp, *Broadband Communities* magazine, March/April 2014
- "Engineering Analysis of Technical Issues Raised in the FCC's Proceeding on Wireless Facilities Siting," filed with the FCC (http://apps.fcc.gov/ecfs/document/view?id=7521070994), Feb. 2014
- "A Brief Assessment of Engineering Issues Related to Trial Testing for IP Transition," prepared for Public Knowledge and sent to the FCC as part of its proceedings on Advancing Technology Transitions While Protecting Network Values, Jan. 2014
- "Gigabit Communities: Technical Strategies for Facilitating Public or Private Broadband Construction in Your Community," prepared as a guide for local government leaders and planners (sponsored by Google), Jan. 2014
- "Critical Partners in Data Driven Science: Homeland Security and Public Safety," submitted to the *Workshop on Advanced Regional & State Networks (ARNs): Envisioning the Future as Critical Partners in Data-Driven Science*, Internet2 workshop chaired by Mark Johnson, CTO of MCNC, Washington, D.C., April 2013
- "Connected Communities: How a City Can Plan and Implement Public Safety & Public Wireless," submitted to the International Wireless Communications Exposition, Las Vegas, March 2013
- "Cost Estimate for Building Fiber Optics to Key Anchor Institutions," prepared for submittal to the FCC by NATOA and SHLB, Sept. 2009
- "Efficiencies Available Through Simultaneous Construction and Co-location of Communications Conduit and Fiber," prepared for submittal to the FCC by the National Association of Telecommunications Officers and Advisors and the City and County of San Francisco, 2009, referenced in the National Broadband Plan
- "How the National Capital Region Built a 21st Century Regional Communications Network" and "Why City and County Communications are at Risk," invited presentation at the FCC's National Broadband Plan workshop, Aug. 25, 2009

Attachment B

Humboldt Fire Safe Council
October 28, 2019 Letter to the President of
Frontier Communications

Jeana Herbst -Southern Humboldt
Fire Safe Council
PO Box 71 Redway, CA 95560

October 28, 2019

Office of the President Frontier Communications Inc
PO Box 5156
Tampa, FL 33675

To Whom it May
Concern:

This is an official complaint, please register it as such.

The Southern Humboldt Fire Safe Council (SHFSC), in Humboldt County, California, has identified a grievous public health and safety situation involving Frontier Communications landline telephones in our rural communities.

Many rural Southern Humboldt communities have been identified as not having redundant communication, as the topography of the landscape eliminates cellular opportunity in many places. As a result, many of these communities have come to rely solely on Frontier for landline telephone service. There is potential for large scale power outage events in these communities. Pacific Gas and Electric has stated that “if gusty winds and dry conditions combined with a heightened fire risk, threaten a portion of the electrical system serving the community, it will be necessary to turn off electricity in the interest of public safety”. These shut offs may last as long as four to seven days.

Many of our rural communities rely solely on Frontier landline telephone service for communications *for all emergencies*. There are large portions of our community that do not have cell towers and cell phones do not work. In the event of a power shutoff, Frontier has a battery backup system to keep the phone lines up and working. Due to highly outdated systems, poor maintenance and inadequate storage, these backup systems only last between three and four hours, and as little as twenty minutes in those which have not been updated recently.. After speaking with the local Frontier office, it seems that Frontier does have portable generators to charge some of these battery stations, but they do not appear to have the adequate personnel or emergency planning in place to distribute and keep generators running for a period of days, or even in multiple distantly located areas from each other on a shorter period.

This was made clearly evident on October 9, 2019, when PG&E shut down power in our area. Many communities were without landline service for over five hours, while one community was without service for entire outage, and did not regain service for an additional 12 hours after the

power returned. During an unscheduled outage on October 17,2019, several communities were without phone service for the duration of the outage, which was approximately 12 hours. Currently as this letter is being written, we are experiencing a scheduled outage. Our power has been out for three days, and we have communities that have not had phone service for this entire outage. This current outage is scheduled to last several more days.

THIS IS A SERIOUS HAZARD AND A POTENTIAL DISASTER. The PG&E shut offs come at a time of heightened fire season. These communities are extremely vulnerable. These areas are prime example of urban, wildland interface. Homes are spread apart, and interface directly with wildland. These outlying areas are dry, wooded and highly flammable. If a fire does occur, the community does not have a way to contact first responders or firefighters in a timely manner. There is no way for the County Office of Emergency Services to call residents or coordinate evacuations, if necessary. If a community member has a medical emergency, ***there is no way to seek help***, which has the extreme potential for loss of life.

The Southern Humboldt Fire Safe Council has encouraged our community to seek redundant communication in the form of HAM and CB radios. This however is not the solution. Very few households will be able to acquire a HAM operator license. For CB radios to be effective in emergencies, it would require a network of CB radios in the neighborhood, tuned to the same channel all the time; and if all the neighborhood phones are down, the same problem will exist -- how to contact emergency services, and how to receive emergency alerts.

As a first step, Frontier should preemptively notify all affected customers that their phones may be down in emergency fire weather conditions. We want you to create an emergency plan in the event of a widespread and prolonged outage. We understand that corded landlines in the larger communities (Redway and Garberville) can be expected to continue working during a power outage. It is the many smaller and more remote communities (Palo Verde, Telegraph Ridge, Wilder Ridge etc.) that we are concerned about. We encourage updates to the rural infrastructure which would allow these systems to work without manned implementation. Additionally and more immediately, for ourselves and for your company edification - we want to know how many battery stations will need to be serviced and how many generators are actually available. What is the staffing capability to service our vast area, installing, and refueling on a six to eight hour schedule around the clock for up to four to seven days? This is the predicted length of time the power will be out. Do not tell us that a corded landline will work in the event of an outage. We know this to be untrue, and you would not need generators in these areas if this was indeed the case. In the meantime, the SHFSC needs a list of the areas in Southern Humboldt that may have disabled landlines in a power shutdown, so that we can work with the people and volunteer fire departments of these areas to mitigate the problem as best can be done while waiting on a better solution.

Thank you in advance for your timely action on the above stated matters. We are looking forward to hearing from you soon.

Sincerely,

Jeana Herbst

Southern Humboldt Fire Safe Council

CC: Southern Humboldt Preparedness Team (SHEPt)

Southern Humboldt Fire Chiefs Association (SHFCA)

Humboldt County Office of Emergency Services

California Office of Emergency Services

Senator Mike McGuire

Attachment C

Customer E-mails to TURN re Phone Service Outages During October, 2019 PSPS Shutoffs

Customer E-mail to TURN
San Gregorio Remote Terminal Outage

RC

Forwarded Message
Subject RE Follow-up PSPS phone issues
Date Mon, 11 Nov 2019 09 02 15 -0800
From [redacted]
Reply-To [redacted]
To 'Regina Costa' <rcosta@turn.org>
CC [redacted]

Hi Regina,

Below is a photo of the equipment cabinet and the various scattered communication boxes across from the San Gregorio General Store. Let me know if you need more.

Regards, Hal

From: Regina Costa
Sent: Wednesday, November 06, 2019 11 05 AM
To: [redacted]
Subject: Re: Follow-up: PSPS phone issues

Hal,

Thanks so much for this. As an aside, I envy you, because the San Gregorio General Store is one of my favorite places on Earth.

Could you take a picture of the AT&T phone cabinet for me? My hunch is that this is a remote terminal that all of your lines feed into, and either it lost power, or if it is a central office switch, there is fibe somewhere in the network facilities that take the calls from San Gregorio to and from Half Moon Bay.

The info you are providing is immensely useful.

Thanks so much,
Regina

On Nov 5, 2019, at 10:35 PM, Hal Feeney <> wrote:

Hi Regina,

Our property is within sight of the San Gregorio General Store—the phone cabinet for the area is across from the store—it is my understanding that the cabinet is fed from Half Moon Bay – in contrast, most of the Highway 84 corridor is fed from La Honda. The photo below is the view of the store from our property on a partially foggy day (Tuesday). I am sure that phone service wiring is 100% copper from the general store to our property. I do not think that there is any remote equipment between the general store and our property (a distance of a little over a mile). When I talked with the ATT customer service rep on the day of the landline failure, she confirmed that the line was out—she described the situation such that he whole area served by the CO was out because of the PSPS and if there was any back-up, it would not have lasted that long (my call was about 40 hours into the PSPS). She did record my incident report. I will follow-up with a complaint to the CPUC.

Going back for a moment to the initial PSPS, I noted that the ATT cell service was not functioning at our property. In contrast, the Verizon cell phone service was functioning normally.

Our Internet service is provided by CoastSide.Net from Half Moon Bay. The service to our property is a wireless connection from the Skyline area to a small tower near Bear Gulch Road (and Hwy 84) that beams the signal to an antenna on the highest part of our property. The receiving antenna depends on electricity from our site and the gateway router to which it connects also requires electricity. The lack of back-up at the point of entry to our property is a problem that I need to correct. I attached an email exchange that I had with the owner of CoastSide.Net regarding our Internet signal during the PSPS.

I hope that these comments help. Let me know if you need any more detail.

Regards, Hal

<image002.jpg>
San Gregorio Urban Area!

From: Regina Costa
Sent: Tuesday, November 05, 2019 9:38 AM
To: [redacted]
Subject: Re: PSPS phone issues

Hal,

Thank you so much for your response and your information. I'm curious about your landline. The recent lengthy power shutoffs are the first I've heard about telephone company copper landlines failing, with the exception of outages in Mendocino County to lines served by equipment called Remote Terminals. These are boxes housing equipment that takes calls from longer lines, combines the calls, and sends them to the phone company central office/switch. They require back-up power.

I'm somewhat familiar with San Gregorio - the General Store, the road heading East up into the hills, Stage Road between San Gregorio and Pescadero. My first guess would be that you are served off of a remote terminal that lost power. But I could be wrong.

When you say your Internet stayed on, can I ask who the provider is?

Have you filed a complaint with the CPUC? The reason I'm asking is that these experiences need to be documented so that the Commission can examine why some service failed and others didn't, why it failed in some areas and not others, and try to understand the scope of the back-up power problem. I am consulting with colleagues in other states and trying to get as much information as possible - for example, New York has back-up power requirements for telephone company landlines and VoIP service, and some very good testimony was presented by engineers with expertise in backup power in a proceeding in the District of Columbia. We and our allies with the Public Advocates Office and other consumer organizations are going to be pushing for a thorough examination of this. All of the information provided by you and other folks is crucial to understanding what happened and, most importantly, how to fix the problem as well as can be.

Thanks,
Regina

On 11/04/2019 11:44 PM, Hal Feeney wrote:

> Hi Regina,
>
> I appreciate your follow-up and concern about maintaining necessary communication during all times when there is a wide-spread power outage. Thanks to Lisa for circulating my initial message. You do have my permission to circulate my comments wherever they may be useful. Since writing my initial email, I learned that my access to Internet in San Gregorio was not down during the PSPS events, but I was not able to access the web because my gateway router was without power—a necessary future back-up modification needed.
>
> You might find a few additional comments of interest. On the ranch property in San Gregorio, there are 15 utility poles (PG&E owned and installed) providing electrical service to 3 buildings. After the first PSPS event, the poles were inspected by two lineman in a truck, a process that took 30-45 minutes for about 4000 feet of line; after the third PSPS event, the inspection was done in about 10 minutes with a helicopter fly-over. PG&E is moving down a steep learning curve and making progress.
>
> Earlier in the year, a tree limb above the wires broke during a rainstorm damaging one conductor and burned a 5' scar in the lush green grass (the circuit breaker responded as it should). It was very fortunate that the weak branch damage occurred in the rainy season and not in the fire season. My concern is that although there are regular inspections of the wires and any nearby trees, it appears that only small branches are removed near or below the wires, but there was no attention to large overhanging limbs.
>
> I hope there is progress that improves the grid so any future PSPS outages are not so widespread.
>
> Regards, Hal

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

On Wed, Oct 30, 2019 at 12 08 PM [redacted]

> Hi Lisa,
>
> Your recent articles regarding the problem with phone and Internet communication during the PSPS events were right on target. It appears that not enough communication planning went into these wide area power outages.
>
> Another data point for your research: During the first PSPS event earlier in October (18 hour PSPS), there was no ATT cell service in San Gregorio, but there was landline (ATT POTS) service available. In the PSPS event beginning Saturday (45 hour PSPS), the cell service was functional, but there was no landline service available. When I contacted ATT (after 25 minutes on HOLD), I learned that the San Gregorio landline was out because of the widespread nature of the PSPS. As you point out, there is little that affected residents can do to back-up the ability to communicate because there is no advance knowledge of the impact of any individual PSPS event—driving a car 10 to 25 miles to find a location with either landline or cell service is not a viable back-up plan.
>
> Keep up the good work of exposing the critical problems related to preparedness for the critical power blackouts.
>
> Regards, Hal

[redacted]

--
Regina Costa
Telecommunications Policy Director
TURN
785 Market St., Suite 1400
San Francisco, CA 94103
Ph. (415) 929-8876, ext. 312
rcosta@turn.org

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<Rob at Coastside.net.pdf>

Customer E-mail to TURN
Lafayette Comcast Outage

-------- Forwarded Message --------
Subject: Re: Why is my landline phone not working ?
Date: Thu, 31 Oct 2019 11:40:32 -0700
From: Kathy Marshall [redacted]
To: [redacted]
CC: [redacted] Regina Costa <rcosta@turn.org>, [redacted]

[redacted]

[redacted]

On Thu, Oct 31, 2019 at 6:03 AM Kathy Marsha [redacted] wrote:

> L sa,
>
> Thanks for your art c e but there s more to the ssue. We have a yet 1000 battery backup for the Comcast modem and phone, but t was use ess because when the power stopped for the psps, so d d the r serv ce. They were more than severa hours de ayed com ng back on after the power was back.
>
> We have our phones charged as we , and AT&T showed no serv ce n the ast psps. None. Texts cou d not go out, no ca s rece ved, some texts were rece ved. SMS texts cou d go random y, when I suppressed Messages. Not re ab y. Luck y we p ugged our o d schoo phone nto our o d schoo copper fax ne and cou d ca upset fam y members back.
>
> However, when the county ca ed my ce number to te us about the Lafayette fire evacuat ons Sunday afternoon we d d not get a phone ca . Later the vo ce ma s from the ca appeared n our vo ce ma , the m ssed ca s never showed up n the sts of ca s.
>
> Luck y we were aware of the fire and where t was and my husband kept an eye on t from the center of town. We v s ted La Chata gne n town a coup e t mes as M chae the baker there had a ce s gna and w fi for the commun ty to use. We ve r ght by Bent ey Schoo on the west end of Lafayette. The fire as you know was on the east end.
>
> So Sunday n ght I watched for the Pu sePo nt not ficat ons that popped through my m ted serv ce, and hoped that we were ok, wak ng every hour or so to check.
>
> I do not know why Comcast ost power and cou d not return serv ce for so ong after the power was restored dur ng both October psps outages. I can te you about AT&T. Dur ng the first psps we saw a b g AT&T generator up on Knox Dr ve across the freeway from us, near LOPC. We had a s ng e bar dur ng that psps. S nce dur ng the second onger psps when our ce phones reported no serv ce dur ng the ent re t me at our home, we went to check on the generator. It was not there.
>
> The copper POTS phone nes are supposed to go away n the next year or so. I asked Comcast for a so ut on after the first psps but they were no he p.
>
> A sate te phone s very expens ve and probab y not a s mp e so ut on. I read about Goog e fi - and maybe that s a better so ut on a though peop e on NextDoor report that t works better abroad?
>
> We need your he p to get the story out and pressure the CPUC to get us re ab e serv ce. I posted comp a nts there about both Comcast and AT&T and w forward anyth ng I hear from them.
>
> Thanks,
> Kathy Marsha
> [redacted]
>
> --
> Best,
>
> Kathy Marsha
> [redacted]

--
Best,

Kathy Marsha
[redacted]

Customer E-mail to TURN
Lafayette Comcast Outage

RC

Forwarded Message
Subject Re landline phone article
Date Fri, 1 Nov 2019 02 08 43 +0000 (UTC)
From lyn lazar[redacted]
To Regina Costa <rcosta@turn.org>

Thanks for the follow-up. You have my permission to share the information I provided.
We did come home to working phones and internet tonight.
Below is a notice on the Lafayette Nextdoor site - I had not seen any information from AT&T regarding this known problem. Certainly did not seem to want to "advertise" the problem they have been having.

"Update on AT&T Service In Lafayette

The City received this update today from AT&T: In checking with my network team, they indicated that once PG&E power was restored, a piece of equipment in a number of our neighborhood cabinets that provide Internet and phone services was affected and needs to be replaced. They're having to locate the replacement cards and expect to have some of them re-installed later today and this evening."

Lyn

[redacted]

On Wed, Oct 30, 2019 at 9:59 PM lyn lazar[redacted] wrote:

> Hi,
> I read your article in today's paper regarding landlines using VOIP, along with internet, not working with the current power outage.
> Our power(we live in Lafayette) was out from Saturday night to Monday night. But, once our power returned, we still did not have phone or internet/wireless. Our carrier is Sonic and they contract with AT&T. We have contacted Sonic twice and have been told that it is a problem with AT&T. The Sonic staff indicated that AT&T has a huge outage problem for home phone/internet service due to a cascade effect from their battery back-up system failing.
> We still do not have landline phone or internet. I have looked on the internet(using a cell phone hotspot) to see if there is any information about this problem and have not found anything. Also, neither AT&T nor Sonic have any comment about this issue on their websites that I can find.
> I thought I would contact you because the problem you described in your article does not seem to just to be limited to the time period of the power outage. I do not know how many customers this issue has affected.
> And, if the Sonic employee is correct, the current AT&T problem has to do with a major failure of their back-up battery system which then cascaded to create additional problems which has led to a persistent failure of their system.
> Thank you for your time,
> Lyn Lazar

--
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rcosta@turn.org