

September 2015 Telecommunication Outage and the Impacts on Residents of Mendocino County



Aerial view of Big River Beach, Mendocino. Photo credit "Visit Mendocino"



North Bay/North Coast
Broadband Consortium

Broadband Alliance
of Mendocino County

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Executive Summary

On September 3, 2015 at 9:55 a.m. fiber cable owned by AT&T located in a remote area of Mendocino County was cut by vandals, resulting in a widespread telecommunications network failure across the 3-county region of Mendocino, Humboldt and Del Norte counties, as well as possibly affecting areas of Sonoma, Lake, and Trinity. The lack of redundancy and diversity in AT&T's infrastructure and the dependence of other providers on AT&T's fiber, caused a loss of services for 24 hours across Mendocino County. This was the fourth outage in the county in the past 13 months. In August 2014 a 45-hour outage severely impacted 8 communities along the Mendocino Coast. There were two smaller outages in Covelo and Laytonville earlier this year. And most recently, on December 9th Humboldt County experienced an outage that caused loss of service to an estimated 90,000 residents.¹

The Sept. 3rd 2015 outage impacted services including Internet, mobile telephone, landline telephone, business processes such as fax and credit card processing and most critically, loss of 9-1-1 services from seven Public Safety Answering Points (PSAPs). Mendocino County Emergency Operations Center (EOC) was activated at level two at 10:45 a.m., re-routing all incoming 9-1-1 emergency calls to a secondary PSAP. Although re-routing of the 9-1-1 system occurred quickly, many people still could not call 9-1-1 or receive reverse 9-1-1 calls because the service remained out on their end. In the EOC center, OASIS Communication, a portable radio communication system, and satellite phone and internet were all activated; the Mendocino Ham Radio Team was activated and deployed to the EOC and hospitals. An Incident Command for California Highway Patrol and Cal Trans was established at Howard Forest. At 9 a.m. the following day, service was restored and the EOC deactivated.

The primary focus of this report is the impacts in Mendocino County. A 33-question online survey was launched four days after the outage to document impacts to residents and businesses, with 627 responses received. Broadband advocacy groups feel that it is vitally important to document these impacts to ensure that when policy makers are considering legislation on these issues, rural voices are heard and their concerns made a part of the policy discussions.

Survey responses verified that the outage affected 25 out of 28 zip codes in Mendocino County alone, with anecdotal evidence that the 3 unrepresented zip codes were affected as well. Survey results showed that 96% of respondents lost some or all forms of communication. 96.5% of the 364 business and organization/government respondents indicated that they were impacted, ranging from reduced capacity to function to having to close their doors, with 47% of businesses/organizations reporting loss of income. Mendocino County can't afford to continue to experience the consequences of outages. The toll is too high and even more severe outcomes than we have experienced so far are possible.

This report recommends changes to address these critical issues: 1) The connections of all AT&T in-county central offices and regional tandem offices should be fully redundant and

¹ Dec. 10th, 2015 Press Democrat article by Julie Johnston

diverse. 2) Redundancy and diversity should be supported by a competitive multi-carrier environment. 3) Emergency 9-1-1 PSAPs should be interconnected with an engineered solution that ensures that all dialed 9-1-1 calls always reach a staffed PSAP. 4) Mendocino County should develop and adopt countywide Broadband Goals and a Broadband Plan with specific strategies to meet these goals. 5) Fiber routes should be inventoried and any cabling that is currently un-secured should be secured. 6) Improvements in communications and protocols should continue to be developed with the incumbent Incumbent Local Exchange Carrier (ILEC), AT&T.

Introduction

On Thursday, September 3rd, 2015 at 9:55 a.m., the northern California coastal region experienced a telecommunications network failure that resulted in the loss of various services in the 3-county region of Mendocino, Humboldt, and Del Norte, affecting thousands of residents, businesses, and public agencies. This outage was due to a single-point of failure in inter-office facilities operated by the Incumbent Local Exchange Carrier (ILEC), AT&T California. The 96-fiber optical cable was cut/vandalized south of Ukiah along the North Coast Railroad Authority tracks near Henry Station Road, west of the Highway 101 corridor. The cable was located in an area where mudslides had previously occurred. The cable was raised out of the ground and secured by steel posts, leaving it vulnerable to vandals. Although AT&T maintains that all network information is proprietary and will not comment on it, it appears that AT&T routes traffic for all of its Mendocino County exchanges to / from the outside world via the tandem office in Santa Rosa, with the Ukiah Central Office serving as one of four trunked 9-1-1 hubs for the area. Thus, when the fiber was cut south of Ukiah and resulted in widespread outages, we can deduce that AT&T does not have the redundancy or diversity to re-route traffic to Santa Rosa, and the fiber cut isolated both the Eureka and Hopland remote switches. The Verizon exchanges are similarly routed, as they rely on the dominant in-region ILEC for transport.

Background of Public Switched Telephone Network (PSTN) Outages

Similar network failures have occurred in the recent past. Approximately 13 months ago (August 2014) a 45-hour outage severely impacted 8 communities along the Mendocino Coast. This outage was documented with a county [Incident Report](#) which was submitted to the California Public Utilities Commission (CPUC) and other agencies, including the Federal Communications Commissions (FCC). Smaller failures have occurred in Covelo (700 people, 3 hours on August 27, 2015) and Laytonville (Spring 2015). Outages with significant impact have occurred in Humboldt County as well. Most recently on December 9th, a widespread outage caused the loss of services for an estimated 90,000 residents, while earlier outages in 2006/2007 resulted in the addition of route diversity in the form of Route 36 (completed in 2011)² and studies for additional diversity on Route 299.³

² <http://www.neratech.net/docs/Blackout.pdf>

³ From a 2012 article (<http://www.northcoastjournal.com/humboldt/occupy-broadband/Content?oid=2166837>), it appears that several providers have leased fiber on this diverse Hwy 36 route: Suddenlink, 101Netlink, PG&G and AT&T. AT&T has not stated why this redundant pathway seemed to fail in this recent outage. The route 299 feasibility study is found here: <http://redwoodtech.org/sites/default/files/final-report-firstmile.pdf>

Mendocino County Response

The loss of 9-1-1 services from seven Public Safety Answering Points (PSAPs) and loss of communications created a critical situation for the safety of county residents. Mendocino County Emergency Operations Center (EOC) was activated at level two at 10:45 a.m. re-routing all incoming 9-1-1 emergency calls to a secondary PSAP at the CAL FIRE Howard Forest station. Additional dispatchers were sent to Howard Forest to help with the increased call volume and to assist Howard Forest dispatch as they normally do not handle law enforcement emergency calls. In addition, an Incident Command for California Highway Patrol and Caltrans was established at that location. *Although re-routing of the 9-1-1 system occurred quickly, many people could not call 9-1-1 or receive reverse 9-1-1 calls because the service was out on their end.* Satellite phones were distributed by the Sheriff to emergency personnel around the county. Police departments in Ukiah, Fort Bragg and Willits, the Sheriff's Department, Coastal Valley EMS, Mendocino County Department of Education, the Mendocino County Executive Office, CalOES, and local fire departments were all notified and/or checked in with the EOC. Many began "high visibility" patrols. Ambulances and firefighters were deployed and stationed at local fire departments that did not have ambulance service. In the EOC center, OASIS Communication, a portable radio communication system, and satellite phone and internet were all activated; the Mendocino Ham Radio team was activated and deployed to the EOC and hospitals. Hospitals were also able to use walkie-talkies as an emergency protocol. The National Weather Service sent out an Emergency Alert Message, and all coastal radio stations were able to get the message out. The Sheriff's Office deployed an officer to find AT&T personnel to determine the cause of the outage and get an update/estimate for a time of reconnection of phone and internet services. AT&T crews were found in about an hour, but did not know a time of re-connection, but gave an estimate of 24 hours. Overall, the Mendocino County response was very positive, and it showed some major strengths: staff and personnel had proper training and consistently reported into the EOC.⁴

An AT&T crew worked throughout the night to repair the fiber break, and the Hopland switch was operational by 9:55 p.m. September 3rd and the Eureka switch by 8:45 a.m. September 4th. Services were out for an average of 18 hours.⁵ The Mendocino County EOC deactivated at 9 a.m. on September 4th, the following day. As of this writing, no one has been arrested in connection with this vandalism.

Purpose of Outage Survey

When these outages occur, they have very real impacts on residents and businesses that affect personal safety, economics, and emotional well-being. Broadband advocacy groups feel that it is vitally important that these impacts be documented to ensure that when policy makers are considering legislation on these issues, rural voices are heard and their concerns made a part of the policy discussions. For this reason, the Broadband Alliance of Mendocino County went on-line with a 33-question survey on September 8th, 4 days after the outage, to document

⁴ From County OES After Incident Reporting

⁵ From the AT&T press release regarding the outage; Appendix B

impacts⁶. The survey link was primarily shared via social media and radio announcements in the Mendocino County area⁷. The bulk of the 627 total responses were received within the first 13 days, although the survey remained open until October 12th. With a county population of 87,000, the number of respondents represents only a small fraction of the total population of Mendocino County (less than 1%) but given the widespread nature of results (more below) we believe the responses are a valid representation of the impacts that such an outage has on residents, businesses, and the community as a whole. The results from this survey, along with other sources of information such as the AT&T Incident Report, Mendocino County OES report, and information from newspaper articles form the basis for this report.

Scope of Affected Area and Services Lost

There is no accurate way to know exactly how many residents, organizations and businesses were affected by the outage. Mendocino and Humboldt counties alone have a combined population of 221,000, which means that tens of thousands of people were impacted at some level. AT&T has not released any hard numbers of customers affected; an AT&T spokesman has said that doing so “would encourage more vandalism”⁸. 74% of survey respondents provided their city and zip code, which provides important information about the scope of the outage. The vast majority of the zip codes (95%) were from Mendocino County, where the advertising of the survey was focused, although 21 surveys were received that represented 12 other zip codes and 5 other counties.⁹ Humboldt County was also impacted, and Lt. Wayne Hanson at the Humboldt County Sheriff’s Office was quoted in the *Times-Standard* “... that the problem spans areas all over the County” and their county OES opened up an on-line survey in the days following the outage.¹⁰ This information is supported by Humboldt Broadband Facebook posts on September 4th by 25 comments from people telling their outage stories.¹¹ A *Willits News* article reported that parts of Sonoma and Lake counties were also affected, although this is not verified.¹² Of the 28 zip codes within Mendocino County, survey responses were received from 25 of them. Of the three zip codes not represented in the survey, it is documented from personal communication with a business in one of these areas that they were very much affected.¹³ This evidence implies that the scope of the outage was extremely

⁶ Appendix A contains the complete list of survey questions and responses

⁷ The survey link was also shared on Humboldt Broadband Facebook page in a comment, which was probably why we received a small number of out of county responses

⁸ Lost Post Outpost article [Beyond Redundancy: Why Last Month’s AT&T Outage Sucked So Bad](#) by Ryan Burns / Friday, Oct. 9 @ 12:34 p.m. / Business , Technology

⁹ The six counties represented in the survey are: Del Norte, Humboldt, Lake, Mendocino, Trinity, and Sonoma.

¹⁰ <http://www.times-standard.com/general-news/20150903/fifth-update-phone-broadband-outage-caused-by-vandalized-fiber-between-ukiah-and-santa-rosa>

¹¹ <https://www.facebook.com/groups/113207222027456/>; see posts from September 4th, 2015

¹² <http://www.willitsnews.com/general-news/20150904/mendocino-county-9-1-1-internet-and-some-cell-service-down>

¹³ The 3 areas in Mendocino County from which no surveys were received are Leggett, Navarro, and Piercy; direct communication from Leggett businesses verified that they were affected by the outage.

widespread in Mendocino County, with virtually every community impacted to some degree. AT&T is the primary ILEC throughout the county and many other providers (including Comcast and Verizon) have leased services from AT&T that were affected. The nature of the technology itself implies that if a few households report loss of a service such as a landline, then most of the households in that area have also lost the same service, whether they completed a survey to verify this or not.

Survey results show widespread loss or reduction of function in a variety of services, with the biggest loss being Internet at 87%. Other services impacted include mobile telephone (86%), landline telephone (61%), and business processes such as fax (23%) and credit card processing (18%). Especially troubling was the loss of 9-1-1 services from seven PSAPs, although the emergency re-routing system was operational within an average of 30 minutes and calls were re-routed to the CAL FIRE Howard Forest Office. However, even though the PSAP was functioning through this re-route, many people could not call 9-1-1 or receive reverse 9-1-1 calls for the duration of the outage, because the service was out on their end.

Question 3 (Q3) summary of services impacted

Q3: Which of your services were impacted? Check all that apply.		
Answer Options	Response Percent	Response Count
Landline phone - lost all service	35.9%	208
Landline phone - worked partially (some calls got through)	25.2%	146
Fax machine	22.8%	132
Credit card machine	18.3%	106
Home alarm system	3.6%	21
Cellular phone - lost all service	52.2%	302
Cellular phone - worked partially (text only, slow, dropped calls, inconsistent)	33.5%	194
Internet Service (wired or wireless)	87.0%	504
Satellite Internet	5.0%	29
Cable Television	7.9%	46
Other (please specify)	10.7%	62
	answered question	579
	skipped question	48

Service Providers Affected

From survey results, the top Internet service providers (ISP's) affected by the outage were Comcast (21.6%), AT&T (19.8%), Pacific Internet (11.4%), Mendocino Community Network

(8.9%), Sonic (3.8%), WillitsOnline (6.7%) and Verizon (2.3%). These service providers likely lease fiber from AT&T, and one point of failure has an impact across many other providers. It is noteworthy that there were three service providers who had zero *reports* of outage according to survey results: 101 Netlinks, Further Reach and CalNeva.¹⁴ These providers either lease diverse/redundant AT&T routes or have developed non-AT&T backhaul routes.

Safety Concerns of Residents

99.3% of respondents reported that they were impacted by this outage (Question 9), with impacts ranging from inconvenient to severely disruptive of their activities. Depending on their individual circumstances, this disruption ranged from having only a mild effect to one that caused high levels of distress.

Mendocino County is rural and many areas are remote. Losing all communication may be an inconvenience for a healthy adult who owns a car but for a disabled or elderly person who does not drive, telephone service is a vital safety net to keep in touch with family, medical staff, and friends. For this reason, even more so than in urban areas, when that service is not available, it causes considerable panic and distress for some residents and families.

Loss of communications was experienced by 96% of respondents. From Q11, 78.5% were cut off from most (46.8%) or all (31.7%) communications during this outage, including 9.2% who live alone. 57.4% said that they would not have been able to dial 9-1-1 should they have needed that service, which translates to 243 people. Q12 reports 3% (13 people) who replied that they needed to call 9-1-1 but could not. Luckily, there were no deaths due to this outage that we know of, but the potential was very real. Again, the number of people who took this survey represents only a fraction of people who live in the area impacted by the outage.

Question 11 (Q11) Summary of Communications Impact

Q11: If responding as a resident, please characterize the communications impact of this outage for you and your family (check all that apply)		
Answer Options	Response Percent	Response Count
No impact	3.8%	16
Cut off from all communication	31.7%	134
Cut off from all communication and I live alone	9.2%	39
Cut off from most communication	46.8%	198
I could not contact members of my family	55.3%	234
Members of my family could not contact me	56.5%	239
I could not contact 9-1-1 if I had wanted to	57.4%	243

¹⁴ There may be other providers who were not affected but not mentioned in the survey

I would not have been able to receive reverse 9-1-1 calls	47.0%	199
Comments		84
	answered question	423
	skipped question	204

The connection between loss of communication and potential safety threat is verified in Q12, where 87% of respondents felt the outage was a potential safety threat.

Question 12 (Q12) Summary of Safety Impacts on Residents

Q12: If responding as a resident, please characterize the safety impact of this outage for you and your family (check all that apply):		
Answer Options	Response Percent	Response Count
I do not feel that this outage was a potential threat to my family's safety	13.1%	56
I considered this outage a potential threat to my family's safety	56.6%	241
I consider this outage a serious potential threat to my family's safety	35.4%	151
I could not buy groceries and/or medicine that I needed to buy	12.2%	52
I could not get in touch with my doctor and I wanted to	12.4%	53
I needed to call 9-1-1 and I could not	3.1%	13
This outage caused actual harm to me or my family (please explain in comment box)	0.5%	2
Please describe actual harm:		29
	answered question	426
	skipped question	201

Here are a few comments that were received with this question:

- *“91 year old lady was unable to report heart attack symptoms or call 9-1-1. Fortunately her medication was on hand and helped. But caused much distress and fear. She is housebound too. She was unable to get refills of med for several days afterward.”*
- *“I could not pick up medicine that I needed at Safeway because the doctor called it in, but they did not get it until the next day. My daughter is also prone to anxiety and panic attacks. This outage took all my calming measures with her to keep her from going into a full-fl*

- *edged panic attack. “My mother is 97 years and 10 months old and is sometimes alone where she lives. I call her every day to check on her since she has fallen in the past and uses a walker. She is fearful when she is alone and panics.”*

Under Q15, 14% of residents said it was not distressing/anxiety producing, leaving 86% of residents for whom the outage was “distressing/produced anxiety” to various degrees.

In that group, 8.5% reported the outage as “very distressing/produced great anxiety”, which represents 36 people who took the survey for whom this outage presented a significant emotional toll. Multiply that by the number of people impacted who did not take the survey, and we get a sense of the larger impact for people whose personal safety is directly connected with being able to communicate.

Question 15 (Q15) Summary of Emotional Impact on Residents

Q15: If responding as a resident, please characterize the emotional impact of this outage for you and your family:		
Answer Options	Response Percent	Response Count
Not distressing/did not produce any anxiety	13.6%	58
Mildly distressing/produced some anxiety	52.0%	221
Distressing/produced anxiety	25.9%	110
Very distressing/produced great anxiety	8.5%	36
Final Comments on impact on your family:		59
	answered question	425
	skipped question	202

Impacts on Businesses and Organizations

Businesses need reliable and fast broadband to compete in the modern world. For businesses in rural areas, access and affordability by itself can be very challenging, and if their service is not reliable, it is an additional economic stressor.

364 surveys were answered as part of a business or organization. Over 65% of the respondents were either owners, CEOs, or in management (Q16). Under Q17, 38% of the businesses that responded were small (less than 5 employees), 10% were medium-sized businesses (5-15 employees) or non-profits, while 17% were large businesses (more than 15 employees). 17 different types of organizations were represented in this survey, such as

schools, health care facilities, financial institutions, government, public safety, tribal organizations, library, and social service organizations.¹⁵

Businesses and organizations were uniformly impacted by this outage. Of 342 who answered Q19, only 3.5% reported there was “no impact”, leaving 96.5% impacted ranging from reduced capacity to function to simply closing their doors because they could not function at all.

Question 19 (Q19) Summary of Business/organization Impacts

Q19: How did the outage impact your business/organization in general?		
Answer Options	Response Percent	Response Count
No impact (100% normal)	3.5%	12
Functioned at reduced capacity (75% of normal)	21.1%	72
Functioned at reduced capacity (50% of normal)	21.6%	74
Functioned at reduced capacity (25% normal)	26.3%	90
We could not function but stayed open	15.8%	54
We could not function and closed our doors	11.4%	39
We were forced to function at increased capacity	2.0%	7
Details		139
	answered question	342
	skipped question	285

Here is a sampling of the 139 comments that were offered in Q19, with “I was unable to work” being very common:

- *“We lost most business that day and all employees were sent home with no pay.”*
- *“It was our payroll processing day for over 800 employees and we could not process it.”*
- *“Credit/debit/EBT transactions were not workable. Even our landline backup for the credit terminals was mostly useless because of the traffic overload on the phone network. We operated on a cash-only basis, which angered some customers.”*
- *“Nearly all our activities are reliant on working phones and Internet connections. We stayed open to provide moral support to our clients who were distressed about the outage and the impact it was having to their businesses and personal lives.”*
- *“...any technology related presentations (which are common) were cancelled or postponed. Remotely held classes had to be cancelled as well. All business communication was dead save for internal email and some very sporadic / limited phone connectivity. For management and classified staff our ability to perform normal duties was below 25% of normal.”“I’m a telecommuter. I was completely unable to work due to the outage. I was completely out of contact with my office.”*

¹⁵ See Question 17 in Appendix A

- *“We had a Board meeting which couldn't take place due to lack of phone and cell and internet service. I drove across the county for the meeting and didn't know the service was out because I couldn't call anyone and no one could call me. No meeting could be held.”*
- *“Inability to meet required timelines. Inability to contact some clients and service partners by phone.”*
- *“We had constant alerts going off due to the inability of caregivers not being able to clock in or out. We were unable to reach caregivers to discuss schedule changes or schedule them for work. Seniors were frightened with no ability to make phone calls. Many of them not driving they were cut off from everyone. The paperwork was tremendous to document the clock and outs. The staff was stressed and couldn't get their normal work done with circuits being busy most of the time when they needed to make phone calls. Calls in to us were periodically not working. Calls out were just as bad.”*
- *“Personally, I couldn't function as my textbooks are eBooks stored online to which I had no access. My course materials are distributed and assigned via an On-Line Learning Management System so neither students nor I could access assignments, prepare submissions, etc.”*
- *“Lucky that I had a few dollars cash on me; I usually don't. My car was running on fumes; without cash, I would have been stranded. I couldn't buy groceries, though; no debit card, no more cash.”*

Reduced ability to function translated into economic losses for almost half (47%) of the business/organization respondents.¹⁶ Specific dollar amounts of lost revenue from 44 businesses who provided such data (out of 119 businesses who said they lost revenue) estimated losses totaling \$118,910, which averaged \$2,702/business. 74 businesses could not provide an estimate, saying simply there was “no way to know”, that it was difficult to quantify “lost opportunities” from customers not being able to contact them, or the cost of employees not being able to function, or how upset/unhappy customers translated into economic losses. Local attorney Bill Barnum opined in a *Lost Coast* article: “Imagine the millions of dollars of productivity we lost yesterday on the North Coast due to a lack of redundancy.”¹⁷ Residents also reported that they were impacted economically, usually due to losing out on a day's work without always providing an amount. The total estimated loss of income for the 22 residents who did provide an amount was \$6,570, or an average of \$299/resident.¹⁸

Mendocino County was not able to provide an estimate of additional costs to the County for activation of all the emergency protocols and increased patrols that resulted from this outage.

The emotional impact of this outage on businesses was surprisingly greater than on residents; while 86.3%% of residents said it was distressing to some degree, 92% of businesses found it distressing to some degree. The highest distress level of “very distressing/producing great

¹⁶ Only 321 of the 342 businesses/organizations who said they were impacted answered this question, and of those 20% said economic losses did not apply

¹⁷ <http://lostcoastoutpost.com/search/?q=beyond+redundancy>; Oct 9, 2015 by Ryan Burns

¹⁸ See appendix C for “specific economic losses”

anxiety” was 19.4% for businesses, compared to the residents’ percentage of 8.5%. This seems to indicate that the potential economic losses produce the highest stress levels, even higher than highest stress levels for residents related to potential safety impacts. The economic impacts were very real with quantifiable estimates of loss for businesses, while the safety impacts were “potential”. But, if this outage had been due to an emergency where there were injuries (such as an earthquake) these results would likely have been very different.

This final comment could very well summarize how many businesses perceived this outage:

- *“The personal impact was a little stressful, but the business impact was VERY stressful.”*

1% of impacted people were non-residents (half visiting family, half on vacation), and the good news for the County is that none of these out-of-towners said that they were less likely to return because of the outage.

Availability of Information During Outage

Only 6% of residents felt that they were “well informed” during this outage, and almost a quarter felt like they were “not able to keep informed at all”. The majority of residents (70%) fell somewhere in the middle. Radio seemed to be the best way that people were able to get information (59%), with KZYX listed the most frequently followed by KOZT. Others drove to town, used social media (Mendocino County Sheriff’s Facebook page was frequently mentioned) or received email updates via the county if they were able. Considering the rural nature of our county and distances between population areas, with many people living in remote areas, we can do a better job of keeping people informed during such an outage with some simple recommendations. The County Office of Emergency Services is currently meeting with AT&T to discuss improvements in communications in an outage event, including providing 2-way contact information and land-line connections. As an example, AT&T was sending updates to radio station KZYX, via email, but the station Internet was down. If AT&T had been using their landline connection (only 36% of respondents lost ALL landline service), they would have been able to contact the station directly and give a verbal update. The OES reported that the Sheriff sent an officer out specifically to find the AT&T crew to get an update, which the officer was able to do in one hour. As these protocols and contact lists are developed they will be shared with appropriate agencies and the general public.

Conclusions and Recommendations

Well designed networks operate with redundancy and diversity in the background; when a network has a point of failure, the system automatically switches to the back-up routing with no glitch in connectivity. Typically, no one is even aware that an event has occurred except the engineers and technicians. However, in Mendocino County many non-technical residents are becoming versed in such terms as “redundancy” and “diversity”, because of our lack of it; these outages make residents feel vulnerable and that their businesses and communities are at risk. In the open-ended “final comments” section of the survey, 178 people offered up their final thoughts, and of these 44% (78 people) *specifically mentioned* the need for “redundancy” or

“back-up systems”¹⁹. Concerns were expressed that if this were a real emergency (earthquake, storm, prolonged outage, fire, terrorism, etc) our communities would be in *much* deeper trouble.

Last year’s outage report concluded with this general warning:

This report documents the impacts such an event can have on a community, and should act as a warning for all – communities, local government, emergency services, and regulatory agencies whose function it is to oversee these networks. A loss of communications capabilities puts everyone’s life at risk if they cannot place an emergency 9-1-1 call. What’s more, we feel strongly that this occurrence was unnecessary. There are simple ways to ensure a backup method of communication is in place in the event that a fiber-optic line is damaged.

It is our hope that this report galvanizes regulatory agencies in California and in Washington, D.C. to require a backup method of communications to be in place. We expect the results of this survey will bring awareness to just how interconnected the modern world is. Finally, that the proper functioning of our communities is absolutely dependent on reliable, stable, redundant and ubiquitous broadband networks.

It seems like the warning in 2014 went unheeded. Or do the wheels of change turn too slowly to have prevented this outage? The question of “How do public safety issues, and at what scale, relate to the ability to bring policy changes at a regulatory/legislative or corporate level”, is one that needs answering. Until that answer is forthcoming, communities should discuss these issues at the county level, and take this issue into their own hands to find solutions. The magnitude of this year’s outage clearly demonstrates that needed changes, for whatever reasons, have not occurred, and that our northern California counties are not properly supported with reliable, redundant service delivered by the ILEC.

Recommendations

1. The connections of all in-county central offices and regional tandem offices need to be fully redundant and diverse.
2. Redundancy and diversity should be supported by a competitive multi-carrier environment
3. Emergency 9-1-1 PSAPs should be interconnected with an engineered solution that ensures that all dialed 9-1-1 calls always reach a staffed PSAP.
4. Mendocino County should develop and adopt county Broadband Goals with input from county personnel from various departments (IT, public safety, OES, Schools, County administration), and also develop a Broadband Plan with specific strategies to meet these goals.
5. Fiber routes should be inventoried and any cabling that is currently un-secured (as was the cable for this outage) should be secured.

¹⁹ See appendix D for a list of ALL final comments; those with the yellow highlight mentioned “redundancy” or “backup”

6. Improvements in communications and protocols should continue to be developed with the incumbent ILEC, AT&T.

For these changes to occur, dialog and transparency with the local ILEC, AT&T must improve. Beginning talks have started, and they must continue and involve public safety officials and AT&T officials at the highest level possible. Communities have the right to know whether they have reliable telecommunications services or if they are at risk of network failure. If they are at risk, they should have access to affordable options that would ensure reliability. AT&T has claimed that such information is proprietary and that releasing such information could be a threat to national security²⁰ However, a news article in MIT Technology Review from September 2015 takes the opposite view - that knowing where fiber is, **is** important to national security. The Department of Homeland Security's project "Predict" is making some maps and data available to government, private, and public researchers. "Our intention is to help improve security by improving knowledge." ²¹

Currently, AT&T owns most of the fiber infrastructure in the county. We lack a robust competitive "multi-carrier" environment to ensure that alternative options are available for communities seeking redundant and diverse networks. With an AT&T corporate policy that prohibits leasing "dark" (wholesale, or unlit) fiber, the leasing of AT&T fiber is often affordable only to those companies that have competitive local exchange carrier (CLEC) status and can get CPUC-regulated rates. Only two providers in our county have CLEC status. That leaves other providers leasing lit circuits at high "retail" rates, or finding alternative backhaul. Even wireless providers must connect their networks to a fiber-based backbone to connect with the "outside world" at some point. If AT&T will not make more of their fiber available for affordable lease, then other options must be pursued in order to bring the redundancy and diversity that is critically needed in the county, through more choices and competition.

California as a whole is behind 30 other states in the number of fiber providers and residential access to fiber services.²² California has 18 fiber providers who cover only 16% of the population. In comparison, Oregon, our neighbor to the north, has 49 fiber providers and they cover almost 77% of their population. For California as a whole to stay competitive, and for our rural counties to not be left behind in the coming "giga-bit" divide, it goes without saying that reliable and affordable high-speed Internet is essential. It will require communities - including their businesses and organizations, governments, and providers - to come together to solve this multi-faceted and complex problem with innovative ideas that are backed by the political will of local and state government and elected politicians.

Our County has abundant natural resources, and this beauty is the reason many of us live here. Our youth are also our valuable resource, and we need to find ways to ensure that they have

²⁰ Verbal comments by AT&T VP of external affairs on Nov. 12, 2015 meeting with Congressman Huffman

²¹ <http://www.technologyreview.com/news/540721/first-detailed-public-map-of-us-internet-backbone-could-make-it-stronger/>

²² <http://broadbandnow.com/Fiber>

economic opportunities, feel safe, and want to stay here and raise their families. Seriously consider this final comment from a local student: “While I am going to school here, I would pause before making a longer term commitment to staying in the area because I rely for work on email and cellular connectivity.” Let’s solve this problem for the benefit of our communities and our future.

Appendices

Appendix A: Survey Questions and Responses

Q1: Were you or your business/organization impacted by the Communications outage on Thursday, September 3rd, 2015?		
Answer Options	Response Percent	Response Count
Yes	96.0%	595
No	4.0%	25
answered question		620
skipped question		7

Q 2: For this survey, I am responding as a:		
Answer Options	Response Percent	Response Count
Resident (business questions automatically skipped)	32.4%	201
Part of a business/organization (resident questions automatically skipped)	17.3%	107
Both resident and part of a business/organization (answer both sets of questions)	50.3%	312
Out of town visitor (answer any that apply)	0.0%	0
answered question		620
skipped question		7

Q3: Which of your services were impacted? Check all that apply.		
Answer Options	Response Percent	Response Count
Landline phone - lost all service	35.9%	208
Landline phone - worked partially (some calls got through)	25.2%	146
Fax machine	22.8%	132
Credit card machine	18.3%	106
Home alarm system	3.6%	21
Cellular phone - lost all service	52.2%	302
Cellular phone - worked partially (text only, slow, dropped calls, inconsistent)	33.5%	194
Internet Service (wired or wireless)	87.0%	504
Satellite Internet	5.0%	29
Cable Television	7.9%	46
Other (please specify)	10.7%	62
answered question		579
skipped question		48

Q4: For Landline telephone, please identify your provider from which services were lost:

Answer Options	Response Percent	Response Count
I do not have/did not lose landline telephone service (go to next question)	22.8%	112
AT&T (Pac Bell)	39.2%	193
Frontier Communications	0.6%	3
Verizon	6.9%	34
I don't know who my landline provider is	5.1%	25
Other (please specify)	25.4%	125
answered question		492
skipped question		135

Q5: For Cellular telephone, please identify your provider from which services were lost:

Answer Options	Response Percent	Response Count
I do not have/did not lose cellular service (go to next question)	13.0%	71
AT&T	20.2%	110
Verizon	33.4%	182
US Cellular	22.0%	120
Sprint	0.4%	2
T-Mobile	1.3%	7
Vonage	0.0%	0
Track phone	5.3%	29
Other (please specify)	4.4%	24
answered question		545
skipped question		82

Q6: For Cellular telephone, please identify your provider from which services were lost:

Answer Options	Response Percent	Response Count
I do not have/did not lose cellular service (go to next question)	13.0%	71
	20.2%	110
Verizon	33.4%	182
AT&T	22.0%	120
Sprint	0.4%	2
T-Mobile	1.3%	7
Vonage	0.0%	0
Track phone	5.3%	29
Other (please specify)	4.4%	24
answered question		545
skipped question		82

Q7: For Internet service, please identify your provider from which services were lost:

	skipped question	Response Count
I did not lose my Internet service (go to next question)	7.6%	42
AT&T	19.8%	109
Comcast	21.6%	119
Central Valley Cable/Cal-Neva	0.0%	0
Frontier Communications	0.2%	1
Further Reach	0.0%	0
Instawave	0.2%	1
Mendocino Community Network (MCN)	8.9%	49
North Coast Internet	0.5%	3
101 Netlinks	0.0%	0
Pacific Internet	11.5%	63
SeaKay	0.4%	2
Sonic.net	3.8%	21
SuddenLink	0.2%	1
US Cellular	1.5%	8
Verizon	2.4%	13
Wave Broadband	0.0%	0
WillitsOnline	6.7%	37
Other (please specify)	9.6%	53
	answered question	550
	skipped question	77

Q8: If responding as a resident, how many people live at your house?

Answer Options	Response Percent	Response Count
I will respond as part of a business/organization and not a resident (next set of questions will be skipped)	12.5%	66
I live alone	13.1%	69
2	43.5%	229
3	13.9%	73
4	9.1%	48
5	4.0%	21
6	2.1%	11
7	0.4%	2
8 or more	0.6%	3
Other (please specify)	0.9%	5
	answered question	527
	skipped question	100

Q9: If responding as a resident, please characterize the general impact of this outage for you and your family:

Answer Options	Response Percent	Response Count
No impact; did not disrupt my activities	0.7%	3
Inconvenient; mildly disrupted my activities	17.5%	77
Inconvenient and moderately disrupted my activities	44.1%	194
Extremely inconvenient; severely disrupted my activities	37.7%	166
Other comments		126
answered question		440
skipped question		187

Q10: Please provide contact information. Minimum required is Line 5 (your town), but the other information would be very helpful. This information will be kept confidential.

Answer Options	Response Percent	Response Count
Name	60.0%	281
Company	33.3%	156
Address	55.6%	260
Address 2	6.0%	28
City/Town	100.0%	468
State/Province	75.2%	352
ZIP/Postal Code	74.8%	350
Email Address	51.3%	240
Phone Number	41.5%	194
answered question		468
skipped question		159

Q11: If responding as a resident, please characterize the communications impact of this outage for you and your family (check all that apply)

Answer Options	Response Percent	Response Count
No impact	3.8%	16
Cut off from all communication	31.7%	134
Cut off from all communication and I live alone	9.2%	39
Cut off from most communication	46.8%	198
I could not contact members of my family	55.3%	234
Members of my family could not contact me	56.5%	239
I could not contact 9-1-1 if I had wanted to	57.4%	243
I would not have been able to receive reverse 9-1-1 calls	47.0%	199
Comments		84
answered question		423
skipped question		204

Q12: If responding as a resident, please characterize the safety impact of this outage for you and your family (check all that apply):

Answer Options	Response Percent	Response Count
I do not feel that this outage was a potential threat to my family's safety	13.1%	56
I considered this outage a potential threat to my family's safety	56.6%	241
I consider this outage a serious potential threat to my family's safety	35.4%	151
I could not buy groceries and/or medicine that I needed to buy	12.2%	52
I could not get in touch with my doctor and I wanted to	12.4%	53
I needed to call 911 and I could not	3.1%	13
This outage caused actual harm to me or my family (please explain in comment box)	0.5%	2
Please describe actual harm:		29
answered question		426
skipped question		201

Q13: Do you know someone or did you hear of anyone that was injured, suffered medical complications, or died as a result of not being able to make a 9-1-1 call during these internet and phone service outages?

Answer Options	Response Percent	Response Count
No	97.5%	430
Yes	2.5%	11
If "yes", please describe details and contact information if known.		3
answered question		441
skipped question		186

Q14: If responding as a resident, please characterize the economic impact of this outage for you and your family

Answer Options	Response Percent	Response Count
No potential nor actual economic impact	44.4%	186
Potentially economically harmful (but was not)	45.3%	190
Actually was economically harmful (provide an estimate of loss below)	10.3%	43
Please provide an estimate of economic loss		63
answered question		419
skipped question		208

Q15: If responding as a resident, please characterize the emotional impact of this outage for you and your family:		
Answer Options	Response Percent	Response Count
Not distressing/did not produce any anxiety	13.6%	58
Mildly distressing/produced some anxiety	52.0%	221
Distressing/produced anxiety	25.9%	110
Very distressing/produced great anxiety	8.5%	36
Final Comments on impact on your family:		59
answered question		425
skipped question		202

Q16: If responding as a business/organization, what is your role in the business/organization:		
Answer Options	Response Percent	Response Count
I am responding as a resident and not as part of a business (business questions will be skipped)	22.1%	103
CEO/President/Executive Director	9.2%	43
Owner	23.8%	111
Management	17.3%	81
Employee	21.2%	99
Volunteer	1.3%	6
Other (please specify)	5.1%	24
answered question		467
skipped question		160

Q17: Please characterize the type of business/organization that you are responding for:		
Answer Options	Response Percent	Response Count
Small business (1-5 employees)	38.1%	134
Medium business (5-15 employees)	9.9%	35
Large business (more than 15 employees)	17.3%	61
Non-profit	16.8%	59
Educational Institution	7.7%	27
Tourism related	2.6%	9
Government	12.2%	43
Public Safety Organization	4.3%	15
Tribal organization	2.3%	8
Health Care facility	4.0%	14
Library	2.0%	7
Park or natural area	0.6%	2
Financial Institution	1.4%	5
Food provider (e.g. grocery store)	1.4%	5
Senior organization (e.g. Senior center)	0.3%	1
Social service organizations (e.g. family resource centers)	2.3%	8
Other (please specify)	15.1%	53
answered question		352
skipped question		275

Q18: If responding as a business/organization, please provide your contact information. Minimum required: your name, organization name, town. The other information is really helpful so please include if you can.

Answer Options	Response Percent	Response Count
Your name	90.6%	288
Business or organization	92.1%	293
Business/org address	66.7%	212
Address 2	12.3%	39
City/Town	95.3%	303
State/Province	81.1%	258
ZIP/Postal Code	78.9%	251
Email Address	67.0%	213
Phone Number	61.9%	197
	answered question	318
	skipped question	309

Q19: How did the outage impact your business/organization in general?

Answer Options	Response Percent	Response Count
No impact (100% normal)	3.5%	12
Functioned at reduced capacity (75% of normal)	21.1%	72
Functioned at reduced capacity (50% of normal)	21.6%	74
Functioned at reduced capacity (25% normal)	26.3%	90
We could not function but stayed open	15.8%	54
We could not function and closed our doors	11.4%	39
We were forced to function at increased capacity	2.0%	7
Details		139
	answered question	342
	skipped question	285

Q20: If responding as a business/organization, what was the economic impact on your business/organization?

Answer Options	Response Percent	Response Count
Does not apply	20.6%	66
Applies, but there was no economic impact	42.4%	136
There was economic impact (75% normal business)	11.2%	36
There was moderate economic impact (50% normal business)	9.3%	30
There was strong economic impact (only 25% normal business)	16.5%	53
If possible, please provide a rough estimate of lost revenue \$		102
	answered question	321
	skipped question	306

Q21: If responding as a business, please characterize the communications impact of this outage for you and your business/organization:		
Answer Options	Response Percent	Response Count
The business/organization could not contact any employees	25.2%	79
The business/organization could only contact some employees	25.5%	80
Employees could not contact the business/organization	29.0%	91
Only some employees were able to contact the business/organization	21.0%	66
Customers/public were unable to contact us	81.8%	257
We were unable to contact customers/public	74.2%	233
Other comments		56
answered question		314
skipped question		313

A22: If responding as a business, please characterize the emotional impact of this outage for your business/organization:		
Answer Options	Response Percent	Response Count
Not distressing at all/did not produce any anxiety	8.0%	27
Mildly distressing/produced some anxiety	42.8%	145
Moderately distressing/produced anxiety	29.8%	101
Very distressing/produced great anxiety	19.5%	66
Comments		43
answered question		339
skipped question		288

Q23: If responding as a business, please characterize the potential safety impact of this outage on your organization/business:		
Answer Options	Response Percent	Response Count
I do not feel that this outage posed any threat to my safety or that of my employees.	30.2%	100
I considered this outage a potential threat to my safety and/or employees.	42.9%	142
I considered this outage a serious potential threat to my safety and/or employees	17.8%	59
I considered this outage a potential threat to my customers	23.3%	77
This outage caused actual harm to me or my employees	0.6%	2
Please provide details if harm was inflicted		36
answered question		331
skipped question		296

Q24: Do you know someone or did you hear of anyone that was injured, suffered medical complications, or died as a result of not being able to make a 9-1-1 call during these internet and phone service outages?

Answer Options	Response Percent	Response Count
No	98.0%	340
Yes	2.0%	7
Please provide details and contact information if available		5
answered question		347
skipped question		280

Q25: If you were an out of town visitor, what county were you visiting at the time of the outage?

Answer Options	Response Percent	Response Count
Does not apply	97.5%	270
Mendocino	0.7%	2
Humboldt	0.7%	2
Lake	0.0%	0
Sonoma	0.0%	0
Del Norte	0.4%	1
Other	0.0%	0
Other (please specify)	0.7%	2
answered question		277
skipped question		350

Q26: If you were an out of town visitor, does this outage impact your desire to return to this county? (check all that apply)

Answer Options	Response Percent	Response Count
Does not apply (I am a resident)	98.9%	274
I am visiting family	0.4%	1
I am here on vacation	0.4%	1
No effect on my desire to return (please indicate which county)	1.1%	3
I am slightly less likely to return (please indicate which county)	0.0%	0
I am moderately less likely to return (please indicate which county)	0.0%	0
I do not plan to return	0.0%	0
Which county were you visiting and other comments:		2
answered question		277
skipped question		350

Q27: How long were your services out?		
Answer Options	Response Percent	Response Count
0-6 hours	7.1%	34
6-10 hours	17.1%	82
10-15 hours	18.8%	90
15-20 hours	31.7%	152
20-25 hours	21.3%	102
More than 25 hours (please specify in comments)	4.0%	19
Hours your service was out		94
answered question		479
skipped question		148

Q28: How well were you able to stay informed of the outage at the time?		
Answer Options	Response Percent	Response Count
I was not able to keep informed	24.8%	121
I was able to stay informed a little bit	48.5%	236
I was able to stay moderately informed	20.7%	101
I felt well-informed	6.0%	29
answered question		487
skipped question		140

Q29: If you were able to stay informed, what was the primary way this was achieved?		
Answer Options	Response Percent	Response Count
Local radio	59.2%	222
I talked to neighbors	24.3%	91
Telephone	8.5%	32
Internet	17.3%	65
I drove to town to get news (how many miles, where did you go)	11.2%	42
Others drove to me (who)	3.5%	13
Please provide details that apply: which radio station, where did you go in town (fire station, grocery store, etc), how many miles, who came to your door (family, Sheriff, etc)		218
answered question		375
skipped question		252

Q30: Did you try to contact your provider to get information?		
Answer Options	Response Percent	Response Count
Yes	42.1%	204
No	57.9%	280
Which provider did you try to contact?		194
answered question		484
skipped question		143

Q31: If you tried to contact your provider, how would you characterize the information about the outage you were able to receive? (check all that apply)		
Answer Options	Response Percent	Response Count
I did not try to contact my provider	50.8%	222
I was not able to get through to my provider (How many times did you try?)	24.7%	108
I was able to get through, but did not receive any helpful information	9.4%	41
I was able to receive some helpful information from my provider	10.3%	45
I was able to receive very helpful information from my provider	2.7%	12
Overall I was very frustrated	13.7%	60
Please supply some additional details		124
	answered question	437
	skipped question	190

Q32: Do you have any other final comments or thoughts that were not covered by this survey?		
Answer Options	Response Percent	Response Count
No	65.5%	309
Yes	34.5%	163
Final Comments		178
	answered question	472
	skipped question	155

Q33: Would you like your email (provided in Question #10) to be added to the Broadband Alliance of Mendocino County email list to receive notes from our monthly meetings and other information updates? (Your email address will be protected)		
Answer Options	Response Percent	Response Count
No	65.9%	321
Yes	30.8%	150
Yes but use a different email address than the one I provided earlier	3.3%	16
Provide email		55
	answered question	487
	skipped question	140

Appendix B: AT&T Overview of Outage

Vandals Cut AT&T's Major Fiber Cable in Ukiah - AT&T Quickly Restored All Services

Overview

On the morning of Thursday, September 3, 2015, vandals possibly in search of fiber severed a major interoffice fiber cable that connects Central Offices and is located just south of Ukiah. The damage affected services for a number of wireline and wireless customers in portions of Mendocino, Humboldt, and Del Norte Counties. Following AT&T's protocols for monitoring and responding to outages, 911 Call Centers affected by the fiber cable cut were quickly identified and inbound calls were rerouted at the direction of each call center until services were restored.

AT&T work crews overcame significant obstacles posed by the remote location of the damage, including cold weather and the presence of rattle snakes, working through the night to minimize the duration and impact of the outage to the communities we serve. All wireline services were restored in just over 24 hours, Friday morning, while wireless service restoration was completed by mid-afternoon the same day at about 2:30 PM.

Impacts

The fiber cable cut outage affected wireline services in Mendocino and Humboldt Counties. Two remote switches were isolated in the outage: Hopland and Eureka. Customers in these two areas had dial tone but could only make and receive calls within their respective local switching areas - there was no inbound or outbound calling beyond the respective local areas, including calls to 911. The Hopland switch was restored at 9:55 PM on Thursday and the Eureka switch was restored at 8:45 AM on Friday.

The Mendocino County Sheriff, Ukiah Police Department, and Willits Police Department were temporarily isolated from the 911 network from 25 minutes to one and a half hours. Within 25 minutes of the outage, AT&T began to implement reroute solutions for calls to these call centers, sending 911 calls to Cal Fire in Willits. Customers had dial tone and could make all inbound/outbound calls but did not have access to 911 calling from the time of the fiber cable cut (9:40 AM) until reroutes were in place (between 10:05 AM and 11:10 AM).

The outage impacted AT&T Mobility's wireless customers in Mendocino, Humboldt, and Del Norte Counties. Callers would have experienced degraded or no service.

Restoration

AT&T's restoration efforts started when alarms at AT&T's operation center identified heavy impact related to a fiber optic cable cut at 9:40 AM on Thursday, September 3, 2015. By 10:45 AM, initial field crews were dispatched to investigate and by 4:55 PM the specific outage location was found. The cable cut occurred in a remote area south of Ukiah that is difficult to reach. The nearest road to the area is a twenty to thirty minute walk away. Technicians teamed up with a local fire department's railroad trolley operator, who used the adjacent railway to haul in power generators, fiber fusing machines, building cases for splicing, a backhoe, and all the new fiber that would be needed for repairs.

With the necessary equipment in place the crew began splicing the 96 fibers of the severed cable and worked through the night using light and power from generators while fending off against rattle snakes and without any space heaters. By sunrise the following morning, the crew had restored most services and a relief crew arrived to complete the remaining work.

The fibers serving 911 call centers were prioritized for splicing and complete restoral of wireline services was accomplished about 24 hours after the outage. Impacted wireless services were fully restored later that day Friday by mid-afternoon at about 2:30 PM.

Historic analysis of AT&T's network in Mendocino and Humboldt Counties shows it performs at a high level, providing consistently reliable service over the years. From January through December 2014, AT&T received an average of only 2 trouble reports per 100 lines served by AT&T in the two counties, which is well within the CPUC's guidelines. We see similar results in 2015. Additionally, the network is continually evolving with new fiber routes that, whenever possible, are able to utilize spare capacity to backup preexisting routes. As a result, some of our facilities are routed with greater pathway diversity than others and, consequently, some customers experience greater protections against damages to our network than others. In rare instances, customers with large facilities in need of a greater level of service protection will purchase local access or end-to-end route diversity offerings where available.

Vandalism

Acts of vandalism and attempted copper theft are an unfortunate reality communications companies face and which AT&T works closely with police authorities to manage. Tampering with phone networks is a violation of federal and state laws and AT&T is cooperating with law enforcement agencies to identify and punish offenders. This is a serious matter that affects public safety and the community at large. AT&T is offering up to a \$10,000 reward for information that leads to the arrest and conviction of those responsible for this attempted copper theft or other vandalism near Ukiah.

Appendix C: Specific Economic Losses

	Q20 -Business losses		Q14 Residential losses
	\$25,000		\$100
	\$4,400		\$2,000
	\$2,500		\$500
	\$500		\$85
	\$150		\$100
	\$1,200		\$200
	\$200		\$200
	\$210		\$135
	\$800		\$400
	\$10,000		\$200
	\$2,000		\$200
	\$400		\$100
	\$20,000		\$400
	\$300		\$100
	\$10,000		\$300
	\$6,000		\$350
	\$2,000		\$100
	\$200		\$100
	\$1,000		\$300
	\$500		\$250
	\$200		\$450
	\$300		
	\$350		
	\$450		
	\$2,000		
	\$1,000		
	\$2,500		
	\$100		
	\$1,000		
	\$250		
	\$500		
	\$100		
	\$2,500		
	\$500		
	\$200		
	\$1,000		
	\$400		
	\$1,000		
	\$100		
	\$100		
	\$2,500		
	\$4,000		
	\$6,000		
	\$4,500		
TOTAL	\$118,910	TOTAL	\$6,570
Average	\$2,702.50	Average	\$306

Appendix D: Final Comments from all Survey Respondents

Final Comments (answered question 472; 178 provided comments; 78 (highlighted in yellow) mentioned need for redundancy/back-up	
1	I think the poor communications infrastructure hampers economic growth in the county. While I am going to school here, I would pause before making a longer term commitment to staying in the area because I rely for work on email and cellular connectivity.
2	We are a rural community and this could have been a disaster if there was a real 911 situation!
3	1 What ever loving fool routed all the internet traffic from supposedly independent service providers? there should be no way that a Comcast outage should affect AT&T or Verizon - someone got cheap and thought they could route all the fiber along the railroad tracks (probably buying bandwidth from the line owner) without thinking of any path redundancy
4	We are a 3rd World Country when it comes to the Internet and providing this EXTREMELY VITAL Service to the population. The Pentagon wastes TRILLIONS of Dollars for Decade piled on Decade and the American Population is treated like Serfs to the Lords of the Military. SPEND THAT MONEY ON OUR INFRASTRUCTURE!
5	It's absolutely insane that a tweaker looking for copper (glass fiber optics...) can cut off all communication for multiple counties and 7 911 call centers.
6	I am lucky that my POS system works on an internal network so that our functionality stayed relatively intact. However, a long term outage would really effect our ability to take credit cards, produce reports, do banking, stay connected with employees, customers, etc.
7	2 In the current state of reliance on telecommunications and Internet, it is irresponsible that this area does not have a significant backup connection to the outside world.
8	Was a good lesson about the value of maintaining some traditional landlines. Many people were surprised about the impact to cellular services.
9	3 We need more reliable services (cell, cable, phone) in the rural areas. We need diversity of services!
10	4 we need a work around system so that one cable does not take everything out
11	5 After this outage, it was evident that our public safety is in jeopardy due to no communication, our business world can be shut down in a second and the communication we depend on with friends and family can be unavailable without notice. There are severe consequences for leaving a fiber optic cable above ground where it can be suddenly destroyed. A backup system is needed desperately in the north coast area to help ensure that this never happens again!
12	6 The State needs to pass laws requiring providers to ensure redundancy or otherwise have a back-up plan to ensure emergency communication is not compromised. Local telco's need to have a system that maintains local connections to land lines, cells, so that local communication is not compromised if out of town communication goes down.
13	7 I recently moved from Southern California (Los Angeles) and find it appalling that we don't have proper communications redundancy here in Lake and Mendocino Counties. Service providers should be able to provide better service than that and it should not require a formed organization to try and pressure those providers to provide proper service. That said, I appreciate everything that the Broadband Alliance is doing to improve the state of communications in our local communities.
14	Don't understand how all county calls would go to a real estate office in Benecia, and they would not get official instructions as to what to say to people, and that it wasn't rerouted quickly.
15	strange that I didn't notice any problems. My internet service provider is DSL through Pacific Internet (although I understand that it's actually an AT&T service)
16	More evidence of unsafe inadequate service.
17	8 It is unacceptable to lose 911 ability. There must be redundancy in this system. +.
18	Question 7 seems to be missing a component
19	9 There needs to be redundancy in communications. Please help us stay safe by helping this to happen.
20	10 we need a redundant system here on the Coast.
21	11 It is unconscionable that there is no redundancy in the system. This is particularly true for emergency services, but losing service has a significant impact on businesses located in the area.
22	12 Thank you for collecting this information. We should have back up infrastructure to minimize this type of outage.
23	13 A system without redundancy is not a system. It's just an anomaly.
24	14 i think we need a backup system. the banks, the shops where I shop, all were disabled for the day.
25	i was away.
26	15 It's unthinkable that the infrastructure is so weak that one incident can take out such a large area for such a long time. Something needs to be done to increase redundancy.

27		Decentralized communication networks are perhaps a better idea than reliance on a single cable that, when damaged, can affect such a widespread area.
28		Thank you. This is important work. Our society is so dependent on the internet & yet our service is so fragile!
29	16	AT&T should be required to install and maintain an automatic backup system. AT&T should be required to pro-rate all billing to reflect the period that they were not providing the service they are being paid to provide, as should all others who did not provide service during this time.
30		Service has still not reached pre-outage levels. All we know is what the Ukiah Daily Journal has reported, and it's not covering the intermittent state of the service. I try to work after midnight in hope of getting response, but often don't.
31	17	We clearly need redundancy of 911 services. If a fire had started, we would have had a disaster on our hands.
32		It was quite frightening to realize that one "simple" thing could put a community in such a helpless situation for so long. It was apparent there was nothing in place to be able to communicate effectively when needed in this type of serious emergency. The agency I work for serves our community, community members that are in need of help, some, very serious help. They were put at great risk had they needed our services and were unable to receive them and/or communicate their needs.
33		It would have been difficult to continue service to our families and children in a prolonged outage. Not sure if it would have been safe or responsible.
34	18	Like others, I think there should have been redundancy installed in the system after the last disastrous outage. This is so crippling to the economy for businesses who rely on internet for just about everything from communication, credit card processing and security systems. I wonder if this had happened near San Francisco or Los Angeles, how long would their services have remained down? I also wonder, why was a crucial fiber optic cable left unattended above ground where someone could damage it? lots of questions and from AT&T:nothing.
35	19	Ironically the Internet was supposed to be built with redundancy in mind. Assuming that Fiber Optic cable is a part of the internet infrastructure things aren't going so well. This seems to be because we have to rely on only one company to provide the fiber infrastructure and are thus at their mercy as far as a more robust system is concerned.
36		My landline worked fine throughout. Clearly the redundancy in that network helped in this outage.
37		We were out of town when the event occurred.
38		My sister was visiting it was very stressful for her. I
39	20	It's scary to hear that one cut cable could black-out such a large area. I did hear conflicting reports of the origin of the black-out. Some said that the cable cut was in Chico, others said it was in Marin County, yet others said it was in Fort Bragg. Either way, we need better backups.
40		I want to laud Seakay, my internet provider. It is small, local, non-profit and run by "real" people. I assume it didn't go out because it provides its own equipment and doesn't depend on the big corporations. My cell phone bounces off both a US Cellular and a Verizon tower, depending on where I am in the house. Neither one could provide me with service. It was quite the eye opener to learn how easily vulnerable we are to the quick snips of a vandal.
41	21	I support the efforts to get Mendocino County some redundancy and a more secure communication system.
42	22	We should not be dependent on one unique line of communication, there should be a redundant network, even in rural areas!
43		This outage did not impact me as much as others but I think it is unacceptable that it can occur because of vandals. We need to protect our internet service lines
44		We are so dependent on these intangible services. The fiber optic cable for phone; and in our case, 100% dependent on the satellite system for internet / email.
45	23	1. Why was that important of a cable left above ground? 2. Where is the redundancy? 3. Why do we have the capacity of a 3rd world country?
46	24	When communications and core work functions require internet and phone connectivity, they are an essential utility and lifeline. Outages are not an option for basic communications. The apparent lack of security for a connection serving around 100,000 people and the corollary lack of redundancy for such a critical link is unacceptable.
47	25	It is absolutely ludicrous that NW California has no redundant fiber optic cable to route communications in case of an outage such as the one on September 3rd, 2015.

48		There should be an alternate way to get information to communities in these situations (non-emergency broadcast issues).
49		My husband and I are using Further Reach and so were not affected by the outage. However our local library was affected. And our Manchester School which I think has a contract with AT&T.
50	26	We pay for and configure redundant service connections to prevent a single service failure from completely severing our connectivity, but AT&T doesn't take the same precautions. Many of the services we utilize rely on AT&T at some point in the process, so it effectively negates our efforts when the major communications provider in the area doesn't take the same precautions that we attempt to take. All this while I hear about other parts of the country getting Fiber connectivity for nearly the same price we are paying for T1s. It is very frustrating.
51		This just shows how dependent we are on our cell phones and internet.
52	27	It seems crazy that with one fiber cut, 911 emergency services, ATMs, banks, post offices, schools, hospitals, fire stations and other essential services in 3 counties can be rendered useless. There absolutely needs to be a back-up communication system, if only for these essential services. Loss of wages was frustrating and inconvenient, but not being able to communicate with my family and 911 services was scary. This is happening altogether too often! There must be a resolution, and soon.
53	28	I thought the taxpayers paid for a redundant cable or fiber optic several years ago so that this kind of a thing would not happen.
54	29	It is unacceptable that there is not a back up...twice in a year is crazy to lose service!
55		I work with children and power outage is of concern. The inability to communicate with families if a strong concern.
56		In the future, that has to be a reliable, dedicated method of producing information. Radio seemed the most accessible, but there was no information being broadcasted...
57		The repaired section of cable remains above ground and exposed to potential future vandalism. Previously that same section had been damaged by landslide while buried. This is also an event that could re-occur. The area is not easily accessed by repair crews. We should not have such a large portion of our communication entirely dependent on a single cable path.
58	30	Why is internet, land line, and cell service all affected by this incident of domestic terrorism. (I do not believe this was vandalism.) Clearly Mendocino county residents are not adequately protected from identical further acts of "vandalism". Where is the backup and redundancy???
59		There needs to be a way to have radio stations play a key part in situations like this. Like the old days. Many radio programmers now get info from www to announce, but if www is down, then what? Prepare for this lapse in communication.
60	31	We need redundant fiber optic systems.
61	32	The redundancy expected (implied) by the government-funded fiber optic cable running east-west failed for most ordinary customers of AT&T. AT&T should be compelled to provide service to all subscribers on that system, rather than only a few high-demand users.
62		Hope they find out who did this. It could have caused possible deaths and also have possibly had others needing medical aid to have to go without. LET ALONE THE POSSIBLY OF ADDED FIRE PROBLEMS WHICH GOODNESS KNOWS MENDOCINO COUNTY CERTAINLY DOES NOT NEED. We were very fortunate to have telephone at our house and internet service, but we don't have cell phones.
63	33	It is essential to the health, safety and well being of residents and visitors in our Fire Department response area for there to be redundant, back-up systems to ensure that the 911 system remains fully operational at all times.
64		we need an updated system with buried lines.
65		US citizens pay too much for inferior phone, internet & television service compared to other countries.
66		We need to get much more prepared for emergencies before El Nino hits, if it does, or the next climate change catastrophe. Also, I think our local emergency services should do a better job informing folks as to what is going on.
67		Thanks for collecting and using this info to push and make the case for the needs and entitlement of rural Californians. ATT should be severely fined for their behavior which caused us, for a second time, to cope with the consequences they are clearly not motivated to acknowledge. It's a revolting and anti-democratic arrangement all 'round.
68		We need better radio information/coverage. I am a radio listener & I had it on most of the day & not once was there any info about the outage. It was in the paper the next day.

69		My provider is SeaKay and we experienced NO problems that day.
70		Please try to get other providers out in this area as AT&T is horrible not only in what we get as far as internet but their customer service when things go wrong. I heard that Wavecable might make its way to the coast, I sure hope so because prices, service and customer service is great with this company!!!!
71	34	System redundancy should be implemented. Ultimately, broadband/high speed internet service should be provided to all rural areas.
72		Not strictly related to the outage. It's frustrating to live in a pocket of the county that lacks cell phone coverage. I hope the Broadband Alliance will continue to work on getting more complete coverage.
73		The police report that it was copper vandals that cut the fiberoptic cable, but in fact, they don't know. It might have been tweekers looking for copper to sell for another hit, or it might have been terrorists. Or it might have been teenagers, or zombies, or anarchists. The facts are unknown, and the police provides a mythical story so that the public doesn't get upset. Even if all the facts were published in the newspaper, a history of lies covering up what was really important results now in a lack of faith in the media. I find it hard to believe anything published by the media or by politicians' spokespeople. They are all trying to pacify the public instead of telling us the hard facts.
74	35	this is the 2nd time this has happened. we must have redundant lines so we have a back up in case this happens again. we cannot keep on being cut off like this!
75		Yes since you didn't ask me any thing how rude!!! In city limits I was without of cable for 3 hrs. I was out from my cell phone for 18 hours but I was able to call my daughter who live out side our area due to MA Bell land line still worked! My voice should still be heard. #4 because I don't have a ? #10
76	36	Shouldn't there be some level of redundancy and/or rerouting for Mendocino County?
77	37	I understand that is has happened many, many times already.....seems to me, there's been plenty of time to have a back up plan ready so that we are not without emergency services or our banks or our gas stations.
78		Yes! Can we please get with the times and secure our internet!!
79		This event made me aware of how vulnerable we are when a single event can have such wide spread consequences. ATT was trying to force me to convert my office land line to fiber optic. I stopped that process. I had just a week earlier been forced by ATT to convert my home phone service to fiber optic and that system completely failed. I do not feel ATT has lived up to it's responsibility to provide the safest possible service to the public. Even though it is a private company it has certain responsibilities as an integral public and emergency service. The Standard of Care has not been met.
80		A great deal of consideration needs to be given to this problem. The criminal element is very quick to pick up on things like this. They are going to realize we don't have 9-1-1 service and then the public is at their mercy. Ham radio's are not a solution!
81		When someone calls they need to say the reason for the outage and updates of when it will fixed not just the standard within 24 hours. I had to push and push to get the reason for the outage.
82	38	A secondary system is very necessary to this community. I'm glad to not have had an emergency. If the Internet is down, many have no way to contact emergency services.
83	39	We need redundancy! We must not rely on single companies to do this. They fail, as did AT&T in this case.
84		Because my TV was working, could someone have used the TV emergency warning system with information? Would reverse 911 have worked?
85		This event shows me how much we rely on cell and Internet for everyday connection with the world!! It felt like we were living back in the 1970s!!
86		(redacted for privacy)... He uses our phones if his computer is down. On this day our phones were down too and it was hard to communicate with his caregiver. We have a landline but it is in another building and down stairs from where my son is. Our business is (redacted). Our land line is connected to the answering service and we all have cell phones. None of them worked. We had another business on our property and we got calls through that business until the outage was over. We are a 24/7 business and it was very cumbersome way to do things. Law enforcement couldn't call us ... and we couldn't communicate (redacted for privacy). ****NOT GOOD****.

87		I know lots of firefighters that spent the night at their fire station because people were to drive to their fire station if they had an emergency. Lots of man hours wasted sitting at the fire station. I drove to Howard Forest ECC to check in with them to see if they needed me. I monitored my hand held radio all day and night.
88		It seems the fact that landlines were also knocked out has not gotten much attention - not mentioned in the newspaper or on the radio reports. I think it is very significant that for some of us ALL telecommunications were knocked out, leaving us with no way to reach beyond our immediate neighbors. Oh, how we have come to rely in these services!!!
89	40	There is a huge need for redundant telecommunications infrastructure.
90	41	The PUC has granted far too many rights and privileges to the big communications companies at the obvious expense of the businesses and residents of this region. From my perspective, the playing field is tilted vertically in favor of big communications with the end-user being an after-thought and merely a source of shareholder revenue. There is no thought given to service, reasonable pricing, system redundancy, safety or efficacy. This seems criminal, from my perspective, given the potential consequences for a similar failure during a disaster, natural or otherwise.
91		Scary situation. Glad it didn't last long
92	42	AT&T and all communications companies need to be on the redundant line coming into Humboldt county. It really isn't redundant then major events like this happen.
93	43	Providers assure government safety planners that their systems are redundant but they did not appear to be in this case. Better planning for events like this needs to be made for public safety/emergency communications and 911 systems.
94		If this outage had lasted it would have effected my job which is entirely dependent on phone and internet to function.
95		I thought the added communications line from Eureka to Red Bluff was supposed to prevent what happened to Humboldt County?
96		totally scary for folks needing care to survive - you know what i mean?
97		The 3 major vulnerabilities I see to the cyber system that, increasingly, all of the USA is dependent upon: 1) Accidents/Vandalism (as in this case) 2) Cyber attack by state/corporate enemies (How much brain power does it take to locate and destroy fiber optic cables? Very little I'm afraid. 3) Coronal Mass Ejection - A powerful CME pointed directly at Earth WILL happen one day. What protection has the cyber system against a CME comparable to (or greater than) the 1859 Carrington Event? As far as I've heard there is NO protection in place or being planned for. If so, that is true madness.
98	44	Redundancy in connections to communication systems is absolutely necessary in our remote area!
99	45	The fact that this left our banks, and other business in danger of being robbed. We have a small police department who did an excellent job, as well as the Fire Department pitching in. Would hope that this lights a fire under those in charge that we need a back up system of some sort. We were lucky this time....
100	46	I realize it costs more to serve rural areas with broadband and redundancy of communication services but it is almost more important here than in the city, and we need to find ways to do this as soon as possible.
101		The 911 system should not go down when the system is down. Shame on you. People depend on that system.
102	47	Outages should be short. Get Redundancy. GET AT&T OUT OF THE CELLPHONE AND INTERNET BUSINESS. THEY ARE IRRESPONSIBLE BECAUSE THEY DO NOT DO NOT DO NOT CARE ABOUT THEIR CUSTOMERS, PERIOD.
103		Thank you for asking
104	48	First and foremost, this outage was a HUGE safety risk to many people throughout the county, including our large elderly population. Second, this was a financial and productivity hit on businesses and services throughout the area. There needs to be a back-up if this were to ever happen again. Lastly, we need to do a better job at getting rural broadband to this area's rural residents. It puts us at a huge economic disadvantage against other companies who have faster and much more reliable service. I have to spend time driving to Starbucks (and spend money paying for a drink) if my service goes out (be it foggy, windy, raining, too hot or too cold...or there's a fire) - in order to get internet OR if I have a larger file to upload or download. Let's do something positive for the members of this community who are actually paying taxes and trying to bring legitimate jobs to the area.
105	49	There needs to be a back up system. I am one of the lucky ones that has not updated to uVerse with AT&T. And I won't now that I know that it goes through the internet. What if this had been an earthquake? What if I or my husband had a medical emergency? I'm very angry about this outage.

106		We were lucky to have been among the least seriously affected by this outage, but the potential for serious disruption was real. It was also very disconcerting to go to bed that night with no access to emergency services should we have needed them and to have no idea how long it would take to restore service. The upside is we learned that we don't have a landline at home and have since switched from Voice over Internet Protocol back to a true landline. I hope other people and public agencies are doing the same.
107		Thank you for doing this survey.
108		Thank you for giving us the opportunity to speak our minds on this outage. I appreciate it!!
109	50	This kind of outage should not happen. We have a redundant cable that was not fully being used by ATT because it would cost them additional money.
110	51	This incident was a dry-run on a real emergency situation ... earthquake, fire, landslide, or ? Back-up communication systems are increasingly in jeopardy now that public carriers are converting to fiber optics without redundancy.
111		I think it's a huge issue especially since people cannot dial 911. It was a good reminder to have cash on hand and medicines backed up as well.
112		This community needs reliable and affordable internet access. To not have it is an economic hardship for the entire community and puts small business owners like myself at a disadvantage. It hinders my ability to compete with other like businesses and limits the number of other entrepreneurs who might want to make this area their home. Not having the same access to the internet that other communities have makes our already struggling working community dependent on agribusiness, legal and illegal, and puts stresses on the services we all depend on such as our clinics and hospitals, our law enforcement, and our schools. As a small business owner living in this community and trying to raise a family here, I feel the lack of reliable broadband internet as a forced economic hardship. It is a product of the economic prejudice that large corporations wield against underserved communities and that elected officials ignore because we don't have the same financial or electoral power that larger populations do.
113		We have a great resource online with CalFire for the wildfires. PG&E has a great online resource for power outages. Would be nice to have an online hub of resources for communication outages. Between my home & business I have 6 different services for internet, phone, & entertainment.
114		Having no stop gaps in the communications process to prevent a line cut from impacting entire counties is an issue that needs to be addressed. There should be steps taken to learn from this situation and prevent similar outages in the future. When cellular communications took over and analogue was discontinued we have become dependent on a single system that is obviously not fail safe.
115		We need better alternatives.
116	52	Elderly mother-in-law unable to contact help and we were unable to contact her. Lack of 911 function very scary. Also, if I had not been at work and getting the Admin emails, I would have had no way to find out what happened. Feared it was an act of domestic terrorism or even war, considering closeness in time to 9/11. Angry to find out afterward that fiber optic cable left exposed for anyone to access and no backup plan in place.
117	53	I can't believe there was ONE cable with no redundancy to serve a three county area, and that cable was not secure. Horrible planning and engineering by providers! They are a huge corporation that don't need to put us at risk to save a few bucks. Where is the REGULATION!
118	54	As a computer professional I recognized the nature of the outage and also the nature of the long term solution. We need redundant internet trunk lines into this region. We had a similar outage last year that only affected the coast of our county (Ft. Bragg and vicinity) and also took much longer to repair. That is two such outages in two years, and it is two too many.
119		This experience highlighted how, in this isolated rural area, if this lasted for a prolonged time, we would be SOL.
120		I was living/working in Fort Bragg when the first outage occurred. I felt really cut off from everything including family and friends. Unable to access my bank or the store for food. It was a long 42 hours. This outage, at least I was able to get food because I had cash. I still couldn't contact family and friends. I live alone so this can really be nerve racking.
121		ATT needs to step up service for Mendocino county--- last December's storms and phone outages were out for almost a MONTH at my residence. I had NO WAY TO CALL 911 during that time and I am a senior, was alone and have health issues. Plus I live in rural area. (no close by neighbors)
122	55	There should be redundancies built into the system. It is unbelievable that one line cut could affect so many people for so long. I was somewhat concerned this was an act of terrorism. To think our communications are so vulnerable boggles the mind. That a simple vandal could shut down communication for almost a day? I hope this serves as a wake-up call.

123		It made me realize how vulnerable we are and how dependent on internet and cell phones we have become. To lose access to both at the same exact time was a wake up call.
124	56	Triple redundancy would solve the problem.
125	57	A secondary structure or a back up is definitely a must! This so especially where 911 services are needed!! Clearly we're all a little too plugged in and find it hard to function without our devices. If it had been a terrorist attack we would have been in real trouble!
126		Having any internet outage here is ridiculous...outages should not happen be it in a city or rural area.
127		Why was AT&T allowed to not have the exposed line supervised or protected by security. If the line was exposed at 9:45 am, and severed, why was not an AT&T crew on site working on a Thursday. Road construction pays CHP to sit in cars with flashers on. Why cannot ATT&T hire someone to protect and exposed line when un earthing the line. Hundreds of thousands of dollars were lost because of the incompetency of AT&T.
128		This was a vicious form of vandalism. I don't know what if anything can be done to prevent this from happening again. We are in a fairly remote area and are usually one of the last areas to get our services back.
129	58	PLEASE establish back-up lines so that we are no longer so vulnerable.
130		I was very alarmed to hear that our local 911 system was dysfunctional as a result of this outage. Medical emergency systems should always have the best functioning systems available. In a country that takes pride in the development and capability of the most modern communication systems in the world, it certainly is functioning very poorly in its rural areas. Shame, shame, shame!!!!!! Improvement in the 911 system and in safeguarding our existing communications systems is a MUST!!! Vandalism prevention systems need to be developed and put in operation immediately.
131		The outage underscored the importance of radio, cash, & emergency meeting spots.
132		I want to know why cell phone coverage existed in some places and not others for me. My logic tells me that certain areas were favored over others. Given I pay the same rate as urban users I am angry I was out while the 101 and Ukiah were functioning.
133		We need a way for people to be informed. We are too reliant on one service (AT&T). Because they were out, I couldn't call or check for information in any way.
134		Will this survey include the outage of yesterday (Sept. 8th) as well? Read the Lost Coast Outpost to get the full story.
135	59	We need redundant fiberoptic lines to Mendocino County. Even more, we need to find a way to become independent of these large corporations that only care about making a huge profit and don't care at all about customer service. We need to find a way to build our own communications systems in all areas of the county.
136		The lives of residents were severely impacted by the outage, yet the survey asks nothing about the kind or degree of that impact.
137		It is absolutely imperative that AT&T be forced to upgrade the systems that deliver internet to our area, so that an accident or bad weather or act of vandalism in one location cannot disrupt service throughout the network. The disruption of emergency services is particularly unacceptable.
138		I also work as a nurse and the computerized charting went down as well as other things we rely on through computers; like medication administration and documentation.
139		AT&T should have more than one link for data into the region. This outage was an inconvenient event but if it happened during an actual disaster like a major earthquake or storm it would likely cost lives. During a major event there will be outages but based on this event we can clearly see the network is not robust at all. The procedures that are in place are not robust. Given our topography we should have a microwave or other wireless backbone that touches the fiber at multiple locations along the network to act as a bridge during emergencies. These bridges should be large enough to carry standard traffic but be set to prioritize traffic when volumes spike in an emergency.
140	60	A backup system must be put in place.
141		It is surprising how we've come to rely on internet/phone/text for keeping up to date with people, miss it when gone
142		One of the earlier questions asked if I needed to call 911 and couldn't. I accidentally checked that box. I did not need to call 911 during the outage.

143	61	It is unbelievable there is no redundant system and that ONE simple break in a fiber optic line could cripple communications, especially 911 dispatch. This is the SECOND time in two years that someone could have lost their life due to the failure to bring our internet system up to acceptable standards. In August 2014 a truck snagged a cable and the coast was out for two days, this September it was nearly 20 hours due to vandalism. Time to take us out of the stone age ...
144		In general for me personally it was more of a frustrating experience rather than causing anxiety. However it concerns me greatly that the communications system is so vulnerable. In the event of deliberate sabotage without a functioning communication system esp. for emergency services there would be chaos. All of my telephone contacts -- including neighbors -- are stored in my cellphone. Without it I could not have contacted anyone whose number I did not otherwise have, or who was not reachable by functioning landline.
145		As a retailer our major impact was lack of credit card machines and phones in Ukiah. Our server is local so cash registers were working. What I want to add is that the inability to communicate with our server from outside caused a system outage at our Lakeport store. They had no cash registers, no credit card machines, and no way to do shipping or receiving.
146	62	I am glad that information is being collected about the outage and hopefully some form of redundancy will be put in place. The personal impact was a little stressful, but the business impact was VERY stressful.
147		I had been reluctant in the past to use satellite internet, but because there is no broadband of any sort available to my residence in Laytonville I was left with no choice then to get satellite internet. I now see that it has its benefits as we were able to maintain internet connectivity through excede internet during the entire communications outage. Two years ago I cancelled my land line phone as the service was terrible and the phone company will not replace the copper infrastructure locally. USCellular just started providing LTE in the Laytonville area and with my satellite internet I now seem to have a redundant communications system until the satellite falls out of the sky. LOL
148		Our local radio station KGUA announced the outage and listed every alternate 911 number. The station also sent out e-mails with the data. Although I wasn't directly affected, it was encouraging to know how to access the information. There was no telephone nor electronic notification from law enforcement!
149		I still do not understand how come a fiber cut would affect Comcast's television service, thus Internet service. I don't believe their TV service runs through the fiber network, bit that it is satellite fed.
150	63	Mendocino County needs to have multiple cables or satellite communication.
151	64	As an IT consulting firm, we believe that redundancy is critical. Unfortunately, the North Coast is largely ignored in this issue.
152		This is unacceptable that preferred customers were allowed access to the auxiliary line and had service just because they were a high paying customer. Being a small business this impacted about 8% of my monthly revenue. Just because my provider had to pay for bandwidth isn't an excuse to treat loyal customers like pions.
153	65	Just that we depend on the Internet for our up to the minute news. We were slightly inconvenienced truthfully but we live in an isolated part of the state and who's to say the next outage wouldn't occur at a less opportune time; earthquake, tsunami? And isn't our money helping to pay for the redundant line too?? Why weren't we covered too?
154		What's the general purpose of this survey? This incident was reported as vandalism, so I'm wondering how these answers will help mitigate future acts of vandalism.
155	66	What happened to the redundant cable that was supposed to prevent this from happening?
156	67	ATT must be aggressively held accountable for the outages and poor copper service in area. No redundancy of fiber is borderline criminal.
157	68	Redundancy needed on the north coast.
158	69	Run an additional redundant line
159		If I had needed to contact family, I could have called. However, they usually email me and would not have known that I was out of contact unless it made the news where they live - and they heard the news.
160	70	I feel that we are extremely vulnerable not only as a community but as a country in terms of security. Not having 911 service is not acceptable. I don't necessarily prescribe to "conspiracy theories" but do feel that we are subject to people taking opportunities that could potentially cause us great harm as a country. We saw, first hand, how by simply cutting some fiber optic lines our "usual" communication was basically cut off and it brought us to our knees! We need to have a redundant system in place to protect our citizens.
161		I was attempting to schedule several appointments on September 8, 2015 when another outage occurred. I do not know when the outage started. My internet service was not available in the morning when I first went to use the Internet at about 8:00 a.m. At about 10:00 a.m. I was able to make an internet connection.f

162		It was a rude awakening of emergency preparedness. While the end-users can also do our part to be better prepared but in this day & age, I feel it is imperative that a backup system/infrastructure be put in place. The impact of such incident is far greater than most of us can imagine, especially when 911 calls or medical care is affected, resulting in a possible serious consequences.
163		It seems to me that major utilities should be more public safety conscious of the critical importance of maintaining any or all of the grid since nine eleven (9-11)
164	71	Relative to the outage several months ago, info via local radio was better. For the fire department getting the immediate page that 911 was down at least let us know there was a problem. However, we had/have no work around. We NEED a redundant system. Single faults, wether by accident or vandalism, have proven NOT to be rare events. I am already on BAMC's email list
165	72	It is unbelievable that we do not have redundancy in place. I understand that AT&T has another coastal fiber cable that, if connected to our system would provide backup. This came to light when the cable was damaged on the Comptche-Ukiah Road, but almost a year later we experienced almost a complete day without service.
166		911 services at the very least should be as secure as our clinic phone system which did not fail! I am surprised and concerned as the potential impact of not having phone and 911 services in such a rural remote area can be life threatening.
167	73	As most of us already know, this was a very real and painful experience of living in an area that has little to no infrastructure redundancy being provided by the major internet providers that theoretically serve this region.
168	74	AT&T should be fined, severely. Executives should lose their jobs. unbelievable that there was no secondary route to serve the north coast. UNBELIEVABLE THAT THE HAD A SINGLE POINT OF FAILURE. Enforce the Telecommunications act of 1996, and force AT&T to provision dark fiber to everyone at below cost. They have demonstrated they have no concern for their customers. GOOGLE FIBER NOW
169	75	It is frustrating that this is the 2nd time such a massive outage has taken place in the past decade. I am concerned that there is not a back up system in place. I am also greatly concerned that there are potential thieves attacking our communications systems.
170		I know that several banks closed for the afternoon.
171		It is awful that we don't have real broadband to begin with and bad to lose cell service and land lines and emergency services.
172	76	The company should have some kind of backup just in case this happens again. Every business has a back up plan.
173		While I understand that this event was precipitated by vandalism, I find it disconcerting that we are on a branch line versus a loop setup.
174		Why can't we get fiber optic internet on the coast in general and Fort Bragg specifically?
175	77	Even though I was not affected because I now have Further Reach in Elk. I gave up teh ATT T-1 line in June - thank Goodness!!! Back up is needed and quick. We desperately need cell phone service in all of these rural areas. I don't really care if people think they are getting brain cancer from cell towers - that is just beyond unbelievable and these idiots should not be listened to. Check the tax payers and I am just guessing that 95% or more would say - Bring on some cell service.
176	78	Vital communications lines need to have redundant backups or be able to be quickly re-routed to rduce duration of outage.
177		My at&t DSL continued to work, but my U.S. Cellular phone failed to work.
178		Luckily my phones (both landline and cellular) worked fine; the internet being down was completely inconvenient but at least I had contact with the outside world. I worried about all the people who did not have 911 services.