

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of: Petition of AT&T for	)	
Forbearance Under 47 U.S.C. § 160(c) from	)	WC Docket No. 26-123
Requirements Imposed on Eligible	)	
Telecommunications Carriers by 47 U.S.C.	)	WC Docket No. 26-125
§ 214(e) ¹	)	

SUPPLEMENTAL REPLY COMMENTS OF WIRED BROADBAND, INC.

AND THE FILING PARTIES

ON BEHALF OF AMERICANS INJURED AND DISABLED

FROM ELECTROMAGNETIC RADIATION

(ELECTROMAGNETIC RADIATION SYNDROME – EMR SYNDROME)



Filed July 22, 2026

¹ DA/FCC #: DA-26-598

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FILING PARTIES

The parties listed in Appendix A (attached hereto and incorporated herein by this reference) collectively constitute the “Filing Parties,” have granted permission to submit these Comments on their behalf, and join together to submit these Comments.

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I. Introduction

Wired Broadband, Inc., and the Filing Parties set forth in **Appendix A**, respectfully submit these reply comments on behalf of Americans injured or disabled by electromagnetic radiation, and those who do not want to be injured or disabled by electromagnetic radiation. The Filing Parties and coalition partner groups have a reach of over two million people across the country. We advocate for the safe deployment of communications infrastructure.

Note: Incorporated herein by reference are the Reply Comments of Wired Broadband, Inc. and the Filing Parties set forth therein from WC Dockets: 25-208, 25-209 and 25-311.²

II. The Commission Should Deny AT&T's Petition To Retire Copper Landlines

We respectfully urge the Commission to reject AT&T's petitions for preemption of California's Carrier of Last Resort (COLR). We agree with the comments of N. Albert, Telecommunications Consultant, that there are no adequate alternatives, despite the Commission's

Network Modernization Order which determined that facilities-based mobile wireless is an adequate replacement service.³ The Commission erred in reaching that conclusion. The California Public Utilities Commission (CPUC) does not consider wireless to be

² [https://www.fcc.gov/ecfs/search/search-filings/results?q=\(proceedings.name:\(%2225-208%22\)+AND+filers.name:\(%22wired%20broadband%22\)\)](https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2225-208%22)+AND+filers.name:(%22wired%20broadband%22))).

³ AT&T's Section 63.71 Applications of AT&T Services, Inc. on behalf of its affiliate; Pacific Bell Telephone Company d/b/a AT&T California ("Application"), p.4, WC Docket 26-121, p. 3. Due to the almost identical nature of the applications to discontinue residential and business service, the residential application is henceforth cited in these comments.

adequate technology for basic voice service, and rightly so. When the CPUC denied AT&T's application to seek relief in 2024, it noted "public commenters at CPUC Public Forums highlighted the unreliability of voice alternatives such as mobile wireless or VoIP." A principal analyst for broadband infrastructure at S&P Global Market Intelligence also stated "There's no wireless technology that will ever be superior to a wireline solution." There is overwhelming evidence that wireless is, in fact, woefully inadequate, . . .⁴ *[internal footnotes omitted]*

We are in **strong opposition** to the proposed retirement of AT&T's landlines. The primary reason is that there are no other sufficient alternatives, especially when AT&T has cell phone outages (which also occurs with other carriers). It should be noted that in disasters, cellular service is woefully deficient.

A second reason is that cellular service fails. As recently as July 22, 2024, there was a major cell service outage in California which prompted the FCC to conduct an investigation, and which spurred other federal agency investigations, such as by the U.S. Dept. of Justice and U.S. Dept of Homeland Security, including New York's Attorney General.⁵ Over 125 million devices were affected, with millions of affected devices concentrated in San Francisco and Los Angeles. The outage prevented 25,000 calls from reaching 911 dispatch centers.⁶

AT&T's nationwide outage was not due to a disaster, but routine maintenance. The outage was "caused by the application and execution of an incorrect process used as we

⁴ Comments of N. Albert, 7-22-26, p.3, <https://www.fcc.gov/ecfs/document/26110041534/1>.

⁵ FCC Opens Investigation into AT&T Outage, 3-7-24, <https://www.washingtonpost.com/business/2024/03/07/fcc-att-outage-investigation/>.

⁶ <https://fox59.com/news/national-world/february-att-outage-blocked-92-million-calls-and-25000-calls-to-911/>; see also, <https://www.cnbc.com/2024/02/22/cellular-outages-hit-thousands-in-us-and-att-users-most-affected.html>.

were expanding our network, not a cyber attack.”⁷ If this much chaos can ensue from basic maintenance, it can be expected that other outages and ensuing chaos may ensue from just basic maintenance. There were multiple points of error that lead to the cellular outages, despite policies in place to prevent such errors; the policies were not followed.⁸

[T]he Bureau finds that the extensive scope and duration of this outage was the result of several factors, including a configuration error, a lack of adherence to AT&T Mobility’s internal procedures, a lack of peer review, a failure to adequately test after installation, inadequate laboratory testing, insufficient safeguards and controls to ensure approval of changes affecting the core network, a lack of controls to mitigate the effects of the outage once it began, and a variety of system issues that prolonged the outage once the configuration error had been remedied.⁹

No outage should have happened if the proper protocols had been followed. There is no guarantee that, despite the FCC’s investigation and recommendations, it won’t happen again. If human error caused the massive outage on 2-22-24, it can cause it again in the future.

As AT&T’s petition is to relieve them of their obligation to provide landline service, leaving people without phone service is exactly what the Communications Act of 1934 was designed to guard against. By allowing AT&T to eliminate copper landlines, the Commission would be removing the very lifeline that the Commission was created to

⁷ AT&T cellular service restored after daylong outage; cause still unknown 2-22-24, <https://www.cnn.com/2024/02/22/cellular-outages-hit-thousands-in-us-and-att-users-most-affected.html>.

⁸ February 22, 2024, AT&T Mobility Network Outage, Report and Findings, A Report of the Public Safety and Homeland Security Bureau, FCC, Section V.29. <https://docs.fcc.gov/public/attachments/DOC-404150A1.pdf>.

⁹ February 22, 2024, AT&T Mobility Network Outage, Report and Findings, A Report of the Public Safety and Homeland Security Bureau, FCC, Section I.3. <https://docs.fcc.gov/public/attachments/DOC-404150A1.pdf>.

maintain. The Commission's primary obligation since the Communications Act of 1934 has been to provide ubiquitous, affordable telecommunications service in the U.S., with a statutory mandate "to protect life and property through the use of wire and radio communication."¹⁰ Removing copper landlines would endanger the lives of Americans because there is no adequate or reliable substitute in the event of an electrical or cellular outage, especially during a disaster. Internet and wireless communications are not an adequate substitute for copper landlines. Cellular, even when it does work, is not a substitute for people suffering from Electromagnetic Radiation Syndrome (EMR-Syndrome). Therefore, reliance on cell service is not in the public interest.

At a bare minimum, the Commission should require that any forbearance and/or relinquishing of ETC **must** be contingent upon the affected homes being served by at least one **wired** broadband provider so that residents can, at a minimum, avail themselves of wired IP-based voice service. Fixed wireless and mobile wireless have dramatically inferior reliability and are not substitutes for wired voice connectivity.¹¹

AT&T's petition fails to show just how unreliable cellular service is; here are some highlights from the FCC's report on AT&T's power outage:

Over the course of the approximately 12 hour duration of the outage, millions of people were without wireless service at various stages and various times. As a result of this outage, not only were members of the

¹⁰ Communications Act of 1934, as amended by the Telecommunications Act of 1996, 47 USC §151 *et seq.*

¹¹ AT&T petition for forbearance, at page 6 and page 30, filed May 20, 2026 <https://www.fcc.gov/ecfs/search/search-filings/filing/10520920917144>, stating "*nearly all serviceable locations have access to at least one alternative provider of facilities-based **fixed broadband or mobile voice** service.*" [emphasis added] This statement elides the fact that fixed broadband could refer to wireless and that mobile voice by definition is exclusively wireless.

public without a reliable connection to 911 services, but they were unable to reach family members, employers, health care professionals, schools, and other forms of assistance. Indeed, AT&T Mobility's outage caused serious disruptions to members of the public. This outage illustrates the need for mobile wireless carriers to adhere to best practices, implement adequate controls in their networks to mitigate risks, and be capable of responding quickly to restore service when an outage occurs. Sound network management practices of critical infrastructure and AT&T Mobility's own processes demand that only approved network changes that are developed pursuant to internal procedures and industry best practices, should be loaded onto the production network. It should not be possible to load changes that fail to meet those criteria.¹²

The entire FCC report of findings is attached hereto as Appendix B.

Without landline service, there would be no phone alternatives to contact 911 or family.

III. COLR and Landlines Provide a Vital Public Service, in the Public Interest

California's regulations do a good job projecting the public interest. We agree with

Commenter N. Albert with his statement:

AT&T claims that California's regulations are "outdated". What it really means is that they [California's regulations] do a good job protecting consumers and thus impeding AT&T's ability to choose to serve only the most profitable customers at the public's expense. Even though the wireline industry has theoretically been competitive for thirty years, in many areas, wireline ILEC service is the only reliable communications service available, something the CPUC recognizes but AT&T pretends is not the case. AT&T and some other commenters speak vaguely about the overall competitiveness of the telecom industry as a whole, but this characterization uses a liberal definition of "competitive" and broad generalizations of the competitiveness of service in general in the United States has little to nothing to do with the competitiveness of service in specific areas.¹³

¹² February 22, 2024, AT&T Mobility Network Outage, Report and Findings, A Report of the Public Safety and Homeland Security Bureau, FCC, Section V.29.

<https://docs.fcc.gov/public/attachments/DOC-404150A1.pdf>.

¹³ Comments of N. Albert, 7-22-26, p.3,

<https://www.fcc.gov/ecfs/document/26110041534/1>.

N. Albert also describes AT&T's fundamental disrespect for rules that protect the public interest. The Commission should heed the public interest and follow suit with the CPUC of California:

In its applications and petitions, AT&T has made evident its **disdain for standard, long-standing consumer protection requirements**. AT&T criticizes the California's protections as "procedural and substantive roadblocks", full of "protracted processes" and "years-long proceedings". It bears remembering the purpose of regulations and rules such as California's COLR rules – they are designed to protect consumers, not to oblige industry. COLR also ensures that "rates, charges, terms, and conditions" are reasonable, another consumer protection AT&T finds objectionable. It is thus fully expected and by design that the COLR regime has not been easily dismantled, and a sign that the system is working as designed . . . Not only does AT&T possess a noticeable lack of respect for civic institutions and regulatory processes, but having underestimated the integrity of the CPUC and the will of the people of California, AT&T is now acting much like a spoiled child pouting for not getting its way, appealing to the Commission because it does not want to comply with regulations that are in place for good reason. Even AT&T admits CPUC proceedings have been "lengthy and contested" – contested because **practically everyone and every organization has opposed AT&T's requests** thus far. **Public sentiment is overwhelmingly against AT&T's desire to discontinue POTS**, something the CPUC has honored. **The CPUC's obligations are first and foremost to the people and the public interest – as should and must be the Commission's.** [*internal footnotes omitted; emphasis added*]¹⁴

There are inadequate functional alternatives to copper landlines. N. Albert states that:

Even AT&T admits that it would be impractical to actually prove or verify that all customers would have a functional wireless signal.¹⁵ In other words, AT&T wants us to take it for its word that "everybody" will receive coverage, but they won't guarantee it and, in fact, have

¹⁴ Comments of N. Albert, p.4.

¹⁵ AT&T's Petition for Preemption and Declaratory Ruling, WC Docket 26-125 ("Petition"), p.

admitted that they would not be able to validate this claim. It is inappropriate to make decisions governing access to communications that could spell life or death for thousands of people based on theoretical and unverified data.¹⁶

AT&T brings forward this petition on the basis that the affected service area is highly competitive, under a broad definition of “alternative” services, including fiber, wireless, or satellite. While voice services over fiber still suffer from certain drawbacks, like reliance on local power or battery backup, as a dedicated, facilities-based option, wireless and satellite, which AT&T also regards as “sufficient”, present much more serious equivalence problems.¹⁷

AT&T’s claim that wireless coverage is available in over 99.9 percent of the affected serviceable locations relies on the National Broadband Map, which has been known to be incomplete and often inaccurate (to AT&T’s advantage). The CPUC has recognized that these maps are designed to reflect outdoor coverage and “cannot be considered reliable determinants for COLR substitution.” Even AT&T admits that it would be impractical to actually prove or verify that all customers would have a functional wireless signal. In other words, AT&T wants us to take it for its word that “everybody” will receive coverage, but they won’t guarantee it and, in fact, have admitted that they would not be able to validate this claim. It is inappropriate to make decisions governing access to communications that could spell life or death for thousands of people based on theoretical and unverified data.¹⁸

Copper landlines are far more reliable than any alternatives. As N. Albert points out:

“in wire centers where both VoIP and POTS are offered... the relative incidence of VoIP service outages was 38.7% greater than it was for POTS¹⁹

¹⁶ Comments of N. Albert, p.5

¹⁷ Comments of N. Albert, p.5.

¹⁸ Comments of N. Albert, p.6.

¹⁹ Examination of the Local Telecommunications Networks and Related Policies and Practices of AT&T California and Frontier California, Phase II “Phase II Examination”, p. 661, <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/document,website/divisions/communications-division/documents/network-exam->

Between 2021 and 2023, VoIP services accounted for 53% of reported outages in California, wireless service for 27%, and POTS for only 12%.²⁰

October 28, 2019, Marin County lost over half its cell sites due to power outages²¹

N. Albert also states that:

AT&T wants to, in many of these areas, withdraw the only wired connection available to consumers. Dismantling the only wireline option because a few less reliable wireless alternatives are available is a step backwards, not a step forwards.²²

We agree.

N. Albert reported that, during the AT&T cellular outage on February 22, 2024, notices by local government said to use landlines. For example, The San Francisco Dept of Emergency Management advised “If you are an AT&T customer and cannot get through to 911, then **please try calling from a landline.**”²³ *[emphasis added]* The Fairfax County Government in Fairfax, Virginia, also advised “There is a nationwide AT&T outage that is

documents/phase-ii/network-exam-report-phase-ii-complete-report-for-public_redacted.pdf.

²⁰ CPUC Communications Division, Service Quality Proceeding Phase One Staff Proposal (2024 CPUC Staff Proposal) (filed June 27, 2024) at 3, <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M534/K529/534529539.PDF>.

²¹ FCC Communication Status Reports for Areas Impacted By California Public Safety Power Shutoffs (Oct. 27, 2019), <https://docs.fcc.gov/public/attachments/DOC-360454A1.pdf>; FCC Communications Status Reports for Areas Impacted by California Public Safety Power Shutoffs (Oct. 28, 2019), <https://docs.fcc.gov/public/attachments/DOC-360482A1.pdf>; FCC Communications Status Reports for Areas Impacted by California Public Safety Power Shutoffs (Oct. 29, 2019), <https://docs.fcc.gov/public/attachments/DOC-360526A1.pdf> (collectively, 2019 FCC Status Reports).

²² N. Albert Comments, p.11.

²³ NBC Bay Area: AT&T cellphone service restored after outage impacts calls to Bay Area police, fire agencies

(<https://www.nbcbayarea.com/news/tech/cellphone-outage-bay-area/3461040/>),

37 <https://abcnews.com/US/att-outage-impacting-us-customers-company/story?id=>. N. Albert Comments, 12.

preventing wireless customers from making and receiving any phone calls (including to 9-1-1)... **try calling from a landline.**”²⁴ *[emphasis added]*

The problem of unreliable cell service is also shared by other carriers. N. Albert reports that:

As recently as January 14, 2026, Verizon Wireless experienced a similar nationwide failure that impacted 146 million of its subscribers, likewise impairing or preventing 911 calls. These incidents show that reliance solely on wireless is inadequate and risks consumers having no reliable way to contact 911 in an emergency. These outages can have particularly devastating effects in conjunction with wildfires or other life-threatening disasters. Cellular outages resulted in 2 million blocked calls in Butte County and Paradise during the 2018 Camp Fire and over 4 million blocked calls in Southern California during the 2018 Hill and Woolsey Fires *[internal footnotes omitted]*

POTS was designed to be decentralized and operate with no single point of failure, something that the wireless providers have demonstrated multiple times is not true of cellular and other so-called “advanced” services. The facts speak for themselves. POTS services are reliable, certainly far more reliable than wireless. Wireless is not reliable and must be rejected as an “alternative”. It is a complementary service to wireline services, not a substitute for them.

Conclusion

For the foregoing reasons, and the reasons given in our filing with respect to 25-208, 25-209, 25-311, the Commission should deny AT&T’s Petition to Retire landlines as many people in California and in communities across the country depend on landlines, including those disabled by electromagnetic radiation, and have no other means of communicating except by wire. The Commission’s primary mission is to serve the public interest as

²⁴ fire agencies

(<https://www.nbcbayarea.com/news/tech/cellphone-outage-bay-area/3461040/>)

established in the Communications Act, otherwise, the Commission is going far afield from the stated purpose that gave rise to its existence.

**On behalf of Americans Injured and Disabled
from Electromagnetic Radiation and the Filing Parties**

Respectfully Submitted,

A handwritten signature in cursive script that reads "Odette J. Wilkens".

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APPENDIX A

The parties listed below collectively constitute the “Filing Parties,” have granted permission to submit these Comments on their behalf, and join together to submit these Comments.

National Organizations – Filing Parties	
Wired Broadband, Inc., 501(c)(3), Odette J. Wilkens, President & General Counsel	
The National Call for Safe Technology, Inc., 501(c)(4), Odette J. Wilkens, President & General Counsel	
The Weston A. Price Foundation, 501(c)(3), Sally Morell Fallon, President, Washington, D.C.	
Alliance for Natural Health-USA, Robert Verkerk, PhD, Executive and Scientific Director, Alexandria, VA	

U.S. State	Filing Parties
AK - Alaska	Hal Stachman, Sitka, AK
AL - Alabama	Donald Campbell, Huntsville, AL
AR - Arkansas	PACTS International, Ken Stroud, Advisory Board Member/Technical Director, with Havana Syndrome, Little Rock, AR
AZ – Arizona	Arizonans for Safe Technology, AZ
	EMF Wellness Tucson, Lisa Smith, PhD, Tucson, AZ
	Safe Tech Tucson, Tucson, AZ
	Floris R. Freshman, published artist and composer, with EMR-Syndrome, Scottsdale, AZ
	Susan Molloy, M.A., Snowflake, AZ
	Melissa Hayes, M.S. with EMR-Syndrome, Oro Valley, AZ, Oak Haven Wellness, LLC, AZ
	Renée Neumann, Tucson / Green Valley, AZ
	Kathy Flanagan, with EMR-Syndrome, Prescott Valley, AZ
	Karen Carswell, Flagstaff, AZ
	Warren Woodward, Sedona, AZ
CA – California	EMF Safety Network, Sidnee Cox, Co-director, Windsor, CA
	Fiber First LA, Charlene Hopey, Topanga, CA
	Malibu for Safe Tech, Lonnie Gordon, Executive Director, Malibu, CA
	Napa Neighborhood for Safe Technology, Amy Martenson, Napa, CA
	Safe Tech International, Sara Aminoff, Union City, CA
	5G Free California, Julie Levine, with EMR-Syndrome, Topanga, CA,
	California Brain Tumor Association, Ellen Marks, Director, Indian Wells, CA
	Sustainability Management Consulting, Angela Casler, Chico, CA
	Eagle Forum of California, Orlean Koehle, CEO, Santa Rosa, CA
	Brenda Shafer, with EMR-Syndrome, CA
	Gene Wagenbreth, Topanga, CA
	Margaret Holt Baird, Esq., with EMR-Syndrome, San Diego, CA
	Raymond Michael LeVesque, RayGuardProtect.com, National Health Federation Board Member, Clear Lake Riviera, CA

	Fariba Mahmoudi, Civil Engineering, Redwood City, CA
CO - Colorado	Coloradans for Safe Technology, Andrea Mercier (mother of a severely disabled child who is adversely impacted various forms of non-ionizing radiation), Colorado Springs, CO
	Coloradans for Safe Technology, Nancy VanDover, DVM, OMD, Dipl Acup, disabled by EMR, CO
	David Byrd, Byrdman Publishing, Longmont, CO 80503 disabled by EMR-S
	La Plata for Safe Technology, Ingrid Iverson, with EMR-Syndrome, La Plata County, CO
	Longmont for Safe Technology, Doe Kelly, Co-Founder, with EMR-Syndrome, Longmont, CO
	Deborah Shisler, with EMR-Syndrome, CO Virginia Farver, Fort Collins, CO
CT - Connecticut	Connecticut for Responsible Technology, Private Membership Association (PMA), Paska Nayden, Co-Founder & Administrator, with EMR-Syndrome, CT
FL - Florida	Connie White, Miami Beach, FL, with EMR Syndrome, FL
	Florida Coalition for Safe Technology, St. Pete's Beach, FL
	Lauren Mones, St. Pete's Beach, FL
	KellyLee McFrederick, St. Pete's Beach, FL
	Kay Fitt, Palm Harbor, FL
	Susan Lee, Miami, FL Shirley Denton Jackson with EMR-Syndrome, unexpected early retirement Research Project Manager and Safe Schools Coordinator from School District of Palm Beach County, FL due to EMR-Syndrome, North Palm Beach, FL
IL - Illinois	Safer Cell Phone and Wi-Fi Project, Marne Glaser, Chicago, IL
LA - Louisiana	Southern EMF Radiation Solutions, Shari Champagne, with EMR-Syndrome, Houme, LA
MA – Massachusetts	Massachusetts for Safe Technology, Cecelia Doucette, Director, Ashland, MA
	Pittsfield Cell Tower Injured & Concerned Citizens (injured with EMR-Syndrome), Pittsfield, MA
	Safer Siting 01240, Lenox, MA
	Safe Tech International, Patricia Burke, journalist, with EMR-Syndrome, Millis, MA
	Sustainable Upton, Laurie Wodin, Co-Administrator, with EMR-Syndrome, Upton, MA
	Last Tree Laws (.com), Kirstin Beatty, with EMR-Syndrome, Director, Holyoke, MA
	The Leto Foundation, Westborough, MA
	Alison McDonough, with EMR-Syndrome, Canton, MA
	Janet FitzGerald, M.S., CCC-SLP Rowley, MA, member of Massachusetts for Safe Technology, MA
	Anna Nelson, with EMR-Syndrome, Pittsfield, MA Tais Howard, Lynn, MA
MD - Maryland	Safe Tech International, Kate Kheel, Taneytown, MD
	Katherine Katzin, Takoma Park, MD
ME - Maine	Global Union Against Radiation Deployment from Space, Bowdoinham, ME

	Maine Coalition to Stop Smart Meters, Richmond, ME
	Janet Drew, retired Registered Nurse, York, ME
	Jen Goddard, Board Certified Doctor of Natural Health, Thriving Proof Holistic Health Practice, and 2025 United States of America Mrs. Maine Pageant, Brewer, ME
MN - Minnesota	DAMS, Inc., 501(c)(3), educates public on dental health issues, St. Paul, MN Safe Tech Minnesota, Leo Cashman, Petra Brokken, St. Paul, MN
MO - Missouri	Marty Freyer, Mexico, MO
	David B. Klug, Kansas City, MO
	Bethany Klug, Supporter and Advocate for EMF Affected, Kansas City, MO
NC - North Carolina	Sharon Behn, Arden, NC
	Susan Marlan, Asheville, NC
	Nicole Stallings, with EMR-Syndrome, Black Mountain, NC
NE - Nebraska	Tammy Lee, with EMR-Syndrome, Lincoln, NE
	Linda Becker, Lincoln, NE
NH - New Hampshire	New Hampshire for Safe Technology, Deb Hodgdon with EMR-Syndrome, Stratham, NH
	Kent Chamberlin, PhD, former member of NH Commission to Study Env't'l and Health Effects of Evolving 5G Technology; Prof. & Chair Emeritus, Fullbright Distinguished Chair, Univ of NH, Coll. of Eng and Phys Sci, Dept. Of Electrical and Comp. Eng, NH
NJ - New Jersey	Lisa Allen, Plainfield, NJ
	Diane Grossi with EMR-Syndrome, East Hanover, NJ
NM - New Mexico	Lori Bagley, concerned individual with EMR-Syndrome, Albuquerque, NM
NY - New York	New Yorkers 4 Wired Tech, New York, NY
	New York City Alliance for Safe Technology, New York, NY
	Safe Tech Westchester, Ruth F. Moss, Westchester, NY
	Amy Harlib, Concerned Citizen, New York, NY
	Fred P. Sinclair, Jr., Alfred, NY
	Kate Reese Hurd with EMR-Syndrome, Philmont, NY
	Gabriela Munoz with EMR-Syndrome, Carmel, NY
	Stephanie Stewart, Lagrangeville, NY
	Virginia Caswell with EMR-Syndrome, NYC (Stuyvesant Town), NY
	Barbara Stemke, New Paltz, Ulster County, NY
OH - Ohio	Toby Stover, High Falls, NY
	Craig McDowell, veteran, Rocky River, OH
	Erin McDowell, Registered Nurse, with EMR-Syndrome, Rocky River, OH
	Southwestern Ohio for Responsible Technology (SWORT), OH
	Jennifer Manzler, Certified Health & Wellness Coach, Cincinnati, OH (SWORT)
	Sean Polacik, Automation Control Systems Technician, OH
OR - Oregon	Cristina Shonk, Cincinnati, OH
	Oregon for Safer Technology, Ashland, OR
	Kelly Marcotulli with EMR-Syndrome, Ashland, OR
	The Soft Lights Foundation, Mark Baker, President, Beaverton, OR

PA - Pennsylvania	EMR Syndrome Alliance, Pennsylvania, PA
	Pennsylvanians for Safe Technology, Donna DeSanto Ott PT DPT MS FMCHC, Founder & President, PA
	Southwest Pennsylvania for Safe Technology, Mount Pleasant, PA, Susan Jennings, MPA, BA, Founder (son has EMR-Syndrome), PA
	Jan Kiefer, Scottdale, PA
RI - Rhode Island	Rhode Island 4 Safe Tech, Sheila Resseger, M.A., Co-Founder, Cranston, RI
TN - Tennessee	Janet Taché, Hohenwald, TN
UT - Utah	Rosemarie Russell, member of The Women's State Legislative Council of Utah, Hurricane, UT
VA - Virginia	Virginians for Safe Technology, Jenny DeMarco, Communications Director, and Mary Bauer, retired radio frequency engineer, Fredericksburg, VA
	Charles Frohman, M.Ed, HIA, lobbyist, National Health Federation, Williamsburg, VA
	Linda M. Cifelli, retired Registered Nurse, Williamsburg, VA
	Grace Hilbert, with EMR-Syndrome, Annandale, VA
VT - Vermont	Martine Victor, Manchester, VT
WA – Washington	Citizen League Encouraging Awareness of Radiation, C.L.E.A.R., Mark Wahl Director, Langley, WA
WI - Wisconsin	Katrine Colton, with EMR-Syndrome, Sheboygan, WI
	Tracey Seymour, with EMR-Syndrome, Westfield, WI
	Carol Seibert, with EMR-Syndrome, Trevor, WI
Non-US Territories	Joiners
Sweden	Eva Christina Andersson, E.U., Sweden

APPENDIX B

February 22, 2024 AT&T Mobility Network Outage REPORT AND FINDINGS²⁵

A Report of the Public Safety and Homeland Security Bureau
Federal Communications Commission

July 22, 2024 *Federal Communications Commission*

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2 Federal Communications Commission

I. INTRODUCTION

1. On Thursday, February 22, 2024, at 2:45 AM Central Standard Time,¹ AT&T Mobility LLC (AT&T Mobility) experienced a nationwide wireless service outage that lasted at least twelve hours.² The outage affected users in all 50 states as well as Washington, D.C., Puerto Rico, and the U.S. Virgin Islands. Based on information provided by AT&T Mobility, all voice and 5G data services for all users of AT&T Mobility were unavailable as a result of the outage, affecting more than 125 million registered devices, blocking more than 92 million voice calls, and preventing more than 25,000 calls to Public Safety Answering Points (PSAPs or 911 call centers). The outage also cut off service to the devices operated by public safety users of the First Responder Network Authority (FirstNet). Voice and 5G data services were also unavailable to users from mobile virtual network operators (MVNOs) and other wireless customers who were roaming on AT&T Mobility's network.

2. AT&T Mobility implemented a network change with an equipment configuration error on Thursday, February 22, 2024 at 2:42 AM. Just three minutes later, the nationwide outage began. Once implemented, this configuration error caused the AT&T Mobility network to enter "protect mode" to prevent impact to other services, disconnecting all devices from the network, and prompting a loss of voice and 5G data service for all wireless users. It took close to two hours to roll back the network change. Full service restoration, however, took at least 12 hours because AT&T Mobility's device registration systems were overwhelmed with the high volume of requests for re-registration onto the network.

3. The Federal Communications Commission's (FCC's or Commission's) Public Safety and Homeland Security Bureau (Bureau) investigated this outage, its effects, and AT&T Mobility's response. Bureau staff reviewed and analyzed network outage reports and written responses submitted by AT&T Mobility, and interviewed AT&T Mobility personnel. This public report represents the Bureau's findings and recommendations. As explained in detail below, the Bureau finds that the extensive scope and duration of this outage was the result of several factors, including a configuration error, a lack of adherence to AT&T Mobility's internal procedures, a lack of peer review, a failure to adequately test after installation, inadequate laboratory testing, insufficient safeguards and controls to ensure approval of changes affecting the core network, a lack of controls to mitigate the effects of the outage once it began, and a variety of system issues that prolonged the outage once the configuration error had been remedied. This outage provides stakeholders with the opportunity to learn valuable lessons about adherence to industry-developed best practices and the challenges of network restoration following a large-scale

²⁵ February 22, 2024, AT&T Mobility Network Outage, Report and Findings, A Report of the Public Safety and Homeland Security Bureau, FCC, Section V.29.

<https://docs.fcc.gov/public/attachments/DOC-404150A1.pdf>.

outage. This “sunny day”³ outage highlights the need for network operators to adhere to their internal procedures and industry best practices when implementing network changes, to implement sufficient network controls to mitigate configuration errors so they do not escalate and disrupt network operations, and to have appropriate systems and procedures in place with adequate capacity to facilitate prompt recovery from large-scale outages.

II. BACKGROUND

4. As designated by Congress, the Commission plays a vital role in ensuring and maintaining

¹ Unless otherwise noted, all times in this report are Central Standard Time.

² Press Release, New York State Attorney General Letitia James, Attorney General James Announces Investigation of Recent AT&T Outage (Feb. 29, 2024), <https://ag.ny.gov/press-release/2024/attorney-general-james-announces-investigation-recent-att-outage>.

³ For this report’s purposes, the term “sunny day outage” refers to an outage that results from circumstances other than severe weather or other natural disasters. Sunny day outages can result from a multitude of different events, such as equipment configuration errors, equipment failures, and software bugs.

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the reliability and resiliency of the nation’s communications networks so that the public can communicate when needed. One of the Commission’s priorities is to ensure that communications are reliable and readily available, consistent with its statutory mission to protect the “safety of life and property.”⁴ Accordingly, it is critical for the millions of customers dependent on the AT&T Mobility network to be able to reach 911 and for FirstNet users to maintain connectivity during an outage, given FirstNet’s role as public safety’s dedicated communications network.

5. The Commission stays abreast of disruptions to the Nation’s communications infrastructure through outage reports filed by communications providers in the agency’s Network Outage Reporting System (NORS) in the wake of major disruptions to their networks.⁵ As part of this reporting framework, Commission rules require wireless service providers, such as AT&T Mobility, to report to the Commission “significant degradation[s] in the ability of an end user to establish and maintain a channel of communications as a result of failure or degradation in the performance of a communications provider’s network.”⁶ An outage that occurs on facilities that a wireless service provider owns, operates, leases, or otherwise uses is reportable when it is at least 30 minutes in duration and, *inter alia*, potentially affects at least 900,000 user minutes of telephony or potentially affects a 911 special facility (e.g., a PSAP).⁷ Wireless providers must submit a notification in NORS within 120 minutes of discovering that a reportable outage has occurred.⁸ Wireless providers must also file an Initial Outage Report no later than 72 hours after discovering the outage, and a Final Outage Report not later than 30 days after discovering the outage.⁹ The Commission requires wireless providers to notify 911 special facilities as soon as possible when they discover outages that could affect them.¹⁰ Wireless providers must convey all available and potentially useful information to the 911 special facility to help mitigate

⁴ 47 U.S.C. § 151.

⁵ NORS is the Commission’s web-based filing system through which communications providers covered by the part 4 outage reporting rules must submit reports to the Commission. These reports are presumed confidential to protect sensitive and proprietary information about communications networks. *See* 47 CFR § 4.2.

⁶ *See* 47 CFR § 4.5(a); *New Part 4 of the Commission’s Rules Concerning Disruptions to Communications*, ET Docket No. 04-35, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 16830, 16895-902, paras. 127-143 (2004) (*2004 Part 4 Report and Order*).

⁷ *See* 47 CFR § 4.9(e)(1)(ii), (v); *see also* 47 CFR § 4.9(e)(1)(i), (iii), (iv) (requiring a wireless service outage be reported when it affects a Mobile Switching Center, when it affects at least 667 OC3 minutes, or when it potentially affects any special offices and facilities). While we note that the Commission adopted 988 outage reporting rules in July 2023, these rules are not yet in effect and thus are not applicable to this incident. *See Ensuring the Reliability and Resiliency of the 988 Suicide & Crisis Lifeline; Amendments to Part 4 of the Commission’s Rules Concerning Disruptions to Communications; Implementation of the National Suicide Hotline Improvement Act of 2018*; PS Docket Nos. 23-5 and 15-80; WC Docket No. 18-336, Report and Order, FCC 23-57 (July 21, 2023).

⁸ *See* 47 CFR § 4.9(e)(1); 47 CFR § 4.11 (specifying additional information that these reports must contain).

⁹ *See* 47 CFR § 4.9(e)(4).

¹⁰ *See 2004 Part 4 Report and Order*; 47 CFR § 4.9. Further, the Commission adopted PSAP notification requirements in November 2022, but they are not in effect, which means that they are not applicable to this outage. *See Amendments to Part 4 of the Commission’s Rules Concerning Disruptions to Communications; Improving 911 Reliability; New Part 4 of Commission’s Rules Concerning Disruptions to Communications*; PS Docket Nos. 15-80 and 13-75; ET Docket No. 04-35, Second Report and Order, 37 FCC Rcd 13847 (2022); *Amendments to Part 4 of the Commission’s Rules Concerning Disruptions to Communications; Improving 911 Reliability; New Part 4 of the Commission’s Rules Concerning Disruptions to Communications*, PS Docket Nos. 15-80 and 13-75; ET Docket No. 04-35, Order on Reconsideration, FCC 24-73 (July 11, 2024).

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the effects of the outage on callers to that facility.¹¹ The Commission does not currently require FirstNet to file outage reports in NORS, although it has an open rulemaking proceeding considering this issue.¹²

III. INCIDENT AND RESPONSE

A. Event Summary

6. **Misconfigured Network Element.** On Thursday, February 22, 2024, at 2:42 AM, an AT&T Mobility employee placed a new network element into its production network during a routine night maintenance window in order to expand network functionality and capacity. The network element was misconfigured. The configuration of the network element did not conform to AT&T’s established

network element design and installment procedures, which require peer review. As a result, the misconfiguration of the network element was not detected before the network element was introduced into AT&T Mobility's network. As a result of the error in configuration, downstream network elements propagated the error further into the network. This triggered an automated response that shut down all network connections to prevent the traffic from propagating further into the network. The shutdown isolated all voice and 5G data processing elements from the wireless towers and switching elements, preventing these services from being available. This resulted in the AT&T Mobility network disconnecting all devices from voice services and 5G data, including FirstNet devices, registered to AT&T Mobility's network, beginning a nationwide wireless outage. This occurred at 2:45 AM, just three minutes after the misconfigured network element was placed into production.

7. Registration Congestion. AT&T Mobility technical and leadership personnel were engaged to identify the issue. AT&T's Network Operations performed a rollback that removed the misconfigured network element and began the restoration of the network to normal operations. While most of AT&T Mobility's subscribers were re-connected to the network by early morning, traffic congestion from mass mobile device registrations prevented some subscriber devices from connecting to the network. Most of these congestion issues were resolved by mid-day.

8. Mitigation and Restoration Efforts. After rolling back the maintenance action, AT&T Mobility prioritized the restoration of FirstNet devices and infrastructure over commercial and residential users which AT&T Mobility asserts is part of its commitment as public safety's partner.¹³ By 5:00 AM on February 22, 2024, FirstNet infrastructure was restored.¹⁴ FirstNet device registrations were approaching normal levels shortly thereafter. Restoring service to commercial and residential users took several more hours as AT&T Mobility continued to observe congestion as high volumes of AT&T Mobility user devices attempted to register on the AT&T Mobility network. This forced some devices to revert back to SOS mode.¹⁵ For the next several hours, AT&T Mobility engineers engaged in additional

¹¹ See 2004 Part 4 Report and Order; 47 CFR § 4.9(e).

¹² See *Resilient Networks, Amendments to Part 4 of the Commission's Rules Concerning Disruptions to Communications; New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, PS Docket Nos. 21-346 and 15-80, and ET Docket No. 04-35; *Second Report and Order and Second Further Notice of Proposed Rulemaking*, FCC 24-5, at paras. 60-63 (Jan. 26, 2024).

¹³ See Donny Jackson, *AT&T suffers extended nationwide outage, prioritizes FirstNet restoration*, Feb. 22, 2024), <https://urgentcomm.com/2024/02/22/att-suffers-extended-nationwide-outage-prioritizes-firstnet-restoration/>.

¹⁴ See Joe Wassel, *Update on February 22 Network Outage*, (Feb. 29, 2024), <https://www.firstnet.gov/newsroom/blog/update-february-22-network-outage#:~:text=AT%26T%20says%20the%20outage%20was,restoration%20of%20public%20safety%20services>.

¹⁵ SOS mode is a limited service mode where a device is not connected to a network, but is still able to make emergency calls. See, e.g., Apple, *If you see SOS, No Service, or Searching on your iPhone or iPad*, (continued....)

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actions, such as turning off access to congested systems and performing reboots to mitigate registration delays. At 12:30 PM – nearly ten hours after the outage began – AT&T Mobility determined that registrations had finally normalized.¹⁶ However, call failures were still occurring after this time. It took several more hours before performance indicators returned to normal levels. At that point, the outage was resolved and full voice and data services were restored to all customers, over 12 hours after the incident began.

B. Actions to Notify and Alert Customers

9. FirstNet Customers. AT&T Mobility notified FirstNet customers of the outage starting at 5:53 AM on February 22, 2024. That notification, however, was distributed more than three hours after the outage began and approximately 53 minutes after FirstNet's infrastructure was restored. A final notification was sent at 4:40 PM.

10. In addition, AT&T Mobility and FirstNet issued FirstNet-specific public statements in the morning communicating that service was affected for some subscribers across the country¹⁷ and advising that service is currently running normally across the FirstNet network. At 11:30 AM, a message was issued by FirstNet via social media stating that “[s]ome FirstNet subscribers may have experienced a service disruption this morning” and confirming that FirstNet service was operating normally.¹⁸

11. **AT&T Mobility Customers.** On February 22, 2024 at 7:05 AM, AT&T Mobility issued a public statement about the outage stating that “[s]ome of our customers are experiencing wireless service interruptions this morning” and encouraging the use of Wi-Fi calling until service was restored. However, some users reportedly experienced a 502 Bad Gateway error when attempting to turn on Wi-Fi calling.¹⁹ AT&T Mobility provided additional updates periodically throughout the morning. At 2:10 PM, AT&T Mobility released a statement to media outlets indicating that wireless service had been restored to all of its affected customers.²⁰ At 6:46 PM, AT&T Mobility issued a statement providing initial findings about the outage's cause, asserting its belief based on initial review that the “outage was caused by the application and execution of an incorrect process used as [it was] expanding [its] network, not a cyberattack.”²¹

12. **PSAP Notification.** AT&T Mobility indicated it notified all of the affected PSAPs nationwide about the outage and the status of the restoration.

<https://support.apple.com/en-us/HT201415> (last visited June 20, 2024). In this incident, if any device in SOS mode connected to a non-AT&T network, it could make 911 calls; however, if it connected to an AT&T network, it could not.

¹⁶ Normalized in this context refers to the number of active registrations being within normal parameters for the network.

¹⁷ Congressional Research Service, AT&T Network Outage: Impact on Public Safety Services at 1 (2024) <https://sgp.fas.org/crs/misc/IF12613.pdf> (Congressional Research Service Report).

¹⁸ See FirstNet, Built with AT&T (@FirstNet), X (Feb. 22, 2024, 2:06 PM), <https://x.com/FirstNet/status/1760727848992547256>. We note that X (formerly Twitter) is a closed social network, and as such, a person not logged in (or not an “X” subscriber) would not be able to routinely subscribe to updates, or (as a non-subscriber) even seen this message.

¹⁹ See, e.g., Brandon Jirod, *Getting a 502 Bad Gateway error on AT&T? Here’s what it means*, (Feb. 22, 2024), <https://www.pnj.com/story/news/2024/02/22/att-outage-502-bad-gateway-error-wifi-calling/72698740007/>.

²⁰ Congressional Research Service Report at 1.

²¹ *Id.*

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C. Effects of the Outage

1. Overall Impact

¹³ All users of AT&T Mobility’s network, including AT&T Mobility subscribers, Cricket subscribers, FirstNet customers, and customers of MVNOs with access to AT&T Mobility’s network were impacted by the outage, affecting more than 125 million registered devices and blocking more than 92 million voice calls. The impacted users reside in all 50 states as well as Washington, D.C., Puerto Rico, and the U.S. Virgin Islands. The outage resulted in lost connectivity impacting all Voice over Long Term Evolution (VoLTE) and all 5G voice and data services provided by AT&T Mobility, including originating calls to 911, for all of the users listed above. FirstNet users also lost connectivity during the outage. Users from other wireless carriers who were roaming on AT&T Mobility’s network were also affected.

2. Impact on 911

¹⁴ No 911 calls from AT&T Mobility-served wireless devices could be routed to the destination PSAP while the voice services were disconnected. All such attempted 911 calls therefore failed preventing more than 25,000 calls to PSAPs or 911 call centers. This includes devices that were in SOS mode while attached to AT&T towers. When a device is in SOS mode, it cannot register to the network, but in most instances the device can still reach 911. However, all voice services on the AT&T Mobility network were unavailable during the outage, including calls to 911 made by phones in SOS mode that were attempted over the AT&T Mobility network. AT&T customers whose devices in SOS mode attached to other carriers could complete 911 calls through those networks.²²

¹⁵ As service was restored, 911 calls were delivered to PSAPs with Automatic Location Identification (ALI) and Automatic Number Identification (ANI).²³

3. Impact on FirstNet

¹⁶ All 4G voice and 5G voice and data infrastructure were impacted between 2:45 AM and 5:00 AM, causing loss of service for FirstNet subscribers. AT&T Mobility prioritized the restoration of FirstNet before other services. FirstNet device registrations approached normal shortly after the restoration of the FirstNet dedicated network elements that are connected to AT&T Mobility’s network.

4. Impact on Wireless Priority Service (WPS)

¹⁷ WPS would not have been available during the outage to devices not registered on the network.²⁴ The volume of Wireless Priority Service calls on the AT&T Mobility network during the outage event was less than two thirds of the typical volume for that same time period, suggesting some WPS calls also failed.

5. Impact on Wireless Emergency Alert (WEA) Messages

¹⁸ AT&T Mobility wireless users’ ability to receive WEAs was not materially impacted by the outage. Despite losing connectivity to AT&T Mobility’s 5G network elements due to the outage, AT&T ²² See, e.g., Marlene Lenthag and Kathleen Itoh, *AT&T service restored after customers hit by widespread cellular outages in the U.S.* (Feb. 22, 2024), <https://www.nbcnews.com/news/us-news/t-verizon-t-mobile-customers-hit-widespread-cellular-outages-us-rcna139938>.

²³ Under part 9 of the Commission’s rules, 911 calls generally must include ANI and ALI information. See generally 47 CFR pt. 9, “911 Requirements.”

²⁴ WPS is a Federal program that authorizes cellular communications service providers to prioritize calls over wireless networks. This program is available to certain organizations that use telecommunication services necessary for the public health, safety, and maintenance of law and order. See generally 47 CFR pt. 64, Appx B.

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Mobility’s 4G/LTE commercial network elements were available to broadcast WEAs throughout the duration of the outage. For example, AT&T Mobility received six WEA messages from Federal Emergency Management Agency (FEMA)’s Integrated Public Alert & Warning System (IPAWS) gateway during the outage, the first at 2:56 AM, and broadcast the WEA message over AT&T Mobility’s 4G/LTE commercial network in accordance with the geographic parameters assigned by the alert originator. According to AT&T Mobility, its devices operating in SOS mode (which AT&T Mobility users would have been in for some duration of time) likely could receive WEA messages.

D. Bureau Findings and Analysis Regarding Causes and Contributing Factors

¹⁹ The Bureau finds that the extensive scope and duration of this outage was the result of

several factors, all attributable to AT&T Mobility, including a configuration error, a lack of adherence to AT&T Mobility's internal procedures, a lack of peer review, a failure to adequately test after installation, inadequate laboratory testing, insufficient safeguards and controls to ensure approval of changes affecting the core network, a lack of controls to mitigate the effects of the outage once it began, and a variety of system issues that prolonged the outage once the configuration error had been remedied. We discuss each of these factors below.

20. *Lack of Peer Review.* The direct cause of the outage was an error by an employee who misconfigured a single network element, ultimately causing the AT&T Mobility network to respond by entering Protection Mode and disconnecting all wireless devices. Adequate peer review should have prevented the network change from being approved, and, in turn, from being loaded onto the network. This peer review did not take place.

21. *Failure to Adequately Test Post Installation.* In addition to AT&T Mobility's assertion that the outage was caused by the execution of an incorrect process, another procedural error also may have contributed to the outage. Specifically, post-installation testing is a well-established best practice to ensure network changes are implemented properly without adverse effect.²⁵ To the extent that testing was performed when the misconfigured network element was placed into the production network on February 22, 2024, they were inadequate and failed to identify the incorrect behavior of the network element which began just three minutes after the network change was implemented. An effective post installation test may have helped detect the misconfigured network element more quickly, thereby allowing AT&T Mobility to initiate corrective action more expeditiously. AT&T Mobility either lacked sufficient oversight and controls in place to ensure these test processes were followed, or if they were, then the processes themselves were insufficient.

22. *Failure to Conduct Adequate Lab Testing.* Lab testing by AT&T did not discover the improper configuration of the network element that caused the outage and did not identify the potential impact to the network of that or similar misconfigurations. To the extent such testing was intended to include operation in a production-representative environment it either failed to effectively emulate the live environment or failed to test the impact of this misconfiguration on the wider network. Any such testing should have identified the issue prior to the occurrence of the outage.

23. *Insufficient Safeguards and Controls to Ensure Approval of Changes Affecting Network.*

Responsible network management principles and organizational best practices dictate that network changes must be thoroughly tested, reviewed, and approved before they are implemented within the network.²⁶ Network Operators, Service Providers, and Public Safety should verify complex configuration changes before committing them and test after the change to ensure the appropriate and expected results. FCC Open Data, *CSRIC Best Practices*, <https://opendata.fcc.gov/Public-Safety/CSRIC-Best-Practices/qb45-rw2t/data> (last visited June 26, 2024) (quoting CSRIC Best Practice 13-10-0615).

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network.²⁶ These safeguards help protect the network against potential risks by helping to ensure that those risks are identified and remediated before they cause service interruptions. Here, the misconfiguration of the network element was not detected before the network element was introduced into AT&T Mobility's network due to a failure to conform to AT&T's established network element design and installment procedures, which require peer review.

24. Two steps led to the network element configuration error reaching the AT&T Mobility network. The first step was the incorrect configuration by an AT&T Mobility employee. The second step was the loading of the network change encompassing the configuration error into the AT&T Mobility network by another AT&T Mobility employee. The fact that the network change was loaded onto the AT&T Mobility network indicates that AT&T Mobility had insufficient oversight and controls in place to ensure that approval had occurred prior to loading.

25. *Insufficient Controls to Mitigate the Effects of the Configuration Error.* The downstream network element lacked controls specific to mitigating this error and therefore was unable to mitigate the effects created by the misconfigured network element. Because the network element was lacking these controls, it passed traffic further into the network. This triggered Protection Mode to prevent significant failures from cascading into other systems. The Protection Mode condition caused all AT&T Mobility customers to be disconnected from the network. If the downstream network element was configured to have proper controls prior to the installation of the misconfigured network element, the outage would have been prevented.

26. *System Limitations Created Registration Congestion, Prolonging the Outage.* As discussed above, once the network entered Protection Mode, all devices were dropped from the network. Once Protection Mode is lifted, user devices must re-register in the network to be recognized and be provided service. Here, once the misconfigured network element was backed out, all user devices automatically tried to simultaneously re-register to reconnect to the network. The influx of device registration attempts far exceeded what AT&T Mobility's network management systems could handle, resulting in widespread congestion. This congestion caused devices to be delayed in registering to the network, thereby prolonging the outage. For the next several hours, AT&T Mobility employees engaged in additional actions to mitigate registration delays and better manage the large number of devices making simultaneous registration attempts. At 12:30 PM, AT&T Mobility determined that registrations had normalized. While most of AT&T Mobility's network returned to normal operations by mid-day,

certain 911 calls failed throughout the afternoon due to congestion caused by mass mobile device registrations onto the network.

27. Despite configuring its network to enter Protection Mode to prevent propagating errors to other parts of the network, AT&T failed to prepare for the registration congestion associated with the network recovering from Protection Mode, or to sufficiently mitigate that congestion after the fact. As noted above, AT&T Mobility experienced many challenges and delays registering the high volume of devices to the AT&T Mobility network on February 22, 2024. It took AT&T Mobility more than 10 hours once the network was restored to fully remediate the network congestion and other issues stemming from registration. More robust registration systems with greater capacity would have enabled AT&T Mobility to more quickly and efficiently recover after the network entered into Protection Mode. Had such systems been in place here, they would have reduced the duration and impact of the outage.

²⁶ See, e.g., CSRIC Best Practice 13-10-0615 (Network Operators, Service Providers, and Public Safety should verify complex configuration changes before committing them and test after the change to ensure the appropriate and expected results).

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IV. CORRECTIVE ACTIONS BY AT&T MOBILITY

28. Since the outage, AT&T has taken numerous steps to prevent a reoccurrence. Within 48 hours of the outage, AT&T implemented additional technical controls in its network. This included scanning the network for any network elements lacking the controls that would have prevented the outage, and promptly putting those controls in place. AT&T has engaged in ongoing forensic work and implemented additional enhancements to promote network robustness and resilience. In addition, post-outage, AT&T has implemented additional steps for peer review and adopted procedures to ensure that maintenance work cannot take place without confirmation that required peer reviews have been completed.²⁷

V. RECOMMENDATIONS FOR NEXT STEPS

29. Over the course of the approximately 12 hour duration of the outage, millions of people were without wireless service at various stages and various times.²⁸ As a result of this outage, not only were members of the public without a reliable connection to 911 services, but they were unable to reach family members, employers, health care professionals, schools, and other forms of assistance. Indeed, AT&T Mobility's outage caused serious disruptions to members of the public. This outage illustrates the need for mobile wireless carriers to adhere to best practices, implement adequate controls in their networks to mitigate risks, and be capable of responding quickly to restore service when an outage occurs. Sound network management practices of critical infrastructure and AT&T Mobility's own processes demand that only approved network changes that are developed pursuant to internal procedures and industry best practices, should be loaded onto the production network. It should not be possible to load changes that fail to meet those criteria. The Bureau plans to release a Public Notice, based on its analysis of this and other recent outages, reminding service providers of the importance of implementing relevant industry-accepted best practices, including those recommended by the Communications Security, Reliability, and Interoperability Council.²⁹ The Bureau has referred this matter to the Enforcement Bureau based on PSHSB's investigation into the February 22, 2024 outage for potential violations of parts 4 and 9 of the Commission's rules.

²⁷ See Letter from Suzanne M. Tetreault et al., Wilkinson Barker Knauer, LLP, Counsel for AT&T Services, Inc. et al., to Debra Jordan, Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission at Exh.t A (July 17, 2024) (on file with Bureau staff).

²⁸ See, e.g., Fiona Leishman, *AT&T speaks out after nationwide outage leaves millions without mobile service*, (Feb. 22, 2024), <https://www.themirror.com/news/us-news/att-speaks-out-after-nationwide-352945>.

²⁹ FCC Open Data, *CSRIC Best Practices*, <https://opendata.fcc.gov/Public-Safety/CSRIC-Best-Practices/qb45-rw2t/data> (last visited July 19, 2024) (referencing CSRIC Best Practice 13-9-0574).