

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking Proceeding To
Consider Changes to the Commission's
Carrier of Last Resort Rules.

R.24-06-012
(Filed June 20, 2024)

**PACIFIC BELL TELEPHONE COMPANY D/B/A
AT&T CALIFORNIA'S (U 1001 C) REPLY COMMENTS ON
ADMINISTRATIVE LAW JUDGE'S RULING
ISSUING STAFF PROPOSAL FOR COMMENT**

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Pacific Bell Telephone Company d/b/a AT&T California (U 1001 C) (“AT&T California”) respectfully submits these Reply Comments in response to the Administrative Law Judge’s Ruling Issuing Staff Proposal for Comment issued on December 15, 2025 (“Ruling”) and the January 6, 2026 Email Ruling of Assigned ALJ on RCRC Extension Request, which extended the time for filing.

I. INTRODUCTION AND EXECUTIVE SUMMARY

A. Introduction

The opening comments reflect broad agreement with the staff’s conclusions that the Commission’s carrier of last resort (“COLR”) regime no longer reflects market realities and consumer needs and that reform thus is necessary. The opening comments also reveal two important themes. First, there is a division between those constructively pursuing real regulatory reform that facilitates deployment of next-generation networks in California and those trying to retain the outdated COLR regime no matter what. Second, there is genuine uncertainty as to many key points of the staff proposal.

As to the first, the Commission commenced this proceeding to consider how to preserve “universal telecommunications service” in light of the technology and marketplace changes of the last three decades.¹ Cal Advocates, Consolidated, Frontier, the TDS Companies, and USTelecom have joined AT&T California in embracing this forward-looking challenge. Their comments affirm the common-sense notion that consumers’ abandonment of plain old telephone service (“POTS” or basic service) means a COLR no longer is needed in areas where modern broadband networks offer or enable alternative voice service. These parties are engaged in a constructive effort to define the criteria for demonstrating which areas qualify for COLR

¹ *Ord. Instituting Rulemaking Proceeding To Consider Changes to the Comm’n’s Carrier of Last Resort Rules*, R.24-06-012, 2024 Cal. PUC LEXIS 359, at *1 (June 28, 2024).

relinquishment. And they recognize that basic service has become outdated, with many required elements that serve no continuing purpose. Their proposals point the Commission down the path of COLR reform that promotes broadband deployment while still preserving universal voice service.

Indeed, Cal Advocates and AT&T California have now developed a compromise joint proposal to provide a voluntary pathway for COLR relinquishment through a binding commitment for a COLR to deploy fiber and offer 1 Gbps service. As such, this joint proposal would advance the twin goals of network modernization and COLR reform. The details of this joint proposal are set forth in Appendix A. In summary, the proposal would authorize a COLR to relinquish its COLR status and discontinue basic service in return for a binding commitment to deploy fiber to a percentage of the total number of serviceable locations in a specified relinquishment area. The proposal also provides that the COLR would commit to participate in the California LifeLine program for its standalone broadband or a broadband/voice service bundle offered to the newly deployed fiber serviceable locations in the relinquishment area for a specified period of time, and the COLR would agree to prioritize deployment in areas that overlap with areas the Commission has found to be “Low-Income Areas” and “Disadvantaged Communities” on the Commission’s Federal Funding Account (“FFA”) map.²

Other commenters urge the Commission to retain regulations to govern services offered by a monopoly that disappeared long ago. Media Alliance, for example, emphasizes the tiny portion of “people in California that do not want to relinquish their POTS landlines.”³ CforAT,

² See Cal. Pub. Utils. Comm’n, *Federal Funding Account Round 2 Public Map* (2025), <https://experience.arcgis.com/experience/9fb1e88c59c44178b1768c1f03d77543/page/Page/> (“FFA Map”)

³ Comments of Media All. on Staff Report in R.24-06-012 10 (filed Jan. 30, 2026) (“Media Alliance Opening Comments”).

EQUAL, and TURN/CWA insist that a COLR remains critical in even the areas with the widest array of alternatives. These parties fail to justify their adherence to the COLR regime given a steady decline has left just three percent of households in AT&T California’s service territory subscribing to its basic service.

These parties also seek to turn back the clock as to the proposed modernized essential service (“MES”). TURN/CWA propose to tariff MES despite decades of recognition that tariffing services in the face of competition—as there unquestionably is for voice service almost everywhere people live in California—serves no purpose and hurts consumers. TURN/CWA also call for retention of obsolete basic service elements—including one-time free blocking of 900/976 information numbers and billing adjustments for those calls even though the internet’s rise led to the extinction of 900/976 numbers, and almost all major carriers have discontinued billing for third-party services.

As to the second theme regarding ambiguity in the proposed framework, parties in both camps seek clarification of various aspects of the staff proposal. EQUAL, for instance, points to “ambiguity ... regarding the relationship between the five-year Modernized Essential Service transition period and the replacement COLR pathway.”⁴ Consolidated, Frontier, and the Independent Small LECs note that, through the inclusion of LifeLine in the MES elements, the staff proposal might inadvertently reinstate, implicitly via General Order 153, the very basic service elements it declares obsolete. These and other examples of uncertainty about the staff proposal underscore why the staff, after considering the parties’ comments, should propose rules for comment by the parties.

⁴ Opening Comments of Empowering Quality Util. Access for Isolated Localities (“EQUAL”) on Carrier of Last Resort & Network Modernization Staff Proposal 10–11 (filed Jan. 30, 2026) (“EQUAL Opening Comments”).

B. Executive Summary

Competition and technological innovation in telecommunications have transformed the way people communicate. POTS has withered to virtually nothing. Just three percent of households in AT&T California's service territory subscribe to its basic service. Consumers have overwhelmingly switched to mobile wireless service. They also have migrated to voice over internet protocol ("VoIP") offerings over broadband networks from cable, fixed wireless, and satellite providers. Where such adequate replacements exist, the COLR obligation has outlived its purpose and should be retired.

In the interest of compromise, however, AT&T California joins Cal Advocates in a proposal for an alternative pathway for COLR relinquishment and discontinuance of basic service predicated on a voluntary fiber deployment commitment. This compromise aside, the comments confirm that the Commission should not, and lawfully cannot, include a broadband mandate within the definition of MES. Broadband deployment can and should be supported by voluntary programs like the joint proposal, BEAD, CASF, and FFA. Comments on the proposed MES definition also generally support the staff's approach of jettisoning outdated service elements currently imposed on COLRs.

Moreover, as set forth in the staff proposal, COLRs should have a viable pathway, by offering MES, to relinquish their obligations in areas with "limited consumer choice." Thus, the Commission should reject attempts to add requirements that would effectively eliminate the ability to relinquish the COLR obligation in these areas.

Additionally, the staff's proposed approach for determining "qualified providers" and areas with "significant consumer choice" makes COLR relinquishment far too difficult in areas where an adequate replacement exists to preserve the availability of voice service. Yet, several commenters seek to raise the bar even beyond the staff proposal. Certain commenters also

continue to urge unwarranted limitations on consideration of wireless providers notwithstanding that they are the leading providers of voice service in California. Use of the FCC’s vetted National Broadband Map and a robust challenge process will ensure an accurate assessment of reliable wireless coverage. And the Commission certainly should reject proposals to penalize good-faith reliance on the FCC data.

The Commission similarly should not adopt the requirement of a formal application, the cap on the scope of relinquishment that can be obtained in a single application, and the “contiguity” requirement. These requirements not only would impose unnecessary burdens but could delay relinquishment for centuries. In addition, some commenters attempt to obtain regulatory outcomes the Commission has declined to adopt elsewhere. For instance, they would have the Commission impose special service-quality enforcement mechanisms and new resiliency requirements—in each case for COLRs alone. The Commission should also rebuff such proposals.

C. Recommended Changes

In addition to adoption of the Cal Advocates and AT&T California joint proposal, the Commission should recognize that consumers have virtually abandoned COLR basic service and adopt the following changes to the staff proposal to achieve meaningful and appropriate COLR reform:

- ***Eliminate Mandatory Broadband Deployment.*** The Commission should remove the LifeLine broadband element from the MES definition and eliminate any explicit or implicit mandate that COLRs deploy broadband.
- ***Streamline Relinquishment for Areas Without Demand.*** The Commission should permit a COLR to submit a Tier 2 advice letter to relinquish its COLR obligation in any census block where the U.S. Census Bureau reports no population or where the COLR does not serve any customer address with basic telephone service.

- ***Require Only One LifeLine Provider, of Any Type, for Relinquishment Based on Alternative Service.*** With 95 percent of LifeLine subscribers choosing wireless service and wireline LifeLine providers having limited footprints, the existence of a wireless LifeLine provider is sufficient, and the requirement for a second, wireline LifeLine provider would significantly constrain relinquishment opportunities.
- ***Determine Wireless Coverage Appropriately.*** The Commission should recognize government fixed and mobile broadband maps are the best-available evidence to demonstrate voice service at scale. The challenge process in the staff proposal would provide a sufficient backstop for customers in the event the map data on wireless coverage are inaccurate.
- ***Eliminate Arbitrary Limits on the Number and Scope of Applications.*** The Commission should set clear criteria for COLR relinquishment and identify acceptable data sources for demonstrating satisfaction of those criteria to permit COLRs to seek relinquishment via advice letters instead of applications. The Commission also should refrain from placing arbitrary limits on the territorial extent for which a COLR may seek relinquishment and should allow a COLR to seek to relinquish its obligation simultaneously in noncontiguous areas.⁵
- ***GO-133 Requirements Should Not Be Imposed for COLR Relinquishment.*** The Commission just revised General Order 133 and should not use this proceeding to add additional enforcement mechanisms for COLRs alone among the providers that are subject to General Order 133.⁶

II. THE COMMISSION SHOULD ADOPT CAL ADVOCATES AND AT&T CALIFORNIA’S JOINT PROPOSAL FOR COLR RELINQUISHMENT AND DISCONTINUANCE OF BASIC SERVICE BASED ON FIBER DEPLOYMENT.

As AT&T California explains in its opening comments, the Commission should adopt additional pathways for COLR relinquishment in areas with no demand and areas in which there is a commitment to deploy fiber.⁷ Together, Cal Advocates and AT&T California have now developed a proposal that would address this latter pathway related to fiber deployment. This

⁵ Alternately, not capping the number of relinquishment requests that a COLR may file in a year would make the contiguity requirement manageable. *See Pac. Bell Tel. Co. d/b/a AT&T Cal.’s (U 1001 C) Opening Comments on Admin. L. Judge’s Ruling Issuing Staff Proposal for Comments 13 n.38, 55–56 (filed Jan. 30, 2026) (“AT&T California Opening Comments”).*

⁶ Appendix B identifies where in these reply comments AT&T California addresses the various questions posed in the Ruling.

⁷ *See AT&T California Opening Comments at 64–65.*

joint proposal would advance the twin goals of network modernization and COLR reform. The proposal is attached to these reply comments as Appendix A.⁸

AT&T California and Cal Advocates' joint proposal would allow a COLR to relinquish its COLR status and discontinue basic service based on a voluntary commitment to deploy fiber to 20 percent of the total number of serviceable locations in the "Relief Area" (as defined in the joint proposal). The COLR would relinquish its obligation by filing a Tier 2 advice letter, which would specify the fiber deployment commitment for the defined Relief Area. Upon acceptance of the advice letter, the COLR would be entitled to relinquish its designation and be relieved of its obligation to provide tariffed basic service under state law.⁹ Customer notices would be provided as AT&T California stipulated in this proceeding or as otherwise required.¹⁰

Specifically, in the advice letter, the COLR would identify a Relief Area not to exceed one million serviceable locations. For that Relief Area, the COLR would commit to deploy fiber to 20 percent (described as a 1:5 build commitment in the joint proposal) of those locations. For example, in a Relief Area of one million serviceable locations, the COLR would commit to build fiber to 200,000 serviceable locations in the Relief Area. To qualify as a Relief Area, at least 80 percent of the serviceable locations must have at least one 1 Gbps wired broadband service offer available from one or more wireline providers, including the COLR. Locations where the COLR

⁸ The joint proposal does not resolve all issues related to COLR relinquishment, and AT&T California reserves its rights to pursue COLR relinquishment in other ways.

⁹ Discontinuance would be subject to any applicable FCC requirements related to the discontinuance of service.

¹⁰ See Meet and Confer Participants' Joint Stipulations exh. A (filed Aug. 5, 2025). Although AT&T California believes that customer notices are only truly necessary when a customer's service changes, it stands by its stipulation that notice should be provided at two points during the COLR withdrawal process—when the COLR first notifies the Commission of its intent to withdraw and when the withdrawal is effective. See *id.* Consistent with its stipulations, AT&T California's opening comments emphasize that customer notices should be narrowly tailored to avoid customer anxiety and confusion. See AT&T California Opening Comments at 65.

and other providers have been granted government funding to expand their fiber networks would count as locations offered at least 1 Gbps service when those locations are connected. The COLR would also commit to (a) completion of this deployment within ten years of approval of the advice letter; (b) offer voice or broadband service, using any technology available throughout the Relief Area; and (c) report quarterly to the Commission on the number of serviceable locations built to satisfy its commitment until the completion of its deployment in the Relief Area.

The proposal also contains guardrails to ensure that no customer is left behind during the relinquishment process and to address low income and disadvantaged communities. First, the COLR would commit to participate in the California LifeLine program for its standalone broadband or a broadband/voice service bundle offered to the newly deployed fiber serviceable locations in the Relief Area for some period of time. AT&T California proposes that this commitment term be no more than five years. This period is consistent with periods adopted by the Commission in its CASF and FFA programs as appropriate for service commitments to the newly deployed fiber locations.¹¹ Second, the COLR would agree to prioritize deployment in Relief Areas that overlap with the “Low Income Areas” and “Disadvantaged Communities” on the Commission’s Federal Funding Account Round 2 Public Map. “Low Income Areas” are those areas where the median household income is less than 80 percent of the county or the state, while “Disadvantaged Communities” are designated by the California Environmental Protection Agency based on economic, health, and environmental factors.¹² This map, which is based on

¹¹ See *Ord. Instituting Rulemaking Regarding Revisions to the Cal. Advanced Servs. Fund*, D.22-11-023, 2022 WL 17225711, at *41 (Cal. Pub. Utils. Comm’n Nov. 17, 2022) (“CASF Order”); *Ord. Instituting Rulemaking Regarding Broadband Infrastructure Deployment & To Support Serv. Providers in the State of Cal.*, D.22-04-055, 2022 WL 1523049, at *63 (Cal. Pub. Utils. Comm’n Apr. 21, 2022).

¹² See Cal. Pub. Utils. Comm’n, *Federal Funding Account 2025 Data Dictionary* (2025), <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/broadband-implementation-for-california/ffa-round-2/public-map-and-data/federal-funding-account-2025-data-dictionary.pdf>.

broadband availability data from the FCC’s National Broadband Map and the BEAD challenge process, provides data about median income and broadband availability in locations across the state.¹³ Finally, to ensure that the COLR meets its commitment, Cal Advocates and AT&T California agree that the Commission should be able to enforce the commitments made by the COLR using the Commission’s existing enforcement powers.

This voluntary pathway contrasts with the staff proposal to mandate broadband access. The latter would be a requirement that would obligate COLRs—but only COLRs—to deploy broadband.¹⁴ In contrast, the joint proposal is voluntary and does not raise jurisdictional concerns. Rather, it would recognize that, in areas where this extensive broadband deployment will occur, there would be no need to retain COLR requirements.

The joint proposal would provide enormous public interest benefits and should be adopted by the Commission. The proposal furthers carriers’ and the Commission’s shared desire to modernize California’s telecommunications networks and provide advanced communications technologies to all communities across the state. In contrast to the staff proposal to impose an unlawful broadband deployment mandate, the joint proposal would do so on a voluntary and lawful basis. The Commission should incorporate this joint proposal into its proposed rules, along with a similar path for expedited COLR relinquishment in areas with no demand.

III. THE COMMISSION SHOULD REVISE THE STAFF PROPOSAL FOR MODERNIZED ESSENTIAL SERVICE.

The comments confirm that the Commission should not include a broadband deployment mandate as part of the MES definition.¹⁵ The parties endorsing this proposed mandate fail to

¹³ See *CASF Order*, 2022 WL 17225711, at *35 (“‘Broadband Map’ means the California Interactive Broadband Map ...”); see also *FFA Map*.

¹⁴ See AT&T California Opening Comments at 28–29; *infra* Section III.A.

¹⁵ See AT&T California Opening Comments at 16–20, 23–25; Opening Comments of Consol. Commc’ns of Cal. Co., LLC (U 1015 C) on Admin. L. Judge’s Dec. 15, 2025 Ruling Issuing Staff Proposal for

demonstrate that the Commission has legal authority to adopt it, or that it would be sound policy to do so.

On the other hand, the Commission should adopt the staff proposal to eliminate COLRs' outdated legacy obligations to provide directory services, access to operator service, and one-time free blocking for information services and billing adjustments.¹⁶ Only TURN/CWA oppose this staff proposal to align COLR service obligations with marketplace reality,¹⁷ but they fail to provide any reasonable basis for retaining these anachronisms.

Finally, the comments reveal significant ambiguities regarding implementation of the staff's MES proposal. Among other things, the Commission should clarify that (a) MES does not need to be tariffed; (b) COLRs may withdraw basic service tariffs once they offer MES; and (c) any LifeLine component does not incorporate the basic service requirements included in General Order 153.

Comment 4–5 (filed Jan. 30, 2026) (“Consolidated Opening Comments”); Opening Comments of Frontier Cal. Inc. (U 1002 C), Citizens Telecomms. Co. of Cal. Inc. dba Frontier Commc’ns of Cal. (U 1024 C), Frontier Commc’ns of the Sw. Inc. (U 1026 C) (“Frontier”) on Assigned Admin. L. Judge’s Ruling Issuing Staff Proposal for Comment 3–4 (filed Jan. 30, 2026) (“Frontier Opening Comments”); Opening Comments of Calaveras Tel. Co. (U 1004 C), Cal-Ore Tel. Co. (U 1006 C), Ducor Tel. Co. (U 1007 C), Foresthill Tel. Co. (U 1009 C), Kerman Tel. Co. (U 1012 C), Pinnacles Tel. Co. (U 1013 C), The Ponderosa Tel. Co. (U 1014 C), Sierra Tel. Co., Inc. (U 1016 C), The Siskiyou Tel. Co. (U 1017 C), Volcano Tel. Co. (U 1019 C) (“Independent Small LECs”) on Admin. L. Judge’s Dec. 15, 2025 Ruling Issuing Staff Proposal for Comment 6–7 (filed Jan. 30, 2026) (“Independent Small LECs Opening Comments”); Opening Comments of Happy Valley Tel. Co. (U 1010 C), Hornitos Tel. Co. (U 1011 C), Winterhaven Tel. Co. (U 1021 C) (the “TDS Companies”) on Admin. L. Judge’s Dec. 15, 2025 Ruling Issuing Staff Proposal for Comment 2–3 (filed Jan. 30, 2026) (“TDS Companies Opening Comments”); Response of USTelecom – The Broadband Ass’n on the Ord. Instituting Rulemaking Proceeding To Consider Changes to Carrier of Last Resort Rules 2–3, 5–7 (filed Jan. 30, 2026) (“USTelecom Opening Comments”).

¹⁶ See AT&T California Opening Comments at 5–6.

¹⁷ See Opening Comments of The Util. Reform Network & Commc’ns Workers of Am., Dist. 9 on the Admin. L. Judge’s Ruling Issuing Staff Proposal for Comment 3–11 (filed Jan. 30, 2026) (“TURN/CWA Opening Comments”).

A. The Commission Should Not Impose a Broadband Mandate on COLRs.

As AT&T California and others explain,¹⁸ the Commission cannot lawfully compel COLRs to offer broadband throughout their territories and assert jurisdiction over the terms and conditions of internet access services offered over those facilities. Among other legal issues, doing so would jeopardize California’s ability to obtain federal BEAD funding.¹⁹ Nonetheless, several commenters endorse a broadband mandate on COLRs.²⁰ None, however, explains how this requirement would be lawful. In fact, the Commission lacks authority to impose such a mandate under state law, and any such mandate would be preempted by federal law.²¹

The California constitution and Public Utilities Code do not permit the Commission to mandate broadband deployment.²² In particular, the “public utilities” over which they grant the Commission regulatory jurisdiction do not include broadband providers.²³ Indeed, the Commission has recognized that its jurisdiction does not extend to non-telephony services that telephone corporations also offer, such as broadband. “It is well-established that Internet service is classified for state and federal regulatory purposes as an ‘information service’ and that state

¹⁸ See AT&T California Opening Comments at 16–20, 23–25; Consolidated Opening Comments at 6; Frontier Opening Comments at 3–4; Independent Small LECs Opening Comments at 6–7.

¹⁹ See AT&T California Opening Comments at 15.

²⁰ See Pub. Advocs. Off. Opening Comments on the Admin. L. Judge’s Ruling Issuing Staff Proposal for Comment 2–3 (filed Jan. 30, 2026) (“Cal Advocates Opening Comments”); Media Alliance Opening Comments at 4; Opening Comments of Small Bus. Util. Advocs. on Carrier of Last Resort & Network Modernization Staff Proposal 3 (filed Jan. 23, 2026) (“SBUA Opening Comments”); TURN/CWA Opening Comments at 22.

²¹ See AT&T California Opening Comments at 16–20, 23–25; Consolidated Opening Comments at 4–5; Frontier Opening Comments at 3–4; Independent Small LECs Opening Comments at 6–7; TDS Companies Opening Comments at 3–4; USTelecom Opening Comments at 5–7. To the extent adopting the staff proposal would result in the Commission’s exercising jurisdiction over all-distance VoIP service, that too is preempted. See AT&T California Opening Comments at 26–28. Indeed, TURN/CWA would require the tariffing and rate regulation of all MES. See TURN/CWA Opening Comments at 5–6.

²² See AT&T California Opening Comments at 16–17; Frontier Opening Comments at 3–4; Independent Small LECs Opening Comments at 6–7.

²³ Cal. Const. art. XII, §§ 3, 6; Cal. Pub. Util. Code § 216(a)(1).

commissions such as the California Public Utilities Commission do not have jurisdiction over information services even if the providers also provide ‘communications services’ that are subject to state regulation. Such is the case here.”²⁴

The broadband mandate would also be preempted by multiple provisions of the federal Communications Act. First, Section 230(e)(3) prohibits states from imposing “liability[ies]” on COLRs that failed to deploy broadband in ways dictated by the Commission.²⁵ Second, the mandate would conflict with Congress’s determination to place internet access under the light-touch Title I regime.²⁶ Third, regulatory authority over the interstate services offered over broadband is entrusted exclusively to the FCC.²⁷ Fourth, an unfunded mandate on COLRs—and only COLRs—to deploy contradicts Section 254(f)’s direction that all universal service requirements be “equitable and nondiscriminatory” and come with “specific, predictable, and sufficient” support.²⁸

The mandate would also raise grave concerns under the federal and California constitutions, both of which prohibit takings and require equal protection.²⁹ But the staff proposal would require COLRs alone to deploy broadband to high-cost areas where no support is available, and there is little chance they would be able to cover the costs of the extra

²⁴ *Peterson v. Verizon Cal., Inc. (U 1002 C)*, D.13-12-005, 2013 Cal. PUC LEXIS 677, at *2 (Dec. 5, 2013) (footnotes omitted).

²⁵ 47 U.S.C. § 230(e)(3). TURN/CWA’s proposal to require the tariffing of MES would only heighten the conflict with Section 230. *See* TURN/CWA Opening Comments at 5–6.

²⁶ *See* AT&T California Opening Comments at 25.

²⁷ *See id.* at 25–26; *see also id.* (discussing contrary rulings by the Second and Ninth Circuits).

²⁸ 47 U.S.C. § 254(f); *see* AT&T California Opening Comments at 28–29.

²⁹ *See* AT&T California Opening Comments at 29 & n.108.

deployment.³⁰ That is a taking. And imposing this regulatory burden on just COLRs is without any rational basis and raises serious equal protection concerns.³¹

The policy arguments advanced by commenters in favor of the broadband mandate also fail. No one disputes the benefits of greater broadband deployment, particularly to underserved areas.³² AT&T California has and continues to expand its broadband networks to underserved areas and offers affordable broadband plans. But the key policy question here is how best to achieve the goal of greater broadband deployment. The answer is clearly not an unfunded mandate on just a handful of market participants that, in many areas, are not even the leading providers of broadband. BEAD and other support programs are a clearly superior way of achieving greater broadband deployment on an equitable—and lawful—basis.³³ Nor does the unfunded mandate have any justification in areas where existing broadband providers already compete.

Finally, imposition of a broadband deployment requirement would have undesirable economic consequences. First, requiring COLRs to devote resources to building out broadband networks in areas where other providers already have deployed broadband risks forcing the COLR to divert capital that it otherwise would have used to deploy broadband to other areas.³⁴ Second, there is no reason to assume that the COLR would be the lowest-cost deployer in any given area, so requiring it to build the network everywhere in its service territory would inefficiently allocate the total capital available for broadband deployment.³⁵ Many areas will be

³⁰ *See id.* at 29–30.

³¹ *See id.* at 30–31.

³² *Cf.* Media Alliance Opening Comments at 4; SBUA Opening Comments at 3; TURN/CWA Opening Comments at 22.

³³ *See* Frontier Opening Comments at 3.

³⁴ *See* TDS Opening Comments at 6–7.

³⁵ *See* AT&T California Opening Comments at 21.

most efficiently served using wireless, satellite, or the expansion of existing cable networks. For these reasons, requiring COLRs to deploy broadband across their territories would fail the necessary assessment of “the economic effects” of such a decision required by Section 321.1(b) of the Public Utilities Code.³⁶

B. The Commission Should Eliminate the Basic Service Elements the Staff Identifies as Outdated Without Waiting for Deployment of Modernized Essential Service.

In its report, the staff undertook a detailed examination of the existing basic service elements and concludes that many were unnecessary.³⁷ The opening comments reflect general agreement that COLRs should no longer be required to provide directory services, billing provisions, blocking/billing adjustments, and operator assistance.³⁸ Indeed, these updates are already long overdue, and the Commission should make clear that these revisions will take effect upon adoption of the decision in this rulemaking and apply to basic service as well as MES.³⁹

Only TURN/CWA seriously oppose eliminating these regulatory relics,⁴⁰ but they fail to provide any justification for retaining them. TURN/CWA have no explanation as to why these elements are “essential” when 97 percent of households have abandoned the only service that

³⁶ Cal. Pub. Util. Code § 321.1(b) (requiring the Commission to “take all necessary and appropriate actions to assess the economic effects of its decisions”).

³⁷ See Carrier of Last Resort & Network Modernization Staff Report 50–65 (filed Dec. 15, 2025) (“Staff Report”).

³⁸ See AT&T California Opening Comments at 5–6; Consolidated Opening Comments at 5; Frontier Opening Comments at 4–6; Independent Small LECs Opening Comments at 4–6; TDS Companies Opening Comments at 2.

³⁹ See AT&T California Opening Comments at 6 n.15.

⁴⁰ Media Alliance generally supports the staff proposal with regard to eliminating basic service elements, but it raises some concern with regard to operator services. See Media Alliance Opening Comments at 4–5.

includes them.⁴¹ Nor do TURN/CWA consider the competitive harm of, and inefficiencies caused by, these mandates: they impose costs on COLRs that their rivals do not have to bear—costs that ultimately must be recovered from all POTS users even if they do not value or use these elements.⁴² In all events, TURN/CWA’s claims as to why these largely abandoned features are somehow critical to consumers do not withstand scrutiny.

Directory assistance. TURN/CWA seem to acknowledge that consumers routinely use the internet instead of directory assistance, but they assert there are privacy concerns with doing so.⁴³ Such concerns clearly do not stop consumers, however. To the extent TURN/CWA’s privacy concerns have merit, they present a general, industrywide concern, not a basis for requiring a single market participant to provide this rarely used service.⁴⁴

Billing provisions. It is hard to understand TURN/CWA’s complaint about the staff’s proposed changes to billing provisions.⁴⁵ The staff proposes to replace the existing billing elements incorporated into the definition of basic service with “more straightforward” requirements.⁴⁶ Furthermore, to the extent the staff suggests that the Commission can assert jurisdiction over all-distance rates,⁴⁷ the staff is proposing the Commission extend its regulatory authority further than it is allowed.⁴⁸

⁴¹ See Pac. Bell Tel. Co. d/b/a AT&T Cal.’s (U 1001 C) Opening Comments on Admin. L. Judge’s Ruling Regarding Comments on Topics Discussed at Aug. Workshop 1 n.3 (filed Nov. 21, 2025) (“AT&T California November 2025 Comments”); AT&T California Opening Comments at 58.

⁴² See Staff Report at 55–57, 63–65; see also Independent Small LECs Opening Comments at 5.

⁴³ See TURN/CWA Opening Comments at 7.

⁴⁴ See Staff Report at 56 (“Indeed, despite the existing obligation to offer access to these services as part of basic service, customers have dramatically reduced use of directory services.”). TURN/CWA acknowledge the staff’s finding regarding 211 service but never explain why it is not a viable alternative to directory assistance. Compare Staff Report at 55 with TURN/CWA Opening Comments at 7.

⁴⁵ See TURN/CWA Opening Comments at 8–9.

⁴⁶ Staff Report at 60

⁴⁷ See Staff Report at 56–61.

⁴⁸ See *supra* pages 11, 15.

More broadly, TURN/CWA seek regulation where it simply is not needed. Consumers overwhelmingly prefer the many alternatives available to POTS. Competitive market forces preclude COLRs from adopting the type of rate structures feared by TURN/CWA. COLRs that tried to impose per-call charges would only lose customers to their many rivals that offer flat-rate, unlimited-calling plans.

One-Time Free Blocking/Billing Adjustments. In its report, the staff observes that providing one-time free blocking of 900/976 information numbers and billing adjustments is no longer necessary because use of such services has disappeared due to the internet, major carriers have discontinued third-party billing, and FCC rules provide additional protections.⁴⁹ TURN/CWA do not seriously dispute the first two propositions; they merely assert the element must be maintained because the FCC may revise its truth-in-billing rules.⁵⁰

But TURN/CWA fail to acknowledge why the FCC is revisiting its rules: the FCC's existing third-party billing requirements address practices that “appear no longer to exist.”⁵¹ Further, while the FCC has proposed to revise some of its billing-related rules, it “propose[s] to retain the core of the billing rules.”⁵² Finally, the FCC proposes to retain its “prohibition against unauthorized charges.”⁵³ TURN/CWA advance no reason why these protections are insufficient, particularly in light of the disappearance of the concerns that led to the Commission's having adopted the blocking and billing adjustment element in the first instance.

⁴⁹ See Staff Report at 63–64.

⁵⁰ See TURN/CWA Opening Comments at 10.

⁵¹ *Protecting Consumers from Unauthorized Carrier Changes & Related Unauthorized Charges*, Notice of Proposed Rulemaking, 40 FCC Rcd. 5602, 5610 ¶ 23 (2025); see also *id.* (“[B]illing models have changed over the years and that third-party billing for telecommunications services is rare.”).

⁵² *Id.* at 5610 ¶ 25.

⁵³ *Id.*

Operator assistance. TURN/CWA do not contest the staff’s conclusion that, as a general matter, online search has eliminated the need for operator services.⁵⁴ Instead, they claim that this option is inadequate for individuals with certain disabilities.⁵⁵ TURN/CWA appear to acknowledge that individuals with such disabilities can use smart devices to get the information they need to find phone numbers, speech-to-text is available for those individuals who cannot type, and IP-relay services provide the same functionality as operator service (and more).⁵⁶ TURN/CWA, however, overlook that the California Connect program already offers IP-relay equipment at no cost, and access to more-advanced IP-enabled equipment is on the horizon thanks to the Commission’s work in the ongoing proceeding to modernize California Connect.⁵⁷

C. The Commission Should Clarify the Transition to Modernized Essential Service.

As AT&T California explains in its opening comments, operationalizing revisions to the COLR regime raises important and complex issues.⁵⁸ The comments highlight these issues, by identifying ambiguities concerning how the transition from the current basic service obligations to MES would occur under the staff proposal.

First, the comments reveal uncertainty on the important issue of whether COLRs must offer modernized essential services within five years everywhere they remain a COLR or only in “limited consumer choice” areas where they apply to relinquish their designations.⁵⁹ Second, the

⁵⁴ See Staff Report at 64.

⁵⁵ See TURN/CWA Opening Comments at 11; see also Media Alliance Opening Comments at 4–5 (raising concerns about elimination of operator services for the elderly and disabled, but without specifically opposing the staff proposal).

⁵⁶ See TURN/CWA Opening Comments at 11.

⁵⁷ See Proposed Decision Establishing Revisions & Updates to the Deaf & Disabled Telecomms. Program (Cal. Connect) 45, 67 (filed Jan. 15, 2026), in *Ord. Instituting Rulemaking To Consider Revisions & Updates to the Deaf & Disabled Telecomms. Program*, R.23-11-001.

⁵⁸ See AT&T California Opening Comments at 2–3.

⁵⁹ See EQUAL Opening Comments at 10–11; see also TDS Companies Opening Comments at 4.

staff proposal seems to imply that a COLR should be allowed to withdraw its basic service tariff when its advice letter seeking approval of its MES offering takes effect⁶⁰—otherwise, the existing basic service obligation would remain in effect. Third, as Consolidated, Frontier, and the Independent Small LECs explain, the staff proposal might reintroduce, by incorporating LifeLine requirements from General Order 153, the obsolete basic service elements that the staff proposes to eliminate.⁶¹ Thus, the Commission should confirm that General Order 153 does not implicitly prescribe any basic service elements for MES.

Finally, the Independent Small LECs, Frontier, and Consolidated assert that replacement of the term “basic service” with “modernized essential service” may cause “confusion.”⁶² They worry that various regulatory statutes, particularly concerning tariffs, refer to “basic service” and not “modernized essential service.” The Commission should address this concern by clarifying that MES is not tariffed, and statutory provisions governing tariffed offerings simply do not apply. For decades, this Commission and the FCC have recognized that tariffing services in the face of competition—as there unquestionably is for voice service almost everywhere people live in California—hurts consumers.⁶³ The Commission has no basis to reverse course now.

⁶⁰ See Staff Report at 1 & n.2, 13 & n.30.

⁶¹ See Consolidated Opening Comments at 5; Frontier Opening Comments at 5–6; Independent Small LECs Opening Comments at 8.

⁶² Independent Small LECs Opening Comments at 3; Frontier Opening Comments at 6; Consolidated Opening Comments at 5.

⁶³ Compare TURN/CWA Opening Comments at 5–6 with, e.g., *Ord. Instituting Rulemaking Proceeding To Consider Changes to Licensing Status & Obligations of Interconnected Voice over Internet Protocol Carriers*, D.24-11-003, 2024 Cal. PUC LEXIS 623, at *102–106 (Nov. 7, 2024); *Rulemaking on the Comm’n’s Own Motion To Establish a Simplified Registration Process for Nondominant Telecomms. Firms*, D.98-08-031, 1998 Cal. PUC LEXIS 592, at *35–36 (Aug. 6, 1998); *Ord. Instituting Rulemaking on the Comm’n’s Own Motion To Assess & Revise the Regulation of Telecomms. Utils.*, D.07-09-018, Cal. PUC LEXIS 428, at *141 (Sept. 6, 2007); *Policy & Rules Concerning Rates for Competitive Common Carrier Servs. & Facilities Authorizations Therefor*, Second Report & Order, 91 F.C.C.2d 59, 71 ¶ 24 (1982).

IV. THE COMMISSION SHOULD REJECT PROPOSALS TO RESTRICT COLR RELINQUISHMENT IN “LIMITED CONSUMER CHOICE” AREAS.

The staff proposal for “limited consumer choice” areas properly recognizes that there should be a path to COLR withdrawal, but the proposed pathway is too restrictive.⁶⁴ Foremost, it would require a commitment to deploy 100/20 Mbps broadband in all serviceable locations in an area, which is greater than necessary for voice service and even for Ultra HD 4K streaming or other video-intensive applications.⁶⁵ It would also require a 15-year service commitment after relinquishment approval. AT&T California’s opening comments explain why these requirements should not be adopted.⁶⁶

Certain parties advance even more restrictive proposals. For example, Media Alliance expresses skepticism that long-term commitments (15 years) would be effectively enforced,⁶⁷ but this Commission is more than capable of enforcing COLR commitments. Media Alliance also warns that customers risk post-commitment service gaps.⁶⁸ However, once a COLR has deployed facilities pursuant to its commitment, those facilities will not just disappear. As AT&T

⁶⁴ See generally Staff Report at 43–44. Where an adequate replacement voice service exists, the Commission should allow the COLR to relinquish its obligation without undertaking this pathway. As discussed above, Congress required that all universal service requirements be “equitable and nondiscriminatory” and come with “specific, predictable, and sufficient” support. See *supra* page 12 (discussing 47 U.S.C. § 254(f)). The Commission intended the 1996 designation of the incumbent local exchange carriers (“ILECs”) as COLRs to last for only three years, at which time it would select a new COLR. See *Rulemaking on Comm’n’s Own Motion into Universal Serv. & To Comply with the Mandates of Assembly Bill 3643*, D.96-10-066, 1996 Cal. PUC LEXIS 1046, at *329 (Oct. 25, 1996) (explaining that the auction mechanism that was to be created pursuant to the COLR rules would commence “in about three years” following the adoption of this decision, implying that the initial COLR term was to be approximately three years). Thirty years on, with an utterly transformed market structure, there is no reason for the ILECs alone to continue to bear this burden.

⁶⁵ See FCC, *Consumer Guide: Broadband Speed Guide* (2020), https://www.fcc.gov/sites/default/files/broadband_speed_guide.pdf.

⁶⁶ See AT&T California Opening Comments at 11–12, 14–34.

⁶⁷ See Media Alliance Opening Comments at 9–10.

⁶⁸ See *id.* at 10.

California discusses more fully below,⁶⁹ modern networks are capital-intensive assets designed to be operated over long time horizons. Providers do not just “walk[] away,” as Media Alliance suggests might happen,⁷⁰ and other operators almost certainly would acquire any already-deployed broadband networks that might become available.

RCRC, on the other hand, proposes a categorical ban on withdrawal in “limited consumer choice” areas because it, like Media Alliance, fears that the deployed broadband facilities would not continue to serve customers once the 15-year service commitment expires.⁷¹ RCRC’s reasons for this ban do not hold up to scrutiny. There is no reasonable chance that already-deployed and -operating broadband facilities would somehow disappear after the commitment ends.

V. THE COMMISSION SHOULD ALLOW RELINQUISHMENT WHERE AN ALTERNATIVE SERVICE WOULD PRESERVE VOICE SERVICE.

The proposed “significant consumer choice” standard strays beyond the scope the Commission set for this proceeding because it mandates multiple providers of broadband service. As the Assigned Commissioner put it, the Commission seeks to account for “the technological changes and the changes in law that have occurred over the past 30 years in providing communication services, while also ensuring that no one is disadvantaged due to a change in the Carrier of Last Resort rules and that all Californians have *access to safe, affordable, and reliable telephone service.*”⁷²

⁶⁹ See *infra* pages 23–24.

⁷⁰ Media Alliance Opening Comments at 10.

⁷¹ See Opening Comments of The Rural Cnty. Representatives of Cal. on Admin. L. Judge’s Ruling Issuing Staff Proposal 9–10 (filed Jan. 30, 2026) (“RCRC Opening Comments”).

⁷² Reporter’s Transcript, *Public Participation Hearing - Order Instituting Rulemaking To Consider Changes to the Commission’s Carrier of Last Resort Rules (R.24-06-012)*, Apr. 9, 2025, Vista, CA at 7 (Statement of Commissioner Reynolds) (emphases added).

Instead of focusing on telephone service, the staff proposes to permit COLR relinquishment using a “significant consumer choice” standard based on broadband service. Broadband service is not telecommunications service,⁷³ and the desired level and variety of broadband competition are outside the scope of the proceeding.⁷⁴ Yet, the staff proposal would continue to force carriers to act as COLRs even where voice service is effectively assured simply because the staff views the area as insufficiently competitive. Notwithstanding the inappropriately high bar set by the staff in the “significant consumer choice” standard, certain parties urge the Commission to lift it even higher. The Commission should reject these proposals and allow COLRs to relinquish their designations except where consumers lack an adequate alternative voice service.

A. Proposed Restrictions on Relinquishment Go Beyond Preservation of Voice Service.

As AT&T California explains in its opening comments, proposals that would require a relinquishing COLR to demonstrate the presence of two facilities-based wireline providers plus two mobile wireless providers—or other configurations that effectively require four or more providers—improperly transform the “significant consumer choice” inquiry into a competition-intensity test.⁷⁵ Instead, COLR relinquishment should turn on a test of “access to safe, affordable, and reliable telephone service.”⁷⁶ Universal service policy, which led to the

⁷³ See *Peterson v. Verizon Cal., Inc. (U 1002 C)*, D.13-12-005, 2013 Cal. PUC LEXIS 677, at *2 (Dec. 5, 2013) (stating, in a case involving DSL service, that “[i]t is well-established that Internet service is classified for state and federal regulatory purposes as an ‘information service’ and that state commissions such as the California Public Utilities Commission do not have jurisdiction over information services even if the providers also provide ‘communications services’ that are subject to state regulation”) (footnotes omitted); see also *Ohio Telecom Ass’n v. FCC*, 124 F.4th 993, 1001 (6th Cir. 2025).

⁷⁴ See Assigned Comm’r Scoping Memo & Ruling 4–6 (filed Feb. 4, 2025).

⁷⁵ See AT&T California Opening Comments at 32, 34.

⁷⁶ Reporter’s Transcript, *Public Participation Hearing - Order Instituting Rulemaking To Consider Changes to the Commission’s Carrier of Last Resort Rules (R.24-06-012)*, Apr. 9, 2025, Vista, CA at 7 (Statement of Commissioner Reynolds).

COLR regime in the first place, focuses on the availability of at least one voice service,⁷⁷ not the number of competitors. Raising the threshold to four providers would preclude meaningful COLR reform. Many areas in California with multiple, viable alternatives would not qualify for relinquishment.⁷⁸

The comments reinforce the inappropriateness of these heightened thresholds. Consolidated notes that requiring even two wireline broadband alternatives is economically unrealistic and would eliminate withdrawal opportunities in otherwise competitive markets.⁷⁹ Frontier similarly explains that such restrictive standards would introduce multiyear delays, effectively nullifying the pathway to relinquishment even where consumers demonstrably rely on competitive alternatives.⁸⁰ USTelecom underscores that the staff proposal operates as a four-provider test, which effectively prevents withdrawal in nearly all circumstances.⁸¹ The proposed requirement that there be a wireline LifeLine provider is especially constraining while offering little benefit, as 95 percent of LifeLine participants choose wireless service.⁸²

Despite the record's showing that the staff proposal contains an overly restrictive standard that would delay meaningful COLR reform or even prevent it entirely, several parties urge the Commission to add to the restrictions.⁸³ They propose, for example, requiring multiple facilities-based wireline broadband providers, ignoring wireless alternatives, or adding further

⁷⁷ See *Universal Service*, FCC, <https://www.fcc.gov/general/universal-service> (last visited Feb. 11, 2026).

⁷⁸ See AT&T California Opening Comments at 31–34.

⁷⁹ See Consolidated Opening Comments at 2–3.

⁸⁰ See Frontier Opening Comments at 6–7.

⁸¹ See USTelecom Opening Comments at 4.

⁸² See AT&T California Opening Comments at 9.

⁸³ See, e.g., Ctr. for Accessible Tech. Comments on Admin. L. Judge's Ruling Issuing Staff Proposal for Comment 11 (filed Jan. 30, 2026) ("CforAT Opening Comments"); EQUAL Opening Comments at 5–9; Media Alliance Opening Comments at 9–10, 15; RCRC Opening Comments at 4–5; TURN/CWA Opening Comments at 12–13, 15–17.

post-approval verification obligations. These recommendations effectively would prevent COLR relinquishment even where there are indisputably multiple available alternatives, which already serve virtually every household. Indeed, these proposals seem designed to make COLR relinquishment all but impossible to achieve or so burdensome that it will not be sought. Media Alliance makes this clear when it emphasizes that the Commission’s COLR regime must ensure access to the legacy copper network regardless of the ability to “select other technologies.”⁸⁴ None of these parties’ proposals appears intended to clarify where alternatives exist such that a COLR is not necessary.

Media Alliance and TURN/CWA also seek to justify their restrictive withdrawal standards by suggesting that an alternative provider relied upon to support relinquishment may later exit the market.⁸⁵ But this speculative argument is contrary to basic economics.⁸⁶ There is no rational economic basis for fearing that a functioning, built-out modern network will be abandoned and unused after COLR relinquishment. Modern networks are capital-intensive assets designed to be operated over long time horizons; providers do not invest billions of dollars only to walk away.⁸⁷ Even in the unlikely event a provider were to fail or enter bankruptcy, the network would almost certainly be purchased by another operator because the enormous costs of deploying these networks has already been incurred, but they will have ongoing revenue potential, making them attractive assets. Not only repeated CLEC consolidations but also recent acquisitions of Frontier by Verizon, Lumen’s mass-market fiber assets by AT&T, and Zply

⁸⁴ Media Alliance Opening Comments at 10.

⁸⁵ See Media Alliance Opening Comments at 12; TURN/CWA Opening Comments at 15.

⁸⁶ See Pac. Bell Tel. Co. d/b/a AT&T Cal.’s (U 1001 C) Opening Comments on Admin. L. Judge’s Ruling Regarding Comments on Topics Discussed at Apr. Workshops 14–15 (filed June 13, 2025) (“AT&T California June 2025 Comments”).

⁸⁷ See *id.* at 15.

Fiber by BCE Inc. demonstrate that better-capitalized companies seize these opportunities when they become available.⁸⁸

Nor does possible industry consolidation threaten to leave consumers without voice service⁸⁹—a merger or acquisition would leave a surviving facilities-based carrier. In all events, existing antitrust laws and the Commission’s own authority under Public Utilities Code Section 854 provide ample protection against potential harms from a merging of overlapping utilities.⁹⁰ For these reasons, AT&T California continues to urge the Commission to reject provider-count requirements that exceed what is needed to ensure “access to safe, affordable, and reliable telephone service.”

B. Wireless Service Offers a Legitimate Alternative to Wireline Service.

1. No Evidentiary Basis Supports Treating Wireless Service as an Inferior Alternative to Wireline.

A number of commenters seek to dismiss or downplay the relevance of wireless service as an alternative to a wireline COLR. These parties ignore marketplace reality. They have no answer to the undisputed fact that over three quarters of Californian adults rely exclusively on their mobile phones.⁹¹ The significant majority of Californians would not rely exclusively on

⁸⁸ See *id.* at 15–16; *Joint Application of Verizon Commc’ns Inc., Frontier Commc’ns Parent, Inc., Frontier Cal. Inc., Citizens Telecomms. Co. of Cal. Inc., Frontier Commc’ns of the Sw. Inc., Frontier Commc’ns Online & Long Distance Inc., & Frontier Commc’ns of Am., Inc. for Approval of the Transfer of Control of Frontier Cal. Inc. (U1002C), Citizens Telecomms. Co. of Cal. (U1024C), Frontier Commc’ns of the Sw. Inc. (U1026C), Frontier Commc’ns Online & Long Distance Inc. (U7167C), & Frontier Commc’ns of Am., Inc. (U5429C), to Verizon Commc’ns Inc. Pursuant to Cal. Pub. Utils. Code Section 854*, D.26-01-023, 2026 Cal. PUC LEXIS 23 (Jan. 15, 2026); *AT&T-Lumen Transaction*, AT&T, <https://investors.att.com/financial-reports/att-lumen-transaction> (last visited Feb. 11, 2026); *BCE Completes Acquisition of Zply Fiber, Accelerating Its Fiber Growth Strategy*, zplyfiber (Aug. 1, 2025), <https://zplyfiber.com/news/press-release/zply-bce>.

⁸⁹ Cf. TURN/CWA Opening Comments at 15.

⁹⁰ See AT&T California June 2025 Comments at 14–15; see also Cal. Pub. Util. Code § 854.

⁹¹ See Nat’l Ctr. for Health Stat., *National Health Interview Survey Early Release Program 1* (2025), https://www.cdc.gov/nchs/data/nhis/earlyrelease/Wireless_state_202506.pdf (finding that, as of 2023,

their mobile phones “if they were dissatisfied with wireless service or found it to be unreliable” in their homes.⁹²

Consumers cut the cord because of the billions and billions of dollars wireless providers have invested in California over the last decade to expand their networks’ coverage, capacity, and redundancy.⁹³ Not only have these carriers enlarged the geographic scope of their wireless networks in California, but their investment in increased “infrastructure and redundancy” has also made “mobile service ... more reliable.”⁹⁴ Thus, as AT&T California, CTIA, Frontier, and USTelecom explain, wireless service is an alternative telecommunications service for the vast majority of Californians, and the Commission should treat it as such in crafting new COLR rules.⁹⁵

Rather than confront the undisputed facts about reliance upon wireless, parties relate stories (many of them old) of the absence of wireless coverage. Stale complaints about wireless coverage say nothing about today’s expanded coverage⁹⁶—or about the future improvements

76.6 percent of California adults relied exclusively on their wireless phones) (“2025 Nat’l Ctr. for Health Stat. Survey”).

⁹² Frontier Opening Comments at 2; *see id.* at 8 (“Consumers would not rely primarily on wireless service if the service were not reliable.”); *see also* USTelecom Opening Comments at 5 (“The reality is that in today’s telecommunications marketplace not only is mobile service the preferred consumer choice in most instances for voice services, it has also become a far more robust service in that last ten years with densified networks and ever evolving wireless technology.”); Comments of CTIA on Admin. L. Judge’s Ruling Issuing Staff Proposal for Comment 4–5 (filed Jan. 30, 2026) (“CTIA Opening Comments”); AT&T California Opening Comments at 37–38.

⁹³ *See* Frontier Opening Comments at 8 (citing Staff Report at 23).

⁹⁴ Staff Report at 23.

⁹⁵ *See* AT&T California Opening Comments at 37–39; CTIA Opening Comments at 4–5; Frontier Opening Comments at 5, 7–9; USTelecom Opening Comments at 4–5; *see also* Consolidated Opening Comments at 3, 7–8; TDS Companies Opening Comments at 12.

⁹⁶ *See, e.g.,* Sue Marek, *Comparing 5G Wireless Rural/Urban Connectivity in the 50 U.S. States*, Ookla, <https://www.ookla.com/articles/5g-wireless-rural-urban-us-states> (Feb. 18, 2024) (describing T-Mobile’s, AT&T’s, and Verizon’s expansion of wireless coverage into rural areas); *Upgrading California’s Network for More Connectivity*, AT&T Connects (Oct. 6, 2025), <https://www.attconnects.com/stories/upgrading-californias-network-for-more-connectivity/> (highlighting

from providers' continued investments.⁹⁷ Moreover, parties make a specious argument when they point to the experiences of Californians who live in areas where reliable wireless coverage does not yet exist.⁹⁸ Wireless service is not an alternative in areas without coverage. And the FCC's vetted wireless coverage maps combined with a robust customer-challenge process address that concern. The relevant question is, where reliable wireless coverage exists, should the Commission treat it as a viable alternative for voice service for consumers. The consumer preference for, and reliance upon, mobile wireless over wireline makes clear that this question should be answered affirmatively.

The remaining objections to recognizing wireless service as a full alternative do not withstand scrutiny. Some commenters suggest that outages from fires or other disasters make wireless unreliable.⁹⁹ But the opposite is true. For example, the California Alarm Association's representative stated that her industry's "standard is cellular ... because it has better protection

AT&T's \$14 billion investment in network infrastructure from 2020 to 2024 and documenting new cell site builds throughout California).

⁹⁷ See *Upgrading California's Network for More Connectivity*, AT&T Connects (Oct. 6, 2025), <https://www.attconnects.com/stories/upgrading-californias-network-for-more-connectivity/>; *T-Mobile-Sprint Merger Compliance*, Cal. Pub. Utils. Comm'n, [https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/t-mobile-sprint-merger-compliance#:~:text=Offer%20the%20California%20LifeLine%20Program,AG\)%20regarding%20the%20Proposed%20merger](https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/t-mobile-sprint-merger-compliance#:~:text=Offer%20the%20California%20LifeLine%20Program,AG)%20regarding%20the%20Proposed%20merger) (last visited Feb. 12, 2026); Jeff Baumgartner, *California Approves Verizon-Frontier Deal...with Conditions*, Light Reading (Jan. 15, 2026), <https://www.lightreading.com/broadband/california-approves-verizon-frontier-deal-with-conditions>; see also *AT&T Commitment To Help Close the Digital Divide Increases to \$5 Billion*, AT&T (Apr. 4, 2024), <https://about.att.com/story/2024/digital-divide-recommitment.html?source=EB00CO0000000000L>; *The New T-Mobile 5G for Good*, T-Mobile, <https://www.t-mobile.com/5g/new-t-mobile-uncarrier-1-0> (last visited Feb. 9, 2026).

⁹⁸ See EQUAL Opening Comments at 2–3; Media Alliance Opening Comments at 11; TURN/CWA Opening Comments at 13.

⁹⁹ See Opening Comments of EMF Safety Network Regarding Carrier of Last Resort & Network Modernization Staff Proposal R.24-06-012, at 4 (filed Jan. 30, 2026) ("EMFSN Opening Comments"); EQUAL Opening Comments at 2–3; TURN/CWA Opening Comments at 16–18; see also SBUA Opening Comments at 4–5.

for our customers.”¹⁰⁰ Indeed, she explained that wireless connectivity is safer in a fire because wireless signals go through the air while wireline connections can burn.¹⁰¹ And, again, marketplace evidence shows that consumers clearly believe they can safely rely on mobile wireless service.

CforAT and other parties note that “mobile providers’ services may not meet the needs of individuals with disabilities.”¹⁰² CTIA refutes these claims:

[W]ireless service offers significant benefits for consumers with disabilities, including TTY compatibility. Wireless providers’ November 2025 filings in this docket confirm that wireless service is compatible with TTY and TTY Relay. Wireless services also enable numerous other advances in communications accessibility beyond hearing and speech disabilities, helping people across the disabilities community to work, participate in civic life, and stay connected in myriad innovative ways.¹⁰³

In short, for the large majority of Californians with reliable wireless coverage, the Commission lacks substantial evidence to distinguish wireless and wireline alternatives in COLR-relinquishment analyses.¹⁰⁴

¹⁰⁰ August 22, 2025 Workshop Video 2:44:22–2:45:39 (statement of Sarah Wilson).

¹⁰¹ *See id.*; *see also id.* at 2:42:37–48 (statement of Sarah Wilson).

¹⁰² CforAT Opening Comments at 15 (citing Staff Report at 23–24); *see also* TURN/CWA Opening Comments at 7–8, 11.

¹⁰³ CTIA Opening Comments at 5 (footnotes omitted) (citing AT&T California November 2025 Comments at 8–11; T-Mobile W. LLC’s Response to Admin. L. Judge Glegola’s Oct. 1, 2025 Ruling Regarding Comments on Topics Discussed at Aug. 22, 2025 Workshop 2–3 (filed Nov. 21, 2025); Comments of Verizon on ALJ Ruling Regarding Topics Discussed at Aug. 22, 2025 Workshop 3–5 (filed Nov. 21, 2025)); *see also* AT&T California Opening Comments at 38–39; AT&T California November 2025 Comments at 11 & attach. A (explaining that only one California Connect device that connects to a TDM telephone line is neither wireless- nor VoIP-compatible and that a different model of that sole device is VoIP-compatible).

¹⁰⁴ In their respective comments, no other party argues that fixed wireless service or satellite service should not count as an alternative. Accordingly, AT&T California does not repeat its explanation of why they should. *See* AT&T California Opening Comments at 35–36, 39–41.

2. Coverage Maps and the Challenge Process Best Establish Wireless Coverage.

Wireless services (both fixed and mobile) should be considered an alternative where coverage exists. Cal Advocates and AT&T California agree on the basic features of an approach for establishing where such reliable wireless coverage exists. First, objective maps should “lay the foundation” for coverage determinations.¹⁰⁵ Second, a customer “challenge process is necessary for times when mobile service may be inadequate in specific locations for unforeseen circumstances.”¹⁰⁶ A customer would initiate this challenge process by “document[ing]” a lack of coverage” and “notify[ing] their COLR.”¹⁰⁷

Although AT&T California and Cal Advocates disagree on some aspects of how to determine wireless coverage, Cal Advocates do not suggest there is a need to test coverage at even a sample of locations in addition to objective map data and the customer challenge process. That makes sense. As AT&T California explains, the challenge process “would provide a sufficient backstop for particular instances where the map data prove to be inaccurate predictions of indoor wireless service.”¹⁰⁸ The extensive testing advocated by some parties¹⁰⁹ seems designed to block COLR reform given the sheer impracticability of testing even a significant

¹⁰⁵ Cal Advocates Opening Comments at 19; *accord* AT&T California Opening Comments at 44–45.

¹⁰⁶ Cal Advocates Opening Comments at 21–22; *accord* AT&T California Opening Comments at 46 (“A COLR should not have to provide further verification of indoor coverage absent a specific rebuttal of its map-based evidence. The staff proposal includes a challenge process that provides a reasonable mechanism for presenting such specific rebuttals. AT&T California supports adoption of such a process. It would provide a sufficient backstop for particular instances where the map data prove to be inaccurate predictions of indoor wireless service.” (footnotes omitted)); *see also* Staff Report at 38–39, 72 (proposing a challenge process).

¹⁰⁷ Cal Advocates Opening Comments at 22.

¹⁰⁸ AT&T California Opening Comments at 46.

¹⁰⁹ *See* Media Alliance Opening Comments at 7–8, 15 (stating there should be “field testing throughout the affected region, with an emphasis on geographically complex terrain”); *see also* EQUAL Opening Comments at 18–23; EMFSN Opening Comments at 6; SBUA Opening Comments at 12–13.

portion of the approximately ten million broadband serviceable locations in California.¹¹⁰ With hundreds of thousands of census blocks that intersect with just AT&T California’s service territory, even sampling at the census-block level would be prohibitive.¹¹¹ Leaving aside whether COLRs could accomplish the task, indoor testing at every location, as RCRC suggests,¹¹² would require “invasive intrusions into customer homes.”¹¹³

The FCC’s National Broadband Map should be used rather than individual provider maps. Although AT&T California agrees with Cal Advocates on the points discussed above, it disagrees with Cal Advocates’ suggestion that the Commission require provider propagation (or coverage) maps instead of government maps for this purpose.¹¹⁴ Government fixed and mobile broadband maps generally, and the FCC’s National Broadband Map specifically, are the best-available evidence to demonstrate the presence of other voice providers at scale.¹¹⁵ AT&T California believes that wireless companies generally use the same underlying propagation modeling for the data they provide for government maps that they use to generate their own individual propagation maps. However, the government maps offer certain advantages over providers’ individual propagation maps.

¹¹⁰ See FCC, Indus. Analysis Div., Off. Econs. & Analytics, *Internet Access Services: Status as of June 30, 2024*, at 13 fig. 9 (May 2025), <https://docs.fcc.gov/public/attachments/DOC-411463A1.pdf>.

¹¹¹ See AT&T California Opening Comments at 43 (noting that there are over 353,000 census blocks that intersect with AT&T California’s service territory).

¹¹² See RCRC Opening Comments at 10.

¹¹³ Consolidated Opening Comments at 3; see also Frontier Opening Comments at 13 (“Accessing customer premises creates inconveniences for customers and would be extremely costly for carriers.”); TDS Opening Comments at 12; AT&T California Opening Comments at 43.

¹¹⁴ See Cal Advocates Opening Comments at 19–21.

¹¹⁵ See AT&T California June 2025 Comments at 26–29; April 4, 2025 Workshop Video at 1:36:39–1:37:14 (statement of Nevada Commissioner Randall Brown); see also L.B. 311, 109th Leg., Reg. Sess., § 4(2)(b), (d) (Neb. 2025) (allowing COLR relinquishment based on “data from the Federal Communications Commission’s Broadband Data Collection [the National Broadband Map] that is available at the time of the application”).

Cal Advocates nonetheless argue against use of the National Broadband Map, but its claims do not hold up. Cal Advocates object that the National Broadband Map “cannot be relied upon because its purpose is to show where *outdoor broadband service* is available.”¹¹⁶ Cal Advocates are right that the National Broadband Map depicts outdoor coverage, but it includes data for voice coverage as well as mobile broadband. As CTIA explains, “per FCC rules, wireless providers also submit granular voice coverage mapping data as part of their [Broadband Data Collection] submissions. This voice mapping data is available ... on the Data Downloads section of the FCC’s National Broadband Map website.”¹¹⁷

Moreover, the provider propagation maps that Cal Advocates prefer also are designed to show outdoor coverage. The government maps, including the National Broadband Map, begin with the same process to predict outdoor coverage as the provider propagation maps.¹¹⁸ Cal Advocates’ description of the process applies equally to both government and provider maps:

[E]ngineers and network planners ... model[] the strength of wireless signal coverage based on the equipment they ... have already installed, the frequency that equipment ... is already emitting, the parameters of how that equipment will be installed (height, tilt, azimuth), the transmission power that will be allocated, and the environmental conditions that may impact service. These network design parameters are entered into industry-standard software to generate a propagation map that shows the ... existing wireless coverage from that [cell site] base station.¹¹⁹

In each case, the outdoor coverage shown in a government map or a provider propagation map will be somewhat greater than the indoor coverage because of “signal deterioration as the

¹¹⁶ Cal Advocates Opening Comments at 18 (emphasis added).

¹¹⁷ CTIA Opening Comments at 3–4 (footnotes omitted).

¹¹⁸ *Compare* CTIA Opening Comments at 1–2 *with* Cal Advocates Opening Comments at 19.

¹¹⁹ Cal Advocates Opening Comments at 19 (footnote and descriptions of modeling future plans omitted); *see also* AT&T California Opening Comments at 44 & n.173 (explaining that government broadband maps are based on propagation modeling and citing sources).

wireless frequency passes through the exterior walls of a home” or other building (“building loss”).¹²⁰

As both government maps and provider propagation maps show outdoor coverage, it seems that Cal Advocates’ real objection to the National Broadband Map is that it shows coverage at a Reference Signal Received Power (“RSRP”) of -120 dBm outdoors instead of the -84 dBm level Cal Advocates claim is appropriate.¹²¹ However, for years, the FCC has maintained that -120 dBm represents reliable outdoor wireless voice coverage.¹²² Cal Advocates base their stronger proposed threshold on an engineering statement from an AT&T Mobility engineer that a tower company submitted in connection with a zoning application for a specific new wireless communication facility. Given the intense competition among mobile wireless providers, they base such applications on the coverage necessary to provide the most reliable and

¹²⁰ Cal Advocates Opening Comments at 20. Cal Advocates propose six decibels as a “reasonable” expectation for building loss in the case of “exterior walls made from standard glass and wood.” *Id.* Six decibels aligns with International Telecommunications Union (“ITU”) measurements of building losses at private homes. See Int’l Telecomms. Union, ITU-R P.679-2 tbl. 2, *Propagation Data Required for the Design of Broadcasting-Satellite Systems* (1999) (presenting building loss measurements at private homes for varying frequencies, polarizations, exterior construction materials, and areas of insulation that average to 6 dBm) (attached as Appendix C). AT&T California requests the Commission to take official notice of this document pursuant to Rule 13.10 of its Rules of Practice and Procedure. While the 1999 version of this document has been superseded, the building loss measurements it reports remain valid. See Int’l Telecomms. Union, ITU-R P.679-4, *Propagation Data Required for the Design of Broadcasting-Satellite Systems* (2015).

¹²¹ Compare 47 C.F.R. § 1.7004(c)(3)(v) and FCC, *Broadband Data Collection 50*, § 8.1.1 (Nov. 25, 2024), <https://www.fcc.gov/sites/default/files/bdc-availability-data-specifications.pdf>, with Cal Advocates Opening Comments at 20–21. Cal Advocates’ figure should be -90 dBm even under its own logic because Cal Advocates subtract -6 dBm for building loss that is already included in the -90 dBm baseline figure. See Cal Advocates Opening Comments at 20–21 (citing an engineering statement that an RSRP of -90 dBm outdoors would result in acceptable indoor coverage). Assuming six decibels of building loss, the engineering statement Cal Advocates cite would imply that -96 dBm RSRP represents acceptable indoor coverage.

¹²² See *Establishing the Digital Opportunity Data Collection*; et al., Third Report and Order, 36 FCC Rcd. 1126, 1142 ¶ 37 (2021) (unanimous bipartisan decision adopting 47 C.F.R. § 1.7004(c)(3)(v) with -120 dBm as the threshold RSRP for stationary outdoor 4G LTE and 5G mobile wireless coverage).

robust indoor data service on a wireless device, which can exceed what is necessary for reliable indoor voice coverage.¹²³

In any event, this proceeding does not require the Commission to set an RSRP threshold for maps used as the “foundation” for wireless coverage assessments. With over three quarters of California adults relying exclusively on mobile wireless service for voice communications, and millions more mostly relying on mobile service,¹²⁴ the appropriate RSRP threshold is an academic question in the vast majority of cases. Clearly, Californians overwhelmingly find their indoor signal strength to be sufficient. And the customer-challenge process would identify instances where consumers may not have reliable indoor coverage.

Cal Advocates’ opposition to the use of government maps also fails to account for the many ways they would be superior to use of individual provider maps as a practical matter. First, government maps undergo external vetting. The National Broadband Map has a particularly robust challenge process, which improves its data with each semiannual update, and these improvements are reflected in the publicly available map data.¹²⁵ RCRC criticizes the National

¹²³ See *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Inv.*; et al., Declaratory Ruling and Third Report and Order, 33 FCC Rcd. 9088, 9107 ¶ 40 n.95 (2018) (explaining that the analysis for when a local government may prevent deployment of infrastructure “focuses on the service the provider wishes to provide, incorporating the capabilities and performance characteristics it wishes to employ, including facilities deployment to provide existing services more robustly, or at a better level of quality, all to offer a more robust and competitive wireless service for the benefit of the public”); see also *T-Mobile W. Corp. v. City of Huntington Beach*, No. CV 10-2835 CAS (Ex), 2012 U.S. Dist. LEXIS 148170, at *15 (C.D. Cal. Oct. 10, 2012) (“Providing quality in-building voice and data services, with sufficient system capacity and high-speed data rates, is critical to T-Mobile’s customers and is essential to T-Mobile’s ability to compete”).

¹²⁴ See *2025 Nat’l Ctr. for Health Stat. Survey* (finding that, as of 2023, 76.6 percent of California adults relied exclusively and 14.7 percent relied mostly on their wireless phones for voice communications).

¹²⁵ See *Fabric Challenge Process*, FCC Broadband Data Collection Help Ctr. (Aug. 13, 2024), <https://help.bdc.fcc.gov/hc/en-us/articles/8554187214107-Fabric-Challenge-Process> (providing guidance for governmental, institutional, commercial, and individual challenges to the National Broadband Map).

Broadband Map because inaccuracies have surfaced through challenges.¹²⁶ To the contrary, this criticism illustrates that the challenge process works as intended to improve the data.

Second, the data from government maps are fully and publicly available. In contrast to government maps, the data from the provider propagation maps suggested by Cal Advocates typically are not available to the public and are not routinely shared among competitors. Additionally, the National Broadband Map offers data downloads that enable “bulk” analysis instead of searches for a single address at a time.

Third, the National Broadband Map requires wireless providers to model their coverage based on narrowly defined parameters, including specified RSRP levels.¹²⁷ On the other hand, providers may pick a different RSRP threshold for their own internal maps, and they may pick different thresholds for different purposes. There thus is no certainty that each provider’s propagation map coverage data would reflect the same RSRP threshold—let alone that each provider’s map coverage data would reflect any particular value. Provider propagation maps, therefore, would not work the way Cal Advocates envision. For these reasons, the Commission should permit COLRs to use government maps, including the National Broadband Map, to demonstrate coverage.

The Commission should reject EQUAL’s flawed testing proposal. In contrast to the reasonable basic approach for determining wireless coverage on which Cal Advocates and AT&T California agree, EQUAL proposes a complicated protocol involving a “desktop study”

¹²⁶ See RCRC Opening Comments at 4.

¹²⁷ See *Formatting Mobile Voice Availability Coverage Maps*, FCC, <https://help.bdc.fcc.gov/hc/en-us/articles/6047464151195-Formatting-Mobile-Voice-Availability-Coverage-Maps> (last visited Feb. 8, 2026); FCC, *Broadband Data Collection* 49–72, §§ 8–9 (Nov. 24, 2025), <https://www.fcc.gov/sites/default/files/bdc-availability-data-specifications.pdf>.

followed by CalSPEED-based field testing guided by the desktop study.¹²⁸ As an initial matter, CalSPEED measurements do not provide a valid estimate of customer voice call experience.¹²⁹ CalSPEED tests the path of unprioritized broadband data traffic, including over the public internet, and not the path of prioritized wireless voice traffic transferred directly from carrier to carrier.¹³⁰ In addition, EQUAL’s protocol involves multiple test points in each census block—sometimes including every location in the census block.¹³¹ As explained above, this volume of testing would be impracticable.¹³²

Furthermore, EQUAL’s protocol includes metrics (signal-to-interference-plus-noise ratio (“SINR”), mean opinion score (“MOS”), and jitter) that typically are not captured during drive tests because they offer little insight into future network performance or customer call experiences. SINR levels are highly volatile, so a measurement at one instant says little about the level at another instant. MOS and similar estimates are adequate for network-planning purposes but do not reliably predict actual customer experience at particular places.¹³³ Also, because voice calls receive priority and have a higher quality of service than most traffic, jitter has little relevance for estimation of indoor wireless voice coverage.¹³⁴ Most importantly, however, testing of the sort proposed by EQUAL would not add to the protections of the customer-

¹²⁸ See EQUAL Opening Comments at 5, 19–23.

¹²⁹ See AT&T California Opening Comments at 47–50.

¹³⁰ See *id.* at 47–49.

¹³¹ See EQUAL Opening Comments at 21–22.

¹³² See *supra* pages 28–29

¹³³ See AT&T California Opening Comments at 46–47 (explaining that use of MOS in this way is contrary to ITU guidelines and was not part of the FCC-approved plan for testing AT&T Phone – Advanced).

¹³⁴ See *id.* at 51 n.195.

challenge process.¹³⁵ Without any incremental benefit, it would run afoul of Public Utilities Code Section 321.1(b) and be arbitrary and capricious to mandate such a complicated protocol.

C. The Commission Should Reject Proposals To Penalize Good-Faith Consumer Choice Analyses If Contrary Facts Later Emerge.

CforAT and EQUAL would have the Commission punish a COLR if customer challenges or other subsequent circumstances indicate that a consumer choice analysis advanced in good faith is judged to have been incorrect.¹³⁶ CforAT and EQUAL contend that such measures are necessary to “deter” COLRs from making overstated claims about available alternatives.¹³⁷ To address these concerns, the Commission should set clear standards for which alternatives count under what circumstances and for acceptable objective evidence.

But, when a standard is ambiguous, the First Amendment would forbid penalizing a COLR for advancing a reasonable, good-faith interpretation of the standard—even if the Commission later disagrees with that interpretation.¹³⁸ And, even if the standard is unambiguous, the First Amendment precludes—and it is fundamentally unfair and a violation of due process to impose—penalties for good-faith analyses based on the available evidence (*e.g.*, wireless coverage maps) that subsequently discovered facts (*e.g.*, information from customer challenges) contradict.¹³⁹ For these reasons, the Commission should reject CforAT’s and EQUAL’s penalty proposals.

¹³⁵ See *supra* page 28.

¹³⁶ See CforAT Opening Comments at 29; EQUAL Opening Comments at 25–26.

¹³⁷ CforAT Opening Comments at 29; see EQUAL Opening Comments at 25.

¹³⁸ See *Bill Johnson’s Rests. v. NLRB*, 461 U.S. 731, 742–43 (1983) (“[c]onsidering the First Amendment right of access to the courts” and related state interests, “[t]he filing and prosecution of a well-founded lawsuit may not be enjoined as an unfair labor practice,” even if filed with retaliatory intent); *id.* at 743 (distinguishing “baseless” suits); *Cordova v. Univ. Hosp. & Clinics*, 92 F.4th 266, 274 (5th Cir. 2024) (recognizing the First Amendment’s protection of “nonfrivolous arguments,” even if “novel”).

¹³⁹ See *Bartko v. Sec. & Exch. Comm’n*, 845 F.3d 1217, 1223 (D.C. Cir. 2017) (stating that the Due Process Clause of the Fourteenth Amendment forbids agencies from taking actions that “impair[] rights a

VI. UNWARRANTED PROCEDURES WOULD UNNECESSARILY DELAY COLR REFORM.

In its opening comments, AT&T California explains that the staff proposal provides insufficient justification for a number of procedural elements that would delay or even preclude COLR relinquishment where appropriate.¹⁴⁰ Several parties, however, endorse three such procedural requirements: the requirement of a formal application, the cap on the scope of relinquishment that can be obtained in a single application, and the “contiguity” requirement. These commenters, however, fail to justify these requirements or to address the valid concerns AT&T California raised.¹⁴¹

The application requirement. Several commenters support the staff proposal that COLRs submit a formal application in order to seek relinquishment.¹⁴² A formal application, however, is not necessary if the Commission creates a COLR relinquishment framework governed by clear criteria and sets forth the data sources and evidence that would be deemed sufficient to demonstrate satisfaction of those criteria.¹⁴³ Under such a framework, the staff would have specific and precise guidance necessary to decide the matter, so a Tier 2 advice letter process

party possessed when he acted, increase[] a party’s liability for past conduct, or impose[] new duties with respect to transactions already completed”); *Cordova*, 92 F.4th at 274.

¹⁴⁰ See AT&T California Opening Comments at 57–60.

¹⁴¹ There similarly is no basis for CforAT’s proposal to prohibit COLRs from seeking relinquishment within 24 months of a transaction requiring approval under Section 851 or 854 of the Public Utilities Code or to enter into such a transaction while it is seeking relinquishment or during a provisional withdrawal period. See CforAT Opening Comments at 20–21.

¹⁴² See, e.g., SBUA Opening Comments at 12; TURN/CWA Opening Comments at 1.

¹⁴³ See AT&T California Opening Comments at 54; see also Consolidated Comments at 2 (advocating for a Tier 3 advice letter process for COLR relinquishment where COLRs can define the appropriate relinquishment area based on data and competitive conditions that demonstrate the satisfaction of the “significant consumer choice” definition).

could be appropriately used.¹⁴⁴ The advice letter process would significantly streamline the disposition of relinquishment requests and reduce the burden on Commission resources.

The 5,000-unit cap. CforAT argues that each application should be capped at the lesser of 20 percent of a COLR's total units within its territory or 5,000 units.¹⁴⁵ Although CforAT, like the staff,¹⁴⁶ is not entirely clear what it means by "units," there are millions of households and serviceable residential locations in AT&T California's territory alone.¹⁴⁷ Even conservatively assuming there were just one million relevant "units," and each application were resolved in a year, CforAT would have it take at least 200 years for AT&T California to obtain territory-wide relinquishment.

CforAT provides no justification for its proposed limit. It speculates that "large" applications are problematic because of the risk "that large numbers of customers might find themselves without service."¹⁴⁸ But 97 out of every 100 households in AT&T California's service territory do not buy basic voice service from the COLR today, and the purpose of relinquishment-request proceedings should be to identify those locations where existing basic service customers, in fact, have alternatives to the COLR. CforAT's procedural proposal seems designed to nullify COLR reform.

¹⁴⁴ See AT&T California Opening Comments at 54.

¹⁴⁵ See CforAT Opening Comments at 26.

¹⁴⁶ See AT&T California Opening Comments at 55 n.208 (discussing ambiguity in staff's use of the term "units").

¹⁴⁷ A serviceable location can have more than one household. See *About the Fabric: What a Broadband Serviceable Location (BSL) Is and Is Not*, FCC Broadband Data Collection Help Ctr. (July 31, 2025), <https://help.bdc.fcc.gov/hc/en-us/articles/16842264428059-About-the-Fabric-What-a-Broadband-Serviceable-Location-BSL-Is-and-Is-Not>.

¹⁴⁸ CforAT Opening Comments at 26.

The contiguity requirement. A few commenters support the staff proposal’s contiguity requirement,¹⁴⁹ with Media Alliance going further and contending that the 10,500-square-mile cap that applies to the contiguity requirement for each application is too large and should be further limited to 5,000 or 6,000 square miles.¹⁵⁰ The contiguity requirement is impracticable and reflects a fundamental misunderstanding of the on-the-ground conditions underlying COLRs’ respective service territories. At least for AT&T California, contiguous portions of its service territory frequently are not homogeneous—they often include a mix of areas that would satisfy the staff proposal’s definition of “significant consumer choice” and those that do not.¹⁵¹ Further, AT&T California’s territory contains isolated “islands” surrounded by another COLR’s territory.¹⁵² Thus, the contiguity requirement, in practice, would force AT&T California (and presumably other COLRs) to exclude areas that otherwise satisfy the definition of “significant consumer choice” from an application for years only because such areas are surrounded by areas that do not satisfy the definition or because they are surrounded by another COLR’s territory.¹⁵³

Even if the Commission rejects these three limits on applications, the procedures under the staff proposal would still substantially delay long-overdue COLR reform.¹⁵⁴ The timelines the Commission includes in the rules it will adopt should supersede any other provisions relating

¹⁴⁹ See CforAT Opening Comments at 26–27; RCRC Opening Comments at 6.

¹⁵⁰ See Media Alliance Opening Comments at 6.

¹⁵¹ See AT&T California Opening Comments at 55–56; Consolidated Opening Comments at 7 (“Competitive markets are rarely perfectly contiguous; they cluster in population centers and are influenced by consumer locations relative to geographic features.”).

¹⁵² See AT&T California Opening Comments at 56.

¹⁵³ See *id.*; Consolidated Opening Comments at 7.

¹⁵⁴ See AT&T California Opening Comments at 57–60; *see also* Consolidated Opening Comments at 4; TDS Companies at 5.

to timing, including the prohibition against AT&T California’s “fil[ing] another application for COLR relief ... until one year after” this proceeding’s conclusion.¹⁵⁵

VII. PROPOSALS TO ADDRESS NON-COLR-SPECIFIC ISSUES SHOULD NOT BE ADDRESSED IN THIS PROCEEDING.

Several commenters seek to interject unrelated regulatory issues into this proceeding. The Commission should reject these improper attempts.

Service Quality Compliance. Both CforAT and EQUAL argue that, because AT&T California has failed to meet the service quality requirements, it should not be allowed to relinquish its COLR obligation.¹⁵⁶ AT&T California strongly disputes this argument. First, POTS customers experience so few outages that the Commission dropped the trouble report metric from General Order 133.¹⁵⁷ This fact disproves the oft-repeated assertion that AT&T California has let its network deteriorate. Second, Resolution T-17789, which EQUAL quotes as evidence,¹⁵⁸ was superseded by Resolution T-17880, in which the Commission approved AT&T California’s corrective action plan for its service quality results for 2021–2024, based on AT&T California’s \$71 million investment in fiber deployments.¹⁵⁹ Even under the staff proposal, compliance with a corrective action plan would allow a COLR to seek to relinquish its obligation.¹⁶⁰

¹⁵⁵ *Application of Pac. Bell Tel. Co. d/b/a AT&T Cal. (U1001C) for Targeted Relief from Its Carrier of Last Resort Obligation & Certain Associated Tariff Obligations*, D.24-06-024, 2024 Cal. PUC LEXIS 331, at *18 (June 25, 2024).

¹⁵⁶ See EQUAL Opening Comments at 3–4; CforAT Opening Comments at 17–19.

¹⁵⁷ See *Ord. Instituting Rulemaking Proceeding To Consider Amends. to Gen. Ord. 133*, D.25-09-031, 2025 Cal. PUC LEXIS 455, at *98–101 (Sept. 18, 2025).

¹⁵⁸ See EQUAL Opening Comments at 4.

¹⁵⁹ See Cal. Pub. Utils. Comm’n Resol. T-17880, at 12 (June 12, 2025).

¹⁶⁰ See Staff Report at 29–30, 67–68.

In any case, there is no logical connection between whether a COLR meets the Commission’s service quality metrics and whether there are sufficient alternatives available to consumers in an area such that consumers are effectively ensured they can obtain voice phone service. Indeed, the presence of alternatives will create incentives for all providers to offer high-quality service to their customers. Further, the public interest is served by COLR relinquishment that frees up resources that can be used for broadband deployment and levels the competitive playing field. Therefore, it makes no sense to withhold that relinquishment simply because the COLR may have not satisfied a service quality metric at some point in the last two years.

Ultimately, CforAT wants to amend the Commission’s service quality enforcement regime, which it views as too lenient with regards to AT&T California.¹⁶¹ But the Commission just revised General Order 133 and should not use this proceeding to add additional enforcement mechanisms for COLRs alone among the providers that are subject to General Order 133. For the same reasons, the Commission should reject any requirement that COLRs should have to show they have met service quality standards for 24-months prior to relinquishment.¹⁶² This has no logical connection to eligibility for COLR relinquishment.

Battery backup. The staff proposal would require that use of VoIP to provide MES must include “the opportunity for customers to obtain Customer Premise Equipment from the COLR capable of 72 hours of backup power” and provide detailed notice and information to customers concerning backup power.¹⁶³ TURN/CWA want the Commission to go further and propose that separate backup power requirements be mandated for “qualified providers,” in addition to the

¹⁶¹ See CforAT Opening Comments at 18–19.

¹⁶² See AT&T California Opening Comments at 58–59.

¹⁶³ Staff Report at 13 n.29, 52–53.

backup power requirements that would apply to customer premises equipment.¹⁶⁴ But, as the TDS Companies explain, the Commission should not adopt the staff proposal, as the Commission already has promulgated industrywide standards governing customer education and notice for backup power for VoIP customer premises equipment.¹⁶⁵ Adding another layer of requirements that specifically target COLRs is unnecessary given these comprehensive rules. If TURN/CWA believe those comprehensive rules are insufficient, they may raise their arguments in the pending network resiliency docket.¹⁶⁶

VIII. MISCELLANEOUS ISSUES

A. Objective Relinquishment Standards Make Contiguity Requirements Unnecessary To Prevent COLRs from Cherry-Picking Certain Areas.

Some parties argue that COLRs would target historically redlined areas for relinquishment unless a contiguity requirement is imposed or the relinquishment areas are required to align with exchange boundaries.¹⁶⁷ This makes little sense. The staff proposal would permit relinquishment under the same definition of “significant consumer choice” regardless of the demographics or socioeconomic profile of an area. An area would qualify (based on the available alternatives), or it would not. Therefore, COLR relinquishment would be granted only where the Commission determines that the available alternatives are sufficient to ensure consumers will be able to obtain voice services. The proposals offered by CforAT, RCRC, and TURN/CWA would not add to the protection but would complicate COLR efforts to relinquish

¹⁶⁴ See TURN/CWA Opening Comments at 17–18.

¹⁶⁵ See TDS Companies Opening Comments at 2–3.

¹⁶⁶ See *Ord. Instituting Rulemaking To Update Commc’ns Emergency Preparedness & Network Resiliency Program*, R.25-07-014, 2025 Cal. PUC LEXIS 361 (Jul. 24, 2025).

¹⁶⁷ See CforAT Opening Comments 26–27; RCRC Opening Comments at 6; TURN/CWA Opening Comments at 23; *see also* EQUAL Opening Comments at 24.

their obligations. Imposing burdens without benefits would be contrary to Public Utilities Code Section 321.1(b) as well as arbitrary and capricious.

EQUAL proposes that, to prevent a COLR from redlining and retaining only profitable areas, the Commission should adopt rules that would require a COLR to undergo enhanced service quality scrutiny in all areas where it remains a COLR if it relinquishes its COLR obligation in any area.¹⁶⁸ EQUAL's proposal is untethered to any facts. As AT&T California has previously explained in the Commission's broadband redlining docket, publicly available data confirm that there is no evidentiary basis whatsoever to support any allegations of digital discrimination.¹⁶⁹

B. If Necessary, Any Reinstatement of COLR Obligations Following the Provisional Withdrawal Period Should Be Proportional to the Scale of the Substantiated Issues.

AT&T California reiterates its opposition to the staff proposal's requirements governing the conclusion of the provisional withdrawal period, restoration of obligations, and freezes on adjacent-area applications that would compound delays and create unnecessary complexity.¹⁷⁰ Reinstatement of COLR obligations should be considered on a case-by-case basis and narrowly tailored to specific locations where such reinstatement is necessary.¹⁷¹ Further, the criteria for determining whether reinstatement is necessary should be tied to the basis of a COLR's relinquishment and not to ancillary or unrelated metrics and compliance windows.¹⁷²

¹⁶⁸ See EQUAL Opening Comments at 24.

¹⁶⁹ See Opening Comments of AT&T Cal. (U 1001 C) on the First Amended Scoping Memo & Ruling 7-9 (filed July 2, 2021), in *Ord. Instituting Rulemaking Regarding Broadband Infrastructure Deployment & To Support Serv. Providers in the State of Cal.*, R.20-09-001.

¹⁷⁰ See AT&T California Opening Comments at 63.

¹⁷¹ See *id.*; TDS Companies Opening Comments at 11.

¹⁷² See AT&T California Opening Comments at 63.

If the Commission opts to adopt the unrelated metrics proposed by the staff, it should allow for flexibility and opportunity to cure before failure to satisfy such metrics is deemed sufficient grounds for COLR reinstatement. For example, as the TDS Companies explain, (1) customer complaints or disputes should reinstate COLR obligations only if they are substantiated and their magnitude is severe, they remain uncured after the COLR has been notified, and if COLR relinquishment would harm customers; and (2) failure to fully comply with service quality metrics over a lengthy period should reinstate COLR obligations only if it is chronic and harmful to consumers.¹⁷³ Inflexible and arbitrary metrics and standards, any minor or technical violation of which could reinstate COLR obligations, would be an unreasonable framework.¹⁷⁴

C. Proposals for Forced Divestiture of COLR Assets Would Be Unconstitutional and Arbitrary.

EQUAL proposes frameworks, including defined timelines and enforcement mechanisms, that would apply to the transfer of networks, assets, and associated entitlements from a COLR to a replacement COLR as well as for compulsory transfers from a COLR to a CLEC.¹⁷⁵ These frameworks include a 90-day negotiation period after a formal offer, mandatory mediation, binding arbitration if mediation fails, and penalties (including involuntary transfer of assets) if a COLR fails to act in good faith during the process.¹⁷⁶

EQUAL's proposal is remarkable. It asserts the Commission has authority to force a COLR to sell to another carrier, that the terms can be determined by binding arbitration, and, finally, that a COLR's sale of its assets should be no more than for their "scrap value" and

¹⁷³ See TDS Companies Opening Comments at 10–11.

¹⁷⁴ See AT&T California Opening Comments at 63; TDS Companies Opening Comments at 10–11.

¹⁷⁵ See EQUAL Opening Comments at 10–15.

¹⁷⁶ See *id.*

should “approach[] zero.”¹⁷⁷ No such authority exists under Sections 851 and 854 of the Public Utilities Code, which are the provisions that govern assignments of utility assets and transfers of control of utilities.¹⁷⁸ And EQUAL points to nothing that would suggest the Commission has legal authority, in effect, to confiscate a COLR’s property and hand it to a competitor (particularly without meaningful compensation). Nor does EQUAL acknowledge the enormous burdens and disruptions that would result from its proposal as basic service sometimes shares facilities with other services or explain exactly how pole attachments, rights of way, vendor contracts, and customer data would be allocated between the old and new COLR so that the former could continue to serve its non-POTS customers. The Commission would likely have to spend years sorting these details out.

Furthermore, EQUAL’s proposal raises constitutional concerns. Allowing COLRs to recover more than the scrap value, EQUAL argues, would compensate them twice for the same infrastructure since they had already received ratepayer-funded subsidies to deploy and maintain their networks.¹⁷⁹ Not so. Since the New Regulatory Framework took effect for AT&T California on January 1, 1990, AT&T California has built out and maintained its network using its own capital, at its own risk.¹⁸⁰ AT&T California has invested in the network’s ongoing maintenance and repair, including powering and maintaining the wire centers and outside plant, developing IT and billing systems, providing customer care, monitoring, and

¹⁷⁷ EQUAL Opening Comments at 16.

¹⁷⁸ See Cal. Pub. Utils. Code §§ 851, 854.

¹⁷⁹ See EQUAL Opening Comments at 16.

¹⁸⁰ See *Alt. Regul. Frameworks for Loc. Exch. Carriers*, D.89-10-031, 1989 Cal. PUC LEXIS 576, at *86–87, *133 (Oct. 12, 1989).

provisioning.¹⁸¹ Absent providing AT&T California (or any other COLR) with fair market value for its property, there would be an unconstitutional taking.¹⁸²

IX. CONCLUSION

For the foregoing reasons, AT&T California respectfully requests that the Commission publish rules reflecting the modifications proposed in its opening and reply comments.

Dated: February 13, 2026

Respectfully submitted,

AT&T California

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¹⁸¹ See Pac. Bell Tel. Co. d/b/a AT&T Cal.'s (U 1001 C) Revisions to Initial Proposal 22 (filed Dec. 6, 2024).

¹⁸² See AT&T California Opening Comments at 29–30.

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APPENDIX A

AT&T California and Cal Advocates' Joint Proposal for Fiber Deployment Commitment for COLR Relief and Basic Service Discontinuance

APPENDIX A

AT&T California and Cal Advocates' Joint Proposal for Fiber Deployment Commitment for COLR Relief and Basic Service Discontinuance

1. Definition of Area for COLR Relief and Basic Service Discontinuance

- a. In addition to the consumer choice options in the Staff Proposal issued on December 15, 2025 in the COLR OIR, a COLR may also choose to relinquish COLR status and discontinue basic service by submitting a Tier 2 advice letter that sets forth a 1:5 build commitment of serviceable locations¹ for deployment of fiber over a 10-year period within an identified "Relief Area."
- b. The Relief Area cannot exceed 1 million serviceable locations per Tier 2 advice letter filing. One million serviceable locations in a Relief Area equals a fiber build commitment of 200,000 serviceable locations in the Relief Area.
- c. The Relief Area shall be defined as an area where 80 percent of the serviceable locations have a 1 Gbps wired broadband service offer made by one or more wireline providers, including the COLR. Serviceable locations where the COLR and other providers have been granted government funding to expand their fiber networks may be counted as locations possessing a 1 Gbps offer when those locations are connected. The COLR must additionally offer voice or broadband using any technology throughout the Relief Area.
- d. Speed, service type, and availability will be determined based on the FCC Broadband Serviceable Location Fabric.
- e. COLR will report on the number of serviceable locations built to satisfy the commitment on a quarterly basis until completion of deployment in the Relief Area.

2. Participation in California Lifeline Program

The COLR will participate in the California LifeLine program for its standalone broadband or a broadband/voice service bundle offered to the newly-deployed fiber serviceable locations in the Relief Area for a period of time after completion of the deployment, assuming the CPUC maintains LifeLine support for these services throughout the time period.²

3. Prioritization of Low Income and Disadvantaged Communities

Subject to build factors such as cost and location of the fiber deployments in the Relief Areas, COLR agrees to prioritize deployment in the Relief Areas that overlap with the Low Income Areas and Disadvantaged Communities on the CPUC's Federal Funding Account Round 2 Public Map.³

4. Enforcement

Enforcement mechanisms should be available to the Commission to ensure that the fiber build is completed as set forth in the Tier 2 advice letter.

¹ Serviceable locations are locations identified by the FCC as "Broadband Serviceable Locations" on the Broadband Serviceable Location Fabric.

² AT&T California and California Advocates have different proposals for the length of time that the COLR would participate in California LifeLine.

³ Map available at [Federal Funding Account Round 2 Public Map](#).

APPENDIX B

Locations of Responses to Questions Posed in the Ruling

Questions	Locations of AT&T Responses
<i>Chapter II: Modernizing Access to Essential Communications Services</i>	
1. Should the Commission include standalone broadband as a requirement of “Modernized Essential Communications Services?”	Section III.A (Pages 11–14)
<i>Chapter IV: Significant Consumer Choice Withdrawal Process: Pre- Application Phase</i>	
1. How should the Commission limit the scope of a COLR withdrawal application?	VI (Pages 36–39)
2. What should be the maximum number of customers affected?	VI (Page 37)
3. What is a reasonable limit on the size of geographic span in which a COLR may seek to withdraw?	VI (Pages 37–38)
4. Must the proposed withdrawal area be contiguous?	VI, VIII.A (Pages 38, 41–42)
<i>Chapter IV: Significant Consumer Choice Withdrawal Process: Application Phase</i>	
1. What documentation would provide sufficient evidence of consumer choice?	V.B.2 (Pages 28–35)
2. If a replacement COLR is not designated, is a customer transition plan necessary? If so, what elements should the transition include?	N/A
<i>Chapter IV: Significant Consumer Choice Withdrawal Process: Provisional Withdrawal Period</i>	
1. How long should the COLR be required to provide basic service to existing customers after the withdrawal decision is approved?	N/A
2. How can the provisional withdrawal period be structured to ensure that all customers are able to find alternative service before the withdrawal is made permanent? Is it necessary for the Provisional Withdrawal period to continue after the COLR is permitted to cease offering basic service?	VIII.B (Pages 42–43)
3. What information should customers provide as part of the extended customer input process?	V.B.2 (Pages 28, 32)
4. Identify any other data that should be included in the required reporting.	VIII.B (Pages 42–43)

Questions	Locations of AT&T Responses
<i>Chapter IV: Significant Consumer Choice Withdrawal Process: Conclusion of Provisional Withdrawal Period</i>	
1. What should the standards be for the Commission to determine if a COLR has passed or failed the provisional withdrawal period?	VIII.B (Pages 42–43)
2. If the Commission restores COLR obligations, how should the area be determined? Should the COLR obligation be restored throughout the entire area identified in the application/decision? Or should specific areas be carved out?	VIII.B (Pages 42–43)
<i>Chapter IV: Significant Consumer Choice Post-Withdrawal Phase</i>	
1. For Significant Consumer Choice areas where the COLR chooses to withdraw, what are the net costs (total costs minus savings associated with COLR withdrawal) associated with withdrawing from COLR obligations?	N/A
<i>Chapter V: Limited Consumer Choice COLR Requirements</i>	
1. For Limited Consumer Choice areas where the COLR chooses to withdraw, what are the net costs (total costs minus savings associated with COLR withdrawal) associated with deploying infrastructure capable of delivering indoor broadband speeds of 100 Mbps download and 20 Mbps upload and sufficient latency to enable VoIP to all Broadband Serviceable Locations in the area within five years of the Application’s approval date?	N/A
<i>Attachment C – Application Phase</i>	
1. If the COLR intends to use availability of mobile providers as evidence of significant consumer choice within an area, the COLR shall provide documentation of the results of its own testing of mobile service availability and usability throughout the area utilizing the Commission’s CalSpeed app. What should the sample size and testing method be to verify coverage and usability of voice service indoors?	V.B.2 (Pages 28–29, 33–35)

APPENDIX C

**Int'l Telecomms. Union, ITU-R P.679-2,
Propagation Data Required for the Design of
Broadcasting-Satellite Systems (1999)**

RECOMMENDATION ITU-R P.679-2

**PROPAGATION DATA REQUIRED FOR THE DESIGN OF
BROADCASTING-SATELLITE SYSTEMS**

(Question ITU-R 206/3)

(1990-1992-1999)

The ITU Radiocommunication Assembly,

considering

- a) that for the proper planning of broadcasting-satellite systems it is necessary to have appropriate propagation data and prediction methods;
- b) that the methods of Recommendation ITU-R P.618 are recommended for the planning of Earth-space telecommunication systems;
- c) that further development of prediction methods for specific application to broadcasting-satellite systems is required to give adequate accuracy for all operational conditions;
- d) that, however, methods are available which yield sufficient accuracy for many applications,

recommends

1 that the propagation data contained in Annex 1 be adopted for use in the planning of broadcasting-satellite systems, in addition to the methods recommended in Recommendation ITU-R P.618.

ANNEX 1

1 Introduction

Broadcasting by satellite leads to propagation considerations that are not entirely comparable with those occurring in the fixed-satellite service. Attenuation data for the space-to-Earth direction are needed in the form of statistical averages and/or contour maps of attenuation and depolarization for large areas. Specific coordination problems may arise at the margin of the service area between satellite broadcasting systems and terrestrial or other space services. General methods for prediction of Earth-space path propagation effects are presented in Recommendation ITU-R P.618. Additional information specific to satellite broadcasting system planning is treated in this Annex. It should be noted that feeder links are considered to be part of fixed-satellite services, not the broadcasting services.

In the case of space-to-Earth paths for broadcasting systems, several propagation effects may require consideration.

Among these are:

- tropospheric effects, including gaseous absorption, and attenuation and depolarization by rain and other hydrometeors;
- ionospheric effects such as scintillation and Faraday rotation (see Recommendation ITU-R P.531);
- local environmental effects, including attenuation by buildings and vegetation.

This Annex discusses these effects and refers to other Recommendations for additional information. More data are needed to characterize propagation impairments for satellite broadcasting systems.

2 Tropospheric effects

Signal impairments caused by the troposphere are negligible for frequencies below about 1 GHz and path elevation angles exceeding 10°.

As elevation decreases and/or frequency increases these impairments become more and more severe and fluctuations of signal amplitude and angle of arrival can be significant (see Recommendation ITU-R P.618). The latter effects are of particular importance for high latitude service areas. Sky-noise temperature increases caused by precipitation (see Recommendation ITU-R P.618) will further reduce C/N of the received signal. In addition, snow and ice accumulations on reflector and feed surfaces of the antenna can seriously degrade antenna pointing, gain and cross-polar characteristics for significant portions of a year.

2.1 Attenuation in the troposphere

Signal losses in the troposphere are caused by gaseous absorption and attenuation by rain and other hydrometeors. In addition, small-scale variations in the atmospheric refractive index cause signal scintillations that contribute both to signal fading and enhancements.

2.1.1 Attenuation by atmospheric gases

The recommended method for predicting gaseous attenuation on Earth-satellite paths is found in Recommendation ITU-R P.618. For most frequencies, gaseous attenuation is of minor importance in relation to rain attenuation. In the 22 GHz band allocated to the broadcasting-satellite service in some regions, however, water vapour absorption can be quite large. For example, at a location where the 22.75 GHz path attenuation exceeds 9.5 dB for 1% of the worst month, about 3 dB of the total is the result of gaseous attenuation.

2.1.2 Precipitation and cloud attenuation

The prediction procedure for precipitation and cloud attenuation is given in Recommendation ITU-R P.618, along with a simple method for the frequency scaling of measured attenuation statistics. Attenuation due to cloud will not be serious for frequencies below 30 GHz, and is accounted for in the rain attenuation prediction method in any case. Fog and cloud attenuation may be estimated if the liquid-water content is known, using the method contained in Recommendation ITU-R P.840.

2.1.3 Rain attenuation for worst month

For satellite broadcast applications, the rain attenuation exceeded for 1% of the worst month is usually of greatest concern. The method for relating worst-month time percentages to annual time percentages for rain attenuation is provided in Recommendation ITU-R P.618. A full treatment of the worst month and its basis is found in Recommendation ITU-R P.581.

Available worst-month rain attenuation data are compiled in Table II-2 of the Radiocommunication Study Group 3 data banks (see Recommendation ITU-R P.311).

2.1.4 Diurnal variation of fading

The dependence of signal fading on the time of day is a significant consideration in the provision of broadcasting-satellite services. Fading data obtained in various regions of the world exhibit a common tendency for the larger fades to occur in the afternoon and early evening hours. In climates characterized by thunderstorms, an increased probability of occurrence of deep fading is associated with the time of maximum local thunderstorm activity. Tropical locations in particular can show a strong diurnal asymmetry.

Low-level fading, on the other hand, is more evenly distributed, both seasonally and diurnally.

2.1.5 Scintillation fading

Small-scale irregularities in the tropospheric refractive index can induce rapid fluctuations in signal amplitude. Signal scintillations are not generally significant contributors to system performance for frequencies below about 10 GHz and path elevation angles above 10°, but can be important at low elevation angles or higher frequencies, especially for small-margin links. The method recommended for the estimation of scintillation fading is obtained from Recommendation ITU-R P.618.

2.2 Depolarization

Hydrometeors, principally concentrations of rain drops and ice crystals, can cause statistically significant depolarization of signals at frequencies above about 2 GHz. The recommended procedure for the prediction of these effects is found in Recommendation ITU-R P.618.

3 Ionospheric effects

At frequencies below about 3 GHz, ionospheric effects are important on some paths and at some locations. For general engineering use, estimated maximum values of ionospheric effects (obtained from Recommendation ITU-R P.531) are summarized in Table 1 for various frequencies. The impairments of most concern are typically signal scintillation and (for linearly polarized waves only) Faraday rotation.

TABLE 1

Estimated* ionospheric effects for elevation angles of about 30° one-way traversal**

(derived from Recommendation ITU-R P.531)

Effect	Frequency dependence	0.5 GHz	1 GHz	3 GHz	10 GHz
Faraday rotation	$1/\cdot^2$	1.2 rotation	108°	12°	1.1°
Propagation delay	$1/\cdot^2$	1 · s	0.25 · s	0.028 · s	0.0025 · s
Refraction	$1/\cdot^2$	< 2.4·	< 0.6·	< 4.2·	< 0.36·
Variation in the direction of arrival (r.m.s. value)	$1/\cdot^2$	48·	12·	1.32·	0.12·
Absorption (auroral and/or polar cap)	$\cdot 1/\cdot^2$	0.2 dB	0.05 dB	$6 \cdot 10^{-3}$ dB	$5 \cdot 10^{-4}$ dB
Absorption (mid-latitude)	$1/\cdot^2$	< 0.04 dB	< 0.01 dB	< 0.001 dB	< 10^{-4} dB
Dispersion	$1/\cdot^3$	0.0032 ps/Hz	0.0004 ps/Hz	$1.5 \cdot 10^{-5}$ ps/Hz	$4 \cdot 10^{-7}$ ps/Hz
Scintillation (1)			> 20 dB peak-to-peak	· 10 dB peak-to-peak	· 4 dB peak-to-peak

* This estimate is based on a total electron content (TEC) of 10^{18} electrons/m², which is a high value of TEC encountered at low latitudes in day-time with high solar activity.

** Ionospheric effects above 10 GHz are negligible.

(1) Values observed near the geomagnetic equator during the early night-time hours (local time) at equinox under conditions of high sunspot number.

4 Effects of local environment

In specific receiving locations, effects of local structures and vegetation may be important. Unfortunately, data for application to satellite broadcasting are insufficient to characterize fully these effects.

4.1 Building entry loss

Representative UHF satellite signal attenuation observed within rooms located near an exterior wall in timber-framed private homes is summarized in Table 2. For interior rooms, 0.6 dB must be added to the tabulated values. For timber-framed buildings the attenuation shows little variation with weather or path elevation angle but, as the table illustrates, there is a systematic variation with frequency, polarization, construction materials, insulation and position within the structure. Some aluminium-backed insulating and construction materials contribute up to 20 dB of loss.

TABLE 2

UHF signal attenuation (dB) through timber-framed buildings*

Building condition		Frequency (MHz) and polarization (Horizontal: H, Vertical: V)			
Exterior	Insulation (non-metallic type)	860 H	860 V	1 550 V	2 569 V
Wood siding	Ceiling only	4.7	2.9	5.0	5.8
	Ceiling and wall	6.3	4.5	6.6	7.4
Brick veneer briques	Ceiling only	5.9	4.1	6.2	7.0
	Ceiling and wall	7.5	5.7	7.8	8.6

* The table is for rooms located near to the exterior wall; for interior rooms, 0.6 dB should be added.

Measurements of building entry loss using 18 to 20 m towers to simulate a satellite transmitter were performed in the bands 700 MHz to 1.8 GHz and 500 MHz to 3 GHz to determine the mean loss and spatial variability in a variety of buildings. There are insufficient data to give precise prediction methods, but the data in Tables 3-5 are indicative.

In these measurements, the first three buildings had elevation angles such that the room was illuminated through a window with a direct line-of-sight from the transmitter. The elevation angles were below 30° to allow side illumination of the buildings.

In the case of building number 3 in these tables, losses through the reflective glass door were about 15 dB greater than when the door was open.

The results of another study are similar, with mean attenuation levels (in the frequency range 500 to 3 000 MHz) varying between 5 dB for a woodframe house with metal roof and no aluminium heat-shield, to 20 dB for a similar house with an aluminium heat-shield. Table 5 shows a summary of the measured mean attenuation values.

Note that for some of the measurements, values obtained near a window or open door are included in the averaging. In the motel (building 6), attenuation when the direct path penetrated a brick wall was 15 to 30 dB below the line-of-sight value. Levels inside building 4 varied from 25 to 45 dB below the line-of-sight value, due to the metal roof and aluminium heat-shield.

Note also that the measurements were on stationary paths. There is evidence that close-in multipath effects will give rise to fluctuations in received signal level should the transmitter or receiver move. This has implications particularly for low Earth orbit (LEO) systems where the transmitter is moving rapidly with respect to the receiver.

TABLE 3

**Signal distributions at the average position and best position within buildings
(over the frequency range 700 to 1 800 MHz)**

Building number	Construction	Elevation angle	Average position		Best position	
			Mean loss (dB)	Standard deviation (dB)	Mean loss (dB)	Standard deviation (dB)
1	Corner office, large windows, single-story building. Concrete block, plasterboard, double-glazing. Concrete roof on steel beams	27.5° (line-of-sight (LOS) through window, azimuth angle between wall and LOS is 50°)	7.9	5.5	4.2	4.2
2	Small room with windows being 5/8 of exterior wall	18° (line-of-sight through window, azimuth angle between wall and LOS is 50°)	9.1	4.4	5.4	3.7
3	Corner foyer, large reflective glass door in half of one exterior wall. External walls concrete, internal walls plasterboard on metal frame	16° (line-of-sight through window, 45° azimuth angle between one wall and LOS, both exterior walls illuminated by transmitter)	15.4	8.4	9.7	6.7
4	Sheet metal shack with plywood interior. One small unscreened window on each of two sides, metal-covered door	25° (azimuth angle between wall and LOS is 60°)	9.7	6.3	5.2	4.9
5	Two-story wood-side house, rockwool insulation (walls and attic); gypsum board, no metallic heat-shield. No metallic screens on windows. Wood-shingled roof	25° (azimuth angle between wall and LOS is 45°)	9.0	4.5	5.4	3.7
6	Empty sheet-metal mobile trailer home, metal frame windows with metal screens	25° (azimuth angle between wall and LOS is 45°)	24.9	3.8	19.8	3.4

TABLE 4

**Median loss at the average position and best position within buildings as a function of frequency
(Construction details and elevation angle as in Table 3)**

Building number	Average position	Best position
(as in Table 3)	750-1 750 MHz	750-1 750 MHz
1	5-11 dB	2-6 dB
2	5-14 dB	2-5 dB
3	17-18 dB	12-13 dB
4	9-11 dB	5-6 dB
5	5-11 dB	3-5 dB
6	20 to > 24 dB	16-22 dB

TABLE 5

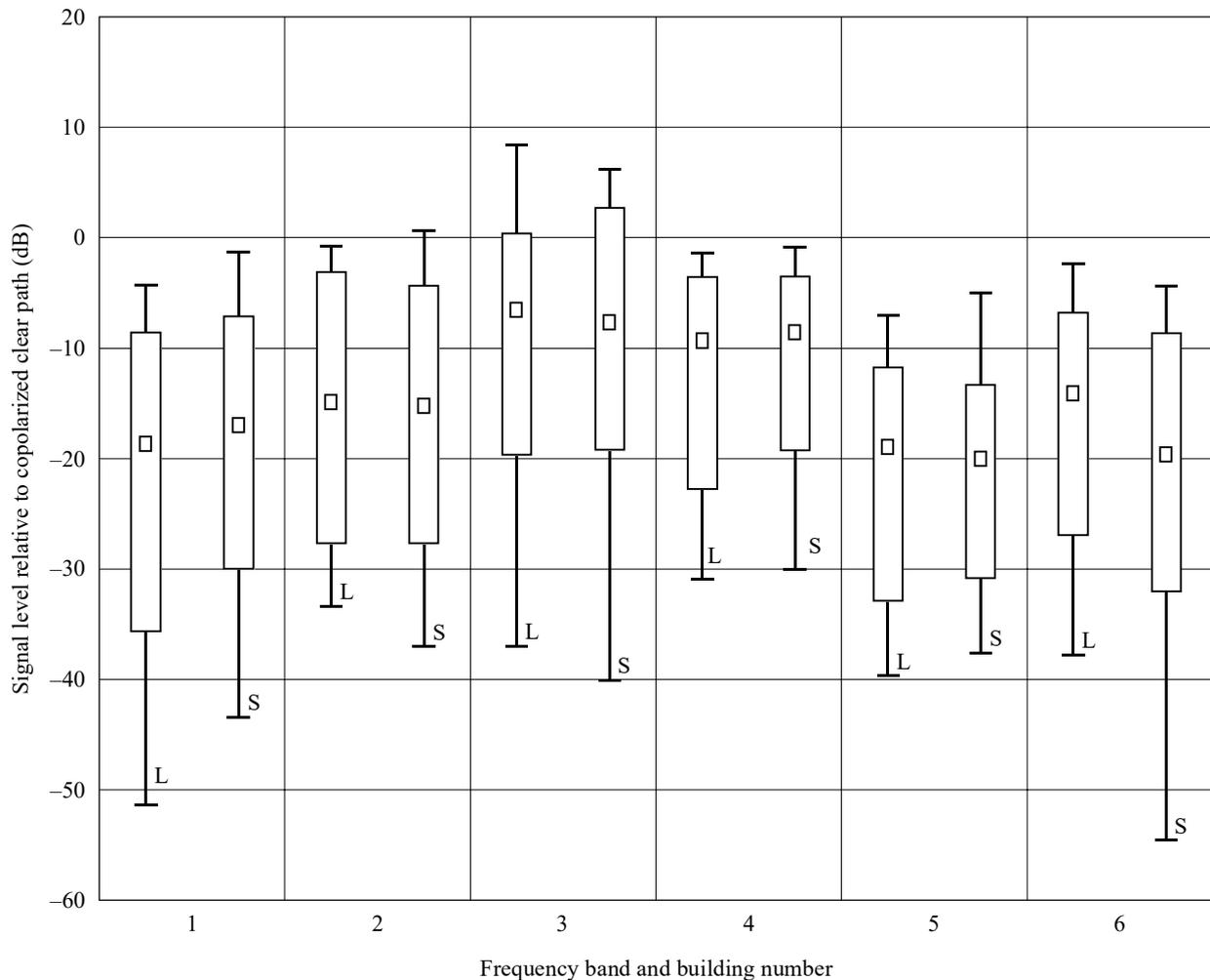
**Signal distributions at the average position within buildings
(estimated over the frequency range 500-3 000 MHz)**

Building number	Construction	Elevation angle (degrees)	Average position	
			Mean loss (dB)	Standard deviation (dB)
1	Entry lobby in single story building – concrete tilt wall, tar roof	18	13	10
2	Office in single story building – block brick, tar roof	38	9	7
3	Two-story wood frame farmhouse, metal roof, no aluminium heat-shield	33	5	4
4	Hallway and living room of two-story woodframe house, metal roof, aluminium heat-shield	41	19.5	12
5	Motel room in two-story building, brick with composite roof	37	13	6
6	Lobby of two-story building, glass and concrete, tar roof	26	12	5

The measurements indicate that attenuation increases with frequency by about 1 to 3 dB/GHz in buildings 1, 2, 4, and 6, by 6 dB/GHz in the least attenuating building (building 3), and shows almost no change with frequency in the glass-walled building 5. Since the values given above are averaged over the frequency range 500 MHz to 3 GHz, they are expected to be slightly optimistic for the 1 to 3 GHz range.

For the six buildings identified in Table 5, 1.6 GHz and 2.5 GHz measurements were performed and analysed to determine the median, 5% and 95% levels of relative signal loss when the antennas were moved horizontally over multiple 80 cm intervals. The buildings were illuminated from the side, and the signals received inside the outside wall (one-wall entry). Azimuthally omnidirectional antennas were used to receive the transmitted signals. Statistics derived from these measurements are summarized in Fig. 1. These data indicate the magnitude and variations of fading that are possible for signal transmission through building walls. Note that on occasions, multipath conditions yield relative signal levels in excess of 0 dB.

FIGURE 1



Median, 5% and 95% levels of building entry power loss relative to unobstructed LOS at 1.6 GHz and 2.5 GHz for the six buildings identified in Table 5 (designated by 1 to 6 in the Figure). For each building, the 1.6 GHz (L) and 2.5 GHz (S) statistics are shown separately.

None of the available measurements provide information for elevation angles above 41°. However, the large losses through metal structures (building 6 in Tables 3 and 4; building 4 in Table 5) suggest that attenuation for a direct path through a metal roof will be of the order of 20 dB. The losses of 15 to 30 dB for a brick wall in building 4 of Table 5 are relevant for higher elevation angles as well.

Studies of terrestrial propagation within buildings indicate that at 2 GHz in an office building, the loss (dB) though floors is given by $15 + 4(n - 1)$ where n is the number of floors penetrated. For a residential building, the loss is typically 4 dB per floor, which serves to estimate the additional loss of a satellite signal entering from a high elevation angle and passing downwards through a building.

4.2 Vehicle entry loss

Measurements of signal penetration into vehicles are quite scanty, and have been obtained by using ground-based techniques similar to those described above. One set of measurements was made at 1 600 MHz using simulated path elevation angles from 8° to 90°, two different antennas (microstrip patch and quadrifilar helix), different types of vehicles (which were mounted on a rotating turntable to evaluate signal level as a function of direction of arrival), and different positions of the terminal user within the vehicle. Data were collected with the vehicle windows down. Typical *excess path losses* (defined as the measured mean signal level inside the vehicle minus the median fade level observed in open-field measurements with the same antenna and body position used in the in-vehicle measurements) were found to range from 3 to 8 dB at the median, and from 4 to 13 dB at the 90th percentile level.

General observations and conclusions obtained from these data are:

- the signal level inside the vehicles was found to be Rayleigh distributed, implying that no direct line-of-sight propagation path typically exists, and that the signal power is coupled via multipath scatter from edges of vehicle openings (e.g. windows);
- losses at the 90th percentile are 15-20 dB over all path elevation angles;
- loss is only weakly dependent on path elevation angle, but the elevation-angle dependence is different for head-level and hip-level antennas;
- vehicle type has no significant effect on signal penetration loss;
- the position of the terminal user inside the vehicle has no significant effect on loss;
- median excess path loss (with respect to open-field measurements) is log-normally distributed;
- the patch antenna indicates less path loss than a head-level antenna (because the higher directivity causes higher open-field losses, which are not made very much worse when the antenna is inside the vehicle); and
- at an 8° elevation angle, the all-vehicle average median excess path loss was found to be 3.7 dB for a head-level antenna, which compares to a median loss of 3.2 dB at 900 MHz reported for a horizontal path into a large sedan vehicle.

These results may be assumed to represent current general expectations for signal penetration into vehicles.

4.3 Reflections and shadowing by buildings

Measurements obtained by transmitting circularly-polarized FM sound broadcast signals at 839 MHz and 1 504 MHz from a tall tower show that at an elevation angle near 20°, location-to-location variations in field strength near street level in an urban area approach 15 dB at 839 MHz and 18 dB at 1 504 MHz. The fluctuations are practically the same for reception with either vertically- or horizontally-polarized antennas. Sound quality is barely impaired by the field-strength variations under multipath conditions, even in narrow and unfavourably-oriented streets.

In suburban and rural areas, reflections from the ground can be a factor in determining the preferred polarization, as the ground-reflected vertically-polarized wave experiences a deep null at the pseudo-Brewster's angle but the horizontally-polarized wave does not. Thus the horizontally-polarized ground-reflected wave will usually be stronger than the vertical wave for the smooth-Earth case, and the sum of the direct and ground-reflected waves will result in both deeper nulls and higher peaks.

5 Statistical distribution of signal level for large areas

A broadcasting satellite must serve a large area, preferably with the same quality of service throughout for the same time percentage. However, portions of the service area (e.g. within different climatic zones) may be affected differently by certain propagation effects. Such differences can be characterized with coordinated measurements performed at several locations distributed over the service area. Such data are useful both for evaluating subscriber equipment requirements and for determining interference conditions at the borders of the service area, but these data are scarce.

Available data show that the joint probability of occurrence of rainy conditions at different locations is several per cent for separations up to 500 km, and that statistical independence cannot be assumed for separations less than about 800 km. For pairs of sites separated by 200 km, the joint probability for rainfall rates in excess of 5 mm/h can be about five times the probability obtained by assuming statistical independence.

6 Statistical distributions and frequency correlation of signals

Measurements obtained by transmitting a 567.25 MHz signal from a 515 m tower to simulate a satellite signal have shown that, for the vast majority of receiver locations, the distributions of instantaneous values of signal envelope are close to a log-normal distribution. If obstructions by local objects introduce attenuation of more than 15 dB with respect to the median level, the distributions of instantaneous values approximate a Rayleigh distribution.

In the same experiment, the frequency correlations between signals with frequency separations of 0.15 MHz, 0.5 MHz, 1.0 MHz, 2.2 MHz, 4.4 MHz and 6.5 MHz were also measured. It was observed that the frequency correlation decreases as the frequency separation increases and is only incidentally and slightly affected by the elevation angle.
