

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

Order Instituting Rulemaking Proceeding to
Consider Amendments to General Order 133

Rulemaking 22-03-016

**COMMENTS OF CTIA ON
PHASE ONE STAFF PROPOSAL**

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CTIA submits these comments in response to the Administrative Law Judge’s Ruling Issuing Staff Proposal, released June 27, 2024 in the above-captioned proceeding.¹

I. INTRODUCTION AND SUMMARY

The record in this docket clearly shows that the Commission’s longstanding decision to take “a more hands-off approach” to mobile wireless service quality, “with reliance on competition to ensure reasonable service and rates,”² is based on sound policy and is serving California wireless consumers well. Despite that record, the Staff Proposal proposes to adopt wireless service quality regulations in the form of outage penalties that would influence the way wireless providers design, deploy, and operate their wireless networks. Such rules would be preempted by federal law.

The Staff Proposal also offers no factual basis or policy justification for its proposals, and many of the specific proposed rules would be infeasible for wireless providers to implement or for the Commission to administer. In support of these comments, CTIA provides an expert report from an economist, Dr. Aren Megerdichian of Compass Lexecon, and a professional engineer, Mark Settle of Wilkinson Barker Knauer LLP. These experts affirm that the Staff Proposal’s wireless service quality rules are not needed, may harm consumers rather than help them, and would be infeasible or impracticable in many respects.

The Commission should reject the Staff Proposal and retain its long-standing, successful approach of recognizing that the competitive marketplace for wireless services will deliver optimal service quality more effectively than heavy-handed regulation.

¹ Administrative Law Judge’s Ruling Issuing Staff Proposal, R.22-03-016 (filed June 27, 2024) (“Ruling”); *id.* at Attachment A (“Staff Proposal”).

² Order Modifying Decision (D.) 16-08-021 on Issue of Fines for CLECS and Denying Rehearing of Decision as Modified, Rulemaking 11-12-001, Decision18-10-058 at 20 (Issued Oct. 30, 2018).

II. ADOPTING THE STAFF PROPOSAL WOULD BE UNSOUND POLICY

A. There Is No Factual Basis in the Record for Wireless Service Quality Regulations.

The Staff Proposal, and indeed the entire record in this docket, fails to identify problems with wireless service quality that need to be addressed with regulations. The Staff Proposal asserts that “the light touch approach for ... wireless services has not yielded improved service quality for [wireless] customers,”³ yet the undisputed factual record in this proceeding shows the opposite.

In particular, the record shows that wireless providers are investing intensively in their networks and delivering steadily faster speeds, greater capacity, broader coverage, and lower prices, all of which are valued by consumers and indicate high service quality.⁴ For example, wireless providers invested \$39 billion nationwide in their networks in 2022, up from \$35 billion in 2021 and \$30 billion in 2020.⁵ In California, wireless providers made capital investments of \$4.8 billion in 2022, which represented a year-over-year increase of over \$250 million.⁶ The industry’s nationwide investment facilitated the deployment of over 110,000 new cell sites between 2016-2021.⁷ Wireless network speeds today are more than 117 times faster than they

³ Staff Proposal at 5.

⁴ See, e.g., Presentation of Benjamin J. Aron, CTIA, Carrier Enforcement Panel (“Aron Presentation”), summarized in The Public Advocates Office and California Broadband Association & Video Association’s Joint Summary of the September 7, 2023 Workshop Discussing General Order 133-D, R.22-03-016, at 149-163 (filed Sept. 21, 2023) (“Joint Summary”).

⁵ *Id.* at 154, citing CTIA, 2023 ANNUAL SURVEY HIGHLIGHTS at 4 (July 25, 2023) (“CTIA 2023 Survey”), available at <https://api.ctia.org/wp-content/uploads/2023/11/2023-Annual-Survey-Highlights.pdf>.

⁶ See ANNUAL REPORT OF TELEPHONE CORPORATIONS CUSTOMER, EMPLOYMENT AND INVESTMENT INFORMATION AS REQUIRED BY PUBLIC UTILITIES CODE SECTION 914 at 5 (2024).

⁷ Aron Presentation, Joint Summary at 153.

were in 2010.⁸ Since 2016, the mean download speed on wireless networks has increased from 19 Mbps to 151 Mbps.⁹ And despite all these investments and improvements, wireless prices have steadily declined.¹⁰

The Staff Proposal does not even acknowledge or discuss these data points, let alone offer any evidence to challenge them.¹¹ Given the contrary evidence in the record, the Staff Proposal instead tries to justify its proposed wireless service quality regulations with unrelated information and inaccurate analysis.

First, the Staff Proposal suggests that service quality regulations are needed because wireless outages “have either maintained high occurrence rates or even increased over the years.”¹² The Staff Proposal asserts that the California Governor’s Office of Emergency Services (“CalOES”) outage data from the three-year period 2021-2023 shows that “wireless outages increased by 75 percent from 3,315 to 5,865 incidents,”¹³ and “adequately confirm[s] the necessity to extend outage-related service [quality] standards to ... wireless services.”¹⁴

In fact, however, the CalOES data does *not* show a high incidence of wireless outages. Over the 2021-2023 period, wireless outage reports ranged from 22% - 37% of all reported

⁸ *Id.* at 157.

⁹ *Id.* at 153.

¹⁰ See, e.g., *Communications Marketplace Report*, 2022 Communications Marketplace Report, 37 FCC Rcd 15514, 15597 fig. II.B.19 (2022) (wireless providers’ average revenue per subscriber has declined year over year for over a decade); CTIA 2023 Survey at 8 (price of wireless service per MB declined by 98% from 2012 to 2022).

¹¹ For example, CTIA discussed these elements of the record in the Workshop, and this was summarized in the Joint Summary, but the Staff Proposal only mentions that CTIA “highlighted that wireless networks are based on radiofrequency technology and are subject to variable performance based on factors outside a carrier’s control.” Staff Proposal at 9.

¹² Staff Proposal at 2; see also *id.* at 5 (“NORS and CalOES data show that outage incidents remain significant for ... wireless service customers over the years.”).

¹³ Staff Proposal at 2.

¹⁴ Staff Proposal at 35.

community isolation outages,¹⁵ and yet wireless providers serve approximately 80% of all voice lines in the State,¹⁶ and operate geographically broader and more diverse networks than other types of telecommunications providers. The data thus shows that the incidence of wireless outages actually is *low* relative to other types of providers—including providers that have long been subject to penalties under the GO 133-D out-of-service rules.

The CalOES data also does not support the Staff Proposal’s conclusion that wireless outages are increasing. The CalOES data shows no appreciable change in the number of wireless outages reported to CalOES from 2021 to 2022 (3,315 versus 3,319). CalOES’s reporting rules changed on October 1, 2022, such that wireless providers were required to report outages affecting 25% of their coverage in a zip code, instead of 50% as had been the case under the prior rule.¹⁷ Staff did not acknowledge this fact, or grapple with the likelihood that this more expansive reporting threshold is the most likely explanation for the change in reportable outages from 3,319 in 2022 to 5,865 in 2023. As such, contrary to the conclusions in the Staff Proposal, the data does *not* demonstrate that there was any increase in wireless outages across the 2021-2023 period due to a degradation in service quality.¹⁸

¹⁵ Staff Proposal at 3 tbl. 1.

¹⁶ FCC, Voice Telephone Services Report, Additional Data Table S.1 Voice Subscriptions by State as of June 30, 2022, https://www.fcc.gov/sites/default/files/vts_state_table_1.xlsx. See also CPUC Communications Division Staff, “Service Quality Outage Analysis” at 22, *attachment to* Administrative Law Judge’s Ruling Requesting Comments on the Service Quality Outage Analysis Report, R.22-03-016 (filed April 17, 2023) (wireless voice connections 78.6% of total in 2021 per FCC data).

¹⁷ See State of California Office of Administrative Law, “Notice of Approval of Regulatory Action,” OAL Matter Number 2022-0621-02 (August 3, 2022), <https://www.caloes.ca.gov/wp-content/uploads/PSC/Documents/2022-0621-02S-Approval.pdf>.

¹⁸ FCC Network Outage Reporting System (“NORS”) data, which the Staff Proposal also cites, also shows a decline in wireless outage reports from 2021 to 2023—although CTIA reiterates that NORS reports also are not relevant to this proceeding. See CTIA Comments on Staff Outage Analysis Report, R.22-03-016 at 3-6 (Filed May 18, 2023).

The Staff Proposal also relies on advocacy groups’ comments following the Workshop¹⁹ that, as CTIA noted at the time, “either have nothing to do with wireless carriers or have nothing to do with service quality”²⁰ to support its finding that “the Commission must update GO 133-D’s service standards and enforcement mechanisms” to “more fully include ...wireless... services.”²¹ The Staff Proposal attempts to create a false impression of wireless service quality problems by lumping wireless service together with complaints about other types of service,²² and mischaracterizing as service quality complaints the concerns of customers wishing to see wireless service extended further into their rural and Tribal areas.²³ As CTIA has discussed, however, imposing service quality regulations on wireless providers is more likely to *deter* the further expansion of wireless networks into hard-to-serve areas, and in any event, service quality regulations would not apply outside of wireless providers’ network boundaries.²⁴

In sum, the record in this proceeding shows that the Commission’s light-touch regulatory approach has fostered intensive wireless industry investments that have improved service quality and lowered consumer prices. The Staff Proposal provides no basis for the Commission to change its approach.

¹⁹ Staff Proposal at 9-11.

²⁰ CTIA Workshop Summary Reply Comments at 9.

²¹ Staff Proposal at 10-11.

²² See, e.g., Staff Proposal at 21 fig. 6 (top issue at public participation hearings was “customer service (poor)” without differentiation by provider type); *id.* at 9 & n.40 (rural and marginalized communities “experienc[e] persistent problems with their communications services” that “competition alone will not” address, without differentiating by provider type); *id.* at 10 (after citing only “plain old telephone service,” or “POTS,” complaints, concluding that “many tribes in the state experience service quality with their communications services”).

²³ See, e.g., Staff Proposal at 20-21 & fig. 6.

²⁴ See CTIA Workshop Reply Comments at 3-6.

B. Adopting Wireless Service Quality Regulations Would Be Bad Policy.

In addition to failing to establish any factual predicate for wireless service quality regulations, the Staff Proposal also fails to establish any policy basis for its proposals.

The Staff Proposal relies frequently on the false tautology that, because voice services—including wireless voice services—are “essential” communications services, it is somehow *necessary* for the Commission to set service quality standards for them.²⁵ The Staff Proposal presumes that, because the Commission regulated the service quality of telephone service when it was a monopoly utility service, and voice service is now provided by wireless (and other) providers, the Commission should extend GO 133-D service quality regulations to wireless voice services.²⁶

In doing so, however, the Staff Proposal ignores the extensive record in this docket showing that regulators impose service quality regulations in monopoly markets to *approximate* the optimal service quality outcomes *already* produced in competitive markets—and the wireless market remains robustly competitive. Indeed, at an earlier stage of the Commission’s consideration of whether to modify GO 133-D requirements, the Commission’s own consultants relied on this same economic principle in formulating their recommendations. Specifically, Recommendation 2 in the Network Exam Report states:

In an effectively competitive market, persistently poor service quality would drive customers to take their business elsewhere. Where competition is not present, fines imposed due to an ILEC’s failure to meet service quality standards should be high enough so as to have the same financial

²⁵ See, e.g., Staff Proposal at 10 (“To provide a relevant service quality framework for essential communication services, the Commission must update GO 133-D’s service quality standards and enforcement mechanisms” to “more fully include ... wireless voice services....”).

²⁶ See, e.g., Staff Proposal at 36 (“Voice service is an essential service. Since voice service is delivered by different technology platforms, such as ... wireless, it is crucial to establish service standards” for those services).

consequences as poor service quality under competitive market conditions.²⁷

These economic principles are confirmed in extensive economic testimony filed in this docket and in response to the Petition for Rulemaking that initiated it.²⁸ And they are further amplified in the attached Report Aren Megerdichian, Ph.D., which confirms that the wireless market exhibits “hallmarks of a well-functioning, competitive marketplace,”²⁹ and that “[t]his competition among providers to acquire new subscribers and to keep existing subscribers keeps wireless service quality at a competitively optimal level.”³⁰

The economic testimony in the record also cautions that attempting to regulate service quality in a competitive environment, such as the wireless market, actually can harm consumers rather than help them.³¹ Dr. Megerdichian confirms this, noting that:

When a market is competitive and there is not a discernible and material market failure, imposing an unnecessary and inherently uncertain regulatory framework will create the undesirable effect of reducing investment incentives and increasing costs incurred by service providers. Ultimately, this will harm wireless service subscribers through reduced

²⁷ Economics and Technology, Inc., EXAMINATION OF THE LOCAL TELECOMMUNICATIONS NETWORKS AND RELATED POLICIES AND PRACTICES OF AT&T CALIFORNIA AND FRONTIER CALIFORNIA: STUDY CONDUCTED PURSUANT TO THE CALIFORNIA PUC SERVICE QUALITY RULEMAKING, at 547, Ch. 11, Recommendation 2 (April 2019), <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/network-exam-documents/network-exam-report-april-2019-compressed.pdf>.

²⁸ See Comments of the California Cable and Telecommunications Association in Response to the Order Instituting Rulemaking Proceeding to Consider Amendments to General Order 133, at Exhibit B, Report of Dr. Gregory L. Rosston and Dr. Ana McDowall on Behalf of the California Cable and Telecommunications Association, at 33-35 (May 9, 2022) (“Rosston-McDowall Declaration”); Reply Comments on OIR of Cellco Partnership dba Verizon Wireless at Attachment A, Reply Expert Report of Christian M. Dippon, Ph.D, at 27 (May 23, 2022) (“Dippon Declaration”).

²⁹ Wireless Service Quality Regulation: An Economic Assessment of Marketplace and Enforcement Realities at 9, September 3, 2024, Attachment A (“Megerdichian Report”).

³⁰ Megerdichian Report at 19. This conclusion is borne out by the lack of any factual evidence of problems with wireless service quality. See *supra* Section II.A.

³¹ See Rosston-McDowall Declaration at 33 ¶¶ 90-91; Dippon Declaration at 55.

coverage, higher prices, less output, or lower-quality services compared to a world without the regulation.³²

Dr. Megerdichian also directly refutes the Staff Proposal's assumption that rising consumer usage of wireless voice services justifies imposing service quality regulations on wireless. Dr. Megerdichian observes that:

The extensive use of wireless services by consumers now and in the future is not a basis for imposing service quality standards on wireless service providers. Quite the opposite: The continued growth in demand for wireless services and its expected expanded role in the U.S. communications landscape will continue to create incentives for wireless providers to compete vigorously, including by competing on service quality. Therefore, sound regulatory policy should continue to rely on the Commission's principle that competition will ensure service quality in the wireless industry.³³

Thus, the record in this proceeding shows that adopting service quality regulations for wireless providers is unnecessary and, indeed, potentially harmful to consumers. The Commission should therefore reject the Staff Proposal.

III. ADOPTING THE STAFF PROPOSAL WOULD VIOLATE FEDERAL LAW

A. The Penalties Mechanism Constitutes Impermissible Rate Regulation That is Expressly Preempted by Section 332(c)(3)(A) of the Communications Act.

The Ruling notes that, for outages of 24 hours or more, “[t]he Staff Proposal includes a new penalty in the form of an automatic customer credit, a \$5 per-day customer credit (or “base fine”) for all customers and a \$10 per-day credit for customers living in disadvantaged communities (DAC) and communications areas of affordability concern (AAC).”³⁴ The Staff

³² Megerdichian Report at 23-24.

³³ Megerdichian Report at 7.

³⁴ Ruling at 4 (footnotes omitted).

Proposal would mandate that for a covered outage (*i.e.*, one that lasts 24 hours or more), this penalty will escalate daily.³⁵ As the Ruling acknowledges, the penalty operates in the form of a mandatory customer “credit” or “refund[.]”³⁶ Clearly, then, this regulates the rates or price of wireless service—as a credit or refund operates as a deduction from or set-off against the monthly price that the customer pays for wireless service.³⁷

This type of rate regulation is explicitly prohibited by federal law. Section 332(c)(3)(A) of the federal Communications Act states in pertinent part that “*no State or local government shall have any authority to regulate the entry of or the rates charged by any commercial mobile service or any private mobile service.*”³⁸ This express preemption clause preempts state rate and entry regulation of wireless voice service (“commercial mobile service” or “CMRS”), which is exactly the type of regulation imposed by the Staff Proposal.

The FCC has broadly interpreted Section 332(c)(A) “to ‘prohibit states from prescribing, setting, or fixing rates’ of wireless service providers. Thus, [the FCC has] f[ound] that the term ‘rates charged’ in Section 332(c)(3)(A) may include *both rate levels and rate structures* for CMRS and that *the states are precluded from regulating either of these*. Accordingly, states not only may not prescribe how much may be charged for these services, but also may not prescribe

³⁵ For outages of 24 hours or more, the staff proposed the following multipliers (in parentheses): (i) 24-48 hours (1x); (ii) 48-72 hours (2x); (iii) 72-96 hours (3x); (iv) above 96 hours (4x). Staff Proposal at 39; Ruling at Attachment B (“Staff Proposed General Order 133-D Redline”), § 2.6.h.

³⁶ Ruling at 4.

³⁷ See, e.g., Staff Proposal at 45 (“For existing customer[s,] credits must apply automatically as either bill credit or direct refund within 30 days from the end of the billing period in which the service standard violation occurred.”); Staff Proposed General Order 133-D Redline, §§ 2.6.f, 2.6.g (requiring “automatic customer credit[s]”).

³⁸ 47 U.S.C. § 332(c)(3)(A) (emphasis added).

the rate elements for CMRS or specify which among the CMRS services provided can be subject to charges by CMRS providers.”³⁹

Under well-established precedent, a state rule requiring the payment of refunds or credits to offset prices for wireless voice service is clearly a direct form of rate regulation that Congress has expressly prohibited. In one case, for example, the plaintiffs alleged that a wireless provider (Comcast Cellular) violated state law by charging customers in one-minute billing increments (“rounding up”) and sought an injunction to block Comcast Cellular from charging for the non-communication period from the time a call is initiated until the call is answered. The court held that this state law claim was preempted as unlawful rate regulation because “[t]he request for such an injunction is nothing less than a request that the court regulate the manner in which Comcast calculates its rate schedules.”⁴⁰ The court further explained that “Plaintiffs’ claims present[ed] a direct challenge to the calculation of the rates charged by Comcast for cellular telephone service. The remedies they seek would require a state court to engage in regulation of the rates charged by a CMRS provider, something it is explicitly prohibited from doing.”⁴¹ Other cases similarly hold that preventing wireless providers from charging for certain time periods—such as in the Staff Proposal’s refunds mechanism here—runs afoul of Section 332(c)(3)(A) and is expressly preempted.⁴²

³⁹ *Matter of Sw. Bell Mobile Sys., Inc.*, 14 FCC Rcd. 19898, 19906-19907, ¶ 20 (1999) (emphasis added; footnotes and citations omitted); see also *Ball v. GTE Mobilnet of Cal.*, 81 Cal. App. 4th 529, 538 (2000) (quoting *Matter of Sw. Bell Mobile Systems* with approval); *Cellco P’ship v. Hatch*, 431 F.3d 1077, 1081 (8th Cir. 2005) (same).

⁴⁰ *In re Comcast Cellular Telecommunications Litig.*, 949 F. Supp. 1193, 1201 (E.D. Pa. 1996).

⁴¹ *Id.*

⁴² See, e.g., *Ball v. GTE Mobilnet of Cal.*, 81 Cal. App. 4th at 537–38 (“The plaintiffs’ claims here, like the plaintiffs’ claims in *Comcast Cellular*, attack the reasonableness of the method by which the defendants calculate the length and, consequently, the cost of a cellular phone call. As such, the plaintiffs’

The case law also confirms that state requirements to compensate customers for periods when their CMRS provider allegedly provided insufficient or non-existent service necessarily involve the sort of impermissible rate regulation that Section 332(c)(3)(A) preempts.⁴³ Here, by ordering CMRS providers to provide refunds or credits to customers who sustained covered network outages, the Commission would be directly regulating the rates of CMRS service, which states are expressly prohibited from doing under Section 332(c)(3)(A).

B. The Outage Prohibition and Related Enforcement Mechanisms Are Also Preempted by Federal Law on Other Grounds.

The Staff Proposal is also preempted by federal law because, by penalizing specified outages exceeding 24 hours (the “Outage Prohibition”), it seeks to regulate the technical aspects of wireless providers’ usage of their radiofrequency spectrum and the design of their networks to ensure a quality of service that the Commission deems desirable.⁴⁴ Such regulation, backed by

claims present a direct challenge to the rates charged by the defendants for cellular phone service” in violation of Section 332(c)); *Cellco P'ship v. Hatch*, 431 F.3d 1077, 1082 (8th Cir. 2005) (“We agree with the FCC that ‘fixing rates of ... providers’ is rate regulation, ... and we conclude that ... the Minnesota statute constitutes impermissible rate regulation preempted by federal law. The [statute’s] requirement ... that consumers consent to any substantive change prevents providers from raising rates for a period of time, and thus fixes the rates.”); *CTIA--Wireless Ass’n v. Echols*, No. 1:13-CV-399-RWS, 2013 WL 6633177, at *2 (N.D. Ga. Dec. 17, 2013) (“[T]he Court finds that the [Georgia Public Service Commission] requirement to bill and collect a minimum service rate of \$5.00 per month is clearly a rate regulation” and therefore likely preempted by Section 332(c)(3)(A)); *Hesse v. Sprint Spectrum L.P.*, 2007 WL 172614, at *1-*3 (W.D. Wash. Jan. 18, 2007) (state prohibition on levying a Business and Occupation tax constituted unlawful rate regulation preempted by Section 332(c)(3)(A)); *Gatton v. T-Mobile USA, Inc.*, 2003 WL 21530185, at *8 (C.D. Cal. Apr. 18, 2003) (challenge to policy against carrying over unused minutes of voice calling to next month necessarily “implicate[d] the rates charged by” a wireless provider, and “the relief sought by Plaintiffs ... would change the way” the provider “calculates its rates,” which Congress “has prohibited”).

⁴³ See, e.g., *Gilmore v. Sw. Bell Mobile Sys., Inc.*, 156 F. Supp. 2d 916, 924-925 (N.D. Ill. 2001) (state law claims that plaintiff received no services or insufficient services in return for wireless service charges paid constituted “a rate challenge that falls within the purview of the [federal Communications Act] ... and, as state law claims, [were] preempted.”).

⁴⁴ See, e.g., Staff Proposal at 49 (establishing “[r]equirement” for “wireless carriers” to “repair community isolation outage tickets within 24 hours”); *id.* at 36 (specifying that the “threshold for compliance” requires “restoring an outage ticket [*i.e.*, restoring service] within 24 hours,” and adding that

stiff penalties,⁴⁵ is preempted on multiple additional grounds: (a) it is expressly preempted by Section 332(c)(3)(A) of the Communications Act as unlawful entry and rate regulation; (b) it is subject to “field preemption” because it impinges on the FCC’s exclusive authority over technical matters involving the use of radiofrequency licensed by the FCC; and (c) it is subject to “conflict preemption” because it obstructs federal policy—specifically, the FCC’s decision *not* to penalize CMRS providers for outages of the type covered by the Staff Proposal.

1. *The Proposed Rules are Expressly Preempted by Section 332(c)(3)(A).*

Section 332(c)(3)(A) of the Communications Act expressly preempts state regulation of wireless networks, including (but not limited to) service quality mandates that, as here, have the effect of dictating wireless network design, deployment, and operation. As described above, the plain terms of Section 332(c)(3)(A) prohibit states from “regulat[ing] the entry of or the rates charged by any commercial mobile service or any private mobile service.”⁴⁶

Judicial precedent makes clear that state action directed at the quality, sufficiency, or configuration of wireless providers’ networks is expressly preempted by Section 332(c)(3)(A), because “a complaint that service quality is poor is really an attack on the rates charged” and

“penalties should increase in accordance with the length of outages”); Staff Proposed General Order 133-D Redline, § 2.6.a (“Wireless Community Isolation Outage Repair Standard requires telephone corporations to restore community isolation outage tickets within 24 hours”).

⁴⁵ Preemption on the grounds discussed below applies to both the Outage Prohibition itself and the related enforcement mechanisms proposed by the staff and outlined in the ALJ Order, including (i) the “Automatic Customer Credit Fine Mechanism” involving customer refunds or credits; (ii) the “General Fund Fine” (penalties payable to the California State General Fund); (iii) the potential alternative fine mechanisms mandating investments in capital (“Capital Investment-in-lieu-of-fine”) or operational expenditures (“Ongoing Operational Expenditures In Lieu of Fine”); and (iv) the “Corrective Action Plan” remedy. See ALJ Order at 4-7; Staff Proposal at 28-30.

⁴⁶ 47 U.S.C. § 332(c)(3)(A); see also H. Rpt. No. 103–111, at 260 (1993), *reprinted in* 1993 U.S.C.C.A.N. 378, 587 (Congress created Section 332(c)(3)(A) to “preempt state *rate* and *entry* regulation of all commercial mobile services.”).

therefore is preempted.⁴⁷ Similarly, the Ninth Circuit has acknowledged Bastien’s holding that whether cell phone service reaches “the proper standard” inherently deals with matters preempted under Section 332(c)(3)(A).⁴⁸

Federal courts in California agree that state inquiries into “the level of cell phone service” that a consumer has received or whether a wireless provider has “the infrastructure necessary to provide” a given level of service inherently “relate to entry of or rates charged by a CMRS provider” and are preempted by Section 332(c)(3)(A).⁴⁹ As the U.S. District Court for the Northern District of California has explained, state directives that would have the effect of “‘alter[ing] the federal regulation of tower construction, location and coverage, quality of service and hence rates for service,’” tread impermissibly into the FCC’s exclusive authority to regulate the “modes and conditions under which [a wireless provider] may begin to offer service”—*i.e.*, enter the market.⁵⁰

⁴⁷ *Bastien v. AT&T Wireless Servs.*, 205 F.3d 983, 988 (7th Cir. 2000) (emphasis added); *see also American Tel. & Tel. Co. v. Central Office Tel., Inc.*, 524 U.S. 214, 223 (1988) (“Rates ... do not exist in isolation. They have meaning only when one knows the services to which they are attached. Any claim for excessive rates can be couched as a claim for inadequate services and vice versa.”).

⁴⁸ *Shroyer v. New Cingular Wireless Servs.*, 622 F.3d 1035, 1040–41 (9th Cir. 2010) (noting that “[t]he plaintiff in *Bastien* was asking the court to decide the requisite number of cellular towers needed to support service” and that the preempted claim focused on whether “New Cingular’s service is above or below the proper standard for cell phone service”); *see also Aubrey v. Ameritech Mobile Commc’ns, Inc.*, No. 00-75080, 2002 WL 32521813, at *1-*3 (E.D. Mich. June 17, 2002) (state law claims alleging that “subscribers have ‘consistently experienced an unreasonably high frequency of terminated calls and are frequently unable to connect with the wireless service at all’” were preempted by Section 332(c)(3)(A) because “a decision in the Plaintiff’s favor would require a determination as to the type and adequacy of the technology that a wireless service provider ... must use in order to enter or serve a particular market. Moreover, it would also obligate [the provider] to lower its rates for these services. *In light of the plain language of section 332, such claims, which relate to the appropriate technology and the rates that are attendant to providing these services, fall squarely within the purview of the Federal Communications Commission, with whom Congress has entrusted the maintenance of a nation-wide level of uniformity and equality of telecommunications services, and are, thus, expressly preempted.*”) (emphasis added) (following *Bastien*).

⁴⁹ *In re Apple iPhone 3G Prods. Liab. Litig.*, 728 F. Supp. 2d 1065, 1074 (N.D. Cal. 2010).

⁵⁰ *Id.* at 1071 (quoting *Bastien*, 205 F.3d at 989).

The FCC has reached the same conclusions regarding the scope of Section 332(c)(3)(A), explicitly holding that “local jurisdictions *do not have the authority* to require that providers offer certain *types or levels of service, or to dictate the design of a provider’s network.*”⁵¹ This holding, which the Ninth Circuit did not question on appeal, remains binding.

Here, the staff’s proposed Outage Prohibition—as well as any related enforcement mechanisms (*e.g.*, penalties payable to customers as refunds, penalties payable to the California General Fund, penalties mandating capital and/or operating expenditures, and Corrective Action Plans⁵²)—necessarily would dictate both minimum levels of service quality and wireless providers’ network designs (including technical configurations), deployment, and operation. For some of CTIA’s members, a rule prohibiting outages of 24 hours or more and imposing severe penalties for any violation of the rule could force them to modify their network equipment and/or configurations in order to satisfy the new rule, and certainly would influence their network design decisions (especially those concerning the use of small cells).⁵³ Indeed, the Staff Proposal openly acknowledges that its recommendations, including the Outage Prohibition and related fines, are intended to target service quality.⁵⁴ Section 332(c)(3)(A), however, plainly

⁵¹ *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, 33 FCC Rcd. 9088, 9104 n.84 (2018) (*Small Cell Order*) (emphasis added), *pets. for review denied in part and granted in part sub nom. City of Portland v. United States*, 969 F.3d 1020, 1032 (9th Cir. 2020) (substantially upholding the challenged FCC orders).

⁵² *See* Ruling at 4-7.

⁵³ *See* Declaration of Mark Settle (“Settle Declaration”) at 5-6, attached hereto as Exhibit B.

⁵⁴ *See* Staff Proposal at 42 (identifying “recommendations that staff contends are necessary to establish a uniform minimum standard of service quality for all Californians”).

preempts such service quality mandates, which impermissibly seek to dictate wireless network design and deployment.⁵⁵

2. *The Proposed Rules Impinge on the FCC’s Exclusive Jurisdiction and Are Subject to Field Preemption.*

For similar reasons, the Outage Prohibition and enforcement mechanisms also would be subject to field preemption by impinging on the FCC’s exclusive authority in an area that is already subject to extensive and pervasive federal regulation.

As noted above, the Outage Prohibition requires CMRS providers to deliver substantially uninterrupted mobile voice service and thereby would impose technical obligations on the performance of providers’ radiofrequency networks.⁵⁶ This falls squarely within the FCC’s “exclusive authority over technical matters” relating to use of radiofrequency spectrum,⁵⁷ and its related exclusive authority over wireless infrastructure design and deployment.

⁵⁵ The Staff’s Proposal cannot avoid express preemption under Section 332(c)(3)(A) based on the theory that the proposed rules would fall within the narrow exception to preemption for state regulation of “the *other* terms and conditions of commercial mobile services” (*i.e.*, CMRS). *See* 47 U.S.C. § 332(c)(3)(A) (emphasis added). By its terms, that exception applies to matters *other than* rate and entry regulation, which are both flatly prohibited. *See Bastien*, 205 F.3d at 987 (exception “continues to allow claims that *do not* touch on the areas of rates or market entry”) (emphasis added). Furthermore, case law confirms that the exception is narrow and covers such matters as state regulation of “deceptive description[s] of [] rates in invoices and advertising,” *State ex rel. Nixon v. Nextel W. Corp.*, 248 F. Supp.2d 885, 892 (E.D. Mo. 2003), and “misrepresentations regarding service,” *Pac. Bell Wireless (Cingular) v. Pub. Utils. Comm’n*, 140 Cal. App. 4th 733, 742 (2006). Such regulation of misrepresentation is far removed from the Staff Proposal’s unlawful attempt here to assert authority over wireless providers’ network configurations and other technical matters concerning how they operate their federally licensed spectrum.

⁵⁶ The FCC has recognized the connection between signal strength and wireless network performance—for example, observing that “the minimum field strength necessary for reliable service can be expected to vary from system to system, depending on the technology employed and other qualitative factors that can not be predicted at this time.” *Amend. of the Commission’s Rules to Establish New Pers. Commc’n Servs.*, 8 FCC Rcd. 7700, 7774 n.130 (1993), *recon. granted in part on other grounds*, 9 FCC Rcd. 4957 (1994). Accordingly, any requirement that CMRS providers deliver uninterrupted call completion for specified periods—such as the Outage Prohibition proposed by the staff here—would impermissibly regulate technical matters within the FCC’s exclusive jurisdiction.

⁵⁷ *New York SMSA Ltd. P’ship v. Town of Clarkstown*, 612 F.3d 97, 105 (2d Cir. 2010) (citation and internal quotations omitted); *see also Head v. New Mexico Bd. of Examiners in Optometry*, 374 U.S. 424,

The FCC’s exclusive occupation of the field of radiofrequency spectrum regulation and usage under Title III of the Communications Act is a bedrock principle in communications law.⁵⁸ Title III constitutes a “unified and comprehensive regulatory system for the industry”⁵⁹ whose purpose is “to maintain the control of the United States over all the channels of radio transmission.”⁶⁰ Relatedly, “[l]icensing [of spectrum] has long been recognized as the FCC’s core tool in the regulation of market entry.”⁶¹

In the Supreme Court’s words, these exclusive and “comprehensive powers” include addressing “technical matters” as part of the FCC’s mandate to promote the “effective use of radio in the public interest.”⁶² That is, “Congress intended the FCC to possess *exclusive authority over technical matters*” relating to use of spectrum—and “Congress’s grant of authority to the FCC was intended to be exclusive and to preempt local regulation.”⁶³

Similarly, the Communications Act confers on the FCC expansive and plenary authority over the operation of wireless infrastructure (i.e., the infrastructure used to facilitate the use of

430 n.6 (1963). (“[T]he Commission’s jurisdiction over technical matters such as a frequency allocation . . . is clearly exclusive”).

⁵⁸ See, e.g., *Cellco P’Ship v. FCC*, 700 F.3d 534, 542 (D.C. Cir. 2012) (quoting *NBC v. United States*, 319 U.S. 190 (1943)). See also *Southwestern Bell Wireless Inc. v. Johnson County Board of County Commissioners*, 199 F.3d 1185, 1190 (10th Cir. 1999); *Freeman v. Burlington Broadcasters Inc.*, 204 F.3d 311, 320 (2d Cir. 2000); *Broyde v. Gotham Tower, Inc.*, 13 F.3d 994, 997 (6th Cir. 1994).

⁵⁹ *NBC*, 319 U.S. at 214.

⁶⁰ 47 U.S.C. § 301.

⁶¹ *Telesaurus VPC, LLC v. Power*, 623 F.3d 998, 1008–09 (9th Cir. 2010) (citing, *inter alia*, 47 U.S.C. § 301 and discussing “the FCC’s duty to manage the spectrum available to mobile services through a licensing system”).

⁶² *NBC*, 319 U.S. at 217. See also *Head*, 374 U.S. at 430 n.6 (“[T]he Commission’s jurisdiction over technical matters such as a frequency allocation . . . is clearly exclusive”).

⁶³ *New York SMSA Ltd. P’ship v. Town of Clarkstown*, 612 F.3d at 105 (citation and internal quotation marks omitted) (emphasis added); accord *Southwestern Bell Wireless Inc. v. Johnson County Bd. of County Comm’rs*, 199 F.3d at 1193 (“Congress intended federal regulation of [radio frequency interference] issues to be *so pervasive as to occupy the field*.”) (emphasis added).

spectrum subject to the FCC’s exclusive control). For instance, a non-exhaustive list of the FCC’s exclusive regulatory authority includes “[p]rescrib[ing] the nature of the services to be rendered” by the licensees; “determin[ing] the power” level that each licensee “shall use” and “the time during which it may operate”; “establish[ing]” the “zones or areas to be served”; and “regulat[ing] the kind of apparatus to be used.”⁶⁴

Thus, “[t]he [A]ct makes the FCC responsible for determining the number, placement and operation of the cellular towers and other infrastructure,” and “Congress has expressed its decision that these areas be reserved exclusively for federal adjudication.”⁶⁵

As federal courts have recognized, the FCC has exercised its exclusive jurisdiction over wireless services in exhaustive fashion through a comprehensive set of regulations.⁶⁶ These include detailed regulations governing such technical matters as:

- service areas to be covered (including “adequate service” and “substantial service” in relevant areas) and construction requirements;⁶⁷
- signal strength requirements;⁶⁸
- maximum power and antenna height limits for operating cellular transmitters and fixed transmitters;⁶⁹
- maximum emission limits;⁷⁰
- signal interference restrictions;⁷¹
- mandates to discontinue service in certain situations,⁷²

⁶⁴ 47 U.S.C. §§ 303(b), 303(c), 303(e), and 303(h).

⁶⁵ *Bastien*, 205 F.3d at 988 (citing 47 C.F.R. §§ 24.103, 24.132, and 24.232).

⁶⁶ *See, e.g., id.*; *see also, e.g.*, 47 C.F.R. Chapter 1, Subchapter B, Parts 20 and 22 (laying out rules for Commercial Mobile Services and Public Mobile Services).

⁶⁷ 47 C.F.R. §§ 22.911, 24.203, 27.14; *see also infra* at Section III.B.3 (discussing “substantial service” requirement).

⁶⁸ *Id.*, §§ 22.911, 24.236, 27.55.

⁶⁹ *Id.*, §§ 22.913, 24.232, 27.50.

⁷⁰ *Id.*, §§ 24.238, 27.53.

⁷¹ *Id.*, §§ 22.970-22.972, § 27.57.

⁷² *Id.*, § 22.352, § 27.64.

- mandates to transmit 911 calls,⁷³ which the FCC has relied on to penalize a subset of network outages based on negligent action by the communications provider;⁷⁴ and
- detailed rules governing obligations to report network outages to the FCC.⁷⁵

Simply put, the FCC exclusively regulates *when*, *where*, and *how* wireless providers may or must provide service to consumers, including but not limited to all related technical issues governing network design, deployment, and operations. The Staff Proposal’s Outage Prohibition and related penalties to sanction violations of the proposed rule infringe on these core areas of exclusive FCC jurisdiction by dictating technical matters of network design and operations—matters directly relevant to CTIA members’ ability to comply with the Outage Prohibition and avoid the penalties they would otherwise risk incurring. Indeed, the Staff Proposal explicitly requires CMRS providers to “repair” outage tickets within 24 hours.⁷⁶ And it proposes to penalize covered outages of more than 24 hours, even though Congress has tasked the FCC—not the Commission—with (among other things) “[p]rescrib[ing] the nature of the services to be rendered” by CMRS providers, “determin[ing] the[ir] power” levels and “the time[s] during

⁷³ *Id.*, §§ 9.4, 9.10(b).

⁷⁴ See, e.g., *Matter of Lumen Techs., Inc.*, 2023 WL 8540521, *2, *10-11, ¶¶ 6, 38, 41 (Notice of Apparent Liability “assessing the reasonableness of Lumen’s conduct in connection with ... 911 Outages” and alleging that, in allowing outage that prevented the connection of 911 calls, Lumen “failed to employ reasonable steps in designing and operating key aspects of its network”); see also *infra* at 22-23.

⁷⁵ See 47 C.F.R. § 4.9. For example, CMRS providers must notify the FCC “within 120 minutes of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration” that affects certain specified facilities (including potentially effecting “a 911 special facility” or that meets certain thresholds of “user minutes”). See *id.*, § 4.9(e); see also *Matter of Xo Commc’ns, LLC*, 25 FCC Rcd. 17025 (EB 2011) (consent decree resolving FCC investigation into telecommunications provider’s compliance with network outage reporting obligations).

⁷⁶ See, e.g., Staff Proposal at 49 (establishing “[r]equirement” for “wireless carriers” to “repair community isolation outage tickets within 24 hours”); *id.* at 36 (specifying that the “threshold for compliance” requires “restoring an outage ticket [i.e., restoring service] within 24 hours”); Staff Proposed General Order 133-D Redline, § 2.6.a (“Wireless Community Isolation Outage Repair Standard requires telephone corporations to restore community isolation outage tickets within 24 hours”).

which [they] may operate,” and “establish[ing]” the “zones or areas to be served.”⁷⁷

Accordingly, the Staff Proposal is a direct and obvious attempt by the state to dictate network technical matters pertaining to the use of spectrum that falls squarely within the FCC’s exclusive jurisdiction. It is therefore subject to field preemption.

3. *The Proposed Rules Frustrate Federal Objectives and Therefore Are Subject to Conflict Preemption.*

The Outage Prohibition and related enforcement mechanisms also would be preempted for the additional reason that they conflict with federal policy—the FCC’s decision *not* to penalize CMRS providers for outages of the kind covered by the Staff Proposal.

Conflict preemption can exist beyond the scope of a related express preemption statute.⁷⁸ A state law is subject to conflict preemption whenever it “prevent[s] or frustrate[s] the accomplishment of a federal objective,” including “the purposes and objectives” of the FCC.⁷⁹ And “[w]hen Congress charges an agency with balancing competing [statutory] objectives,” a state’s attempts to re-balance those objectives or “impose a different standard” are preempted because they would present an obstacle to the accomplishment and execution of federal objectives.⁸⁰

Furthermore, a federal agency’s decision to *not* regulate or penalize certain conduct for policy reasons preempts contrary state regulatory efforts.⁸¹

⁷⁷ 47 U.S.C. §§ 303(b), 303(c), 303(h).

⁷⁸ See, e.g., *Robbins v. New Cingular Wireless PCS, LLC*, 854 F.3d 315, 319–320 (6th Cir. 2017); accord *Farina v. Nokia*, 625 F.3d 97, 122–34 (3d Cir. 2010).

⁷⁹ *Geier v. Am. Honda Motor Co.*, 529 U.S. 861, 873 (2000); *Metrophones Telecomms., Inc. v. Glob. Crossing Telecomms., Inc.*, 423 F.3d 1056, 1072–73 (9th Cir. 2005), *aff’d*, 550 U.S. 45 (2007).

⁸⁰ *Farina*, 625 F.3d at 123; *Oneok, Inc. v. Learjet, Inc.*, 135 S. Ct. 1591, 1595 (2015).

⁸¹ See, e.g., *Ray v. Atlantic Richfield Co.*, 435 U.S. 151, 178 (1978) (“[W]here failure of federal officials affirmatively to exercise their full authority takes on the character of a ruling that no such regulation is

While the FCC has adopted extensive regulations governing power emissions, obligations to provide “substantial service” pursuant to CMRS licenses, and other technical matters, it has deliberately declined to penalize CMRS providers for even lengthy outages of much more than 24 hours. To the contrary, the FCC has afforded providers a “safe harbor” protection when seeking renewal of their licenses even in cases where they have sustained temporary service outages.⁸² The FCC also requires providers to *report* outages,⁸³ but does not penalize them for all outages of 24 hours or more, much less under a strict-liability standard. The Staff Proposal would undermine the FCC’s carefully calibrated policy judgments and impose penalties for conduct that the FCC has affirmatively decided *not* to penalize.

The FCC has long applied a flexible “substantial service” or “substantial performance” standard to determine whether a provider’s wireless service is adequate to justify renewal of its license.⁸⁴ In applying this requirement, since the early days of cellular service, the FCC has

appropriate or approved pursuant to the policy of the statute, States are not permitted to use their police power to enact such a regulation.”) (cleaned up); *Arkansas Elec. Coop. Corp. v. Arkansas Pub. Serv. Comm’n*, 461 U.S. 375, 384 (1983) (“[A] federal decision to forgo regulation in a given area may imply an authoritative federal determination that the area is best left *unregulated*, and in that event would have as much pre-emptive force as a decision *to* regulate.”).

⁸² 47 C.F.R. § 1.949(e)(2)(ii).

⁸³ 47 C.F.R. §§ 4.1 – 4.11 and 4.18.

⁸⁴ See, e.g., *Matter of Amend. of Part 22 of the Commission’s Rules Relating to License Renewals in the Domestic Pub. Cellular Radio Telecommunications Serv.*, 8 FCC Rcd. 2834, 2835-36, ¶ 8, 10 (1993) (*Cellular Order*) (in determining whether a cellular licensee is entitled to a “renewal expectancy” to keep its license, the FCC will consider whether licensee “has provided ‘substantial’ service during its past license term”), *recon denied*, 8 FCC Rcd. 6288 (1993); see also 47 C.F.R. § 27.14(a) (“‘Substantial service’ is defined as service which is sound, favorable and substantially above a level of mediocre service which just might minimally warrant renewal.”).

recognized that outages do occur and are not inconsistent with a showing of “substantial service.”⁸⁵

In codifying this policy, the FCC made the decision to afford CMRS providers that seek to renew their licenses a “safe harbor” if they “certify that no *permanent discontinuance* of service occurred during the license term.”⁸⁶ Moreover, the FCC has confirmed that a provider may avail itself of this safe harbor if it reduces its operations below the requisite level for fewer than 180 days due to “temporary service outages.”⁸⁷ In other words, the FCC again recognized that outages inevitably occur and these occurrences should not result in adverse action against the affected provider (*i.e.*, non-renewal of its license). When discussing related rules concerning discontinuance of service to wireless consumers, the FCC explained that “the approach we adopt today strikes an appropriate balance between affording licensees operational flexibility and ensuring that licensed spectrum is efficiently utilized.”⁸⁸

⁸⁵ *Cellular Order*, 8 FCC Rcd. at 2836, ¶ 10 (as part of “substantial service” analysis, FCC will consider among other factors, “the extent to which service has been provided on a continuous basis, *i.e.*, the system has been reliable and has *not had many (if any) significant outages*”) (emphasis added).

⁸⁶ 47 C.F.R. § 1.949(e)(2)(ii) (emphasis added).

⁸⁷ *Matter of Amend. of Parts 1, 22, 24, 27, 74, 80, 90, 95, & 101 to Establish Unif. License Renewal, Discontinuance of Operation, & Geographic Partitioning & Spectrum Disaggregation Rules & Policies for Certain Wireless Radio Servs.*, 32 FCC Rcd. 8874, 8884, ¶ 21 (2017) (*License Renewal Order*) (“[W]e clarify that licensees who temporarily drop below their construction benchmark for fewer than 180 days may avail themselves of the safe harbor”) (citing with approval comments seeking confirmation that a licensee may rely on the safe harbor even when “there are circumstances (*e.g.*, network upgrades, natural disasters, power outages, routine maintenance, *temporary service outages*) during which a licensee may need to ‘reduce overall coverage below the level required by buildout requirements, or briefly turn down service ... for a limited period’”) (emphasis added); *id.* at 8883, ¶ 19 & n.43 (“Consistent with our treatment of wireless providers using geographic licenses as discussed below, licensees who temporarily reduce their operations for fewer than 180 days may avail themselves of the safe harbor”) (citing request for clarification that a wireless licensee “may certify that it has met the level of service during the license term requirement even if it has ‘fallen below the benchmark at some point during the license term’ if, for example, it took sites down for routine maintenance or technology upgrades or *sites were down due to a temporary service outage*”) (emphasis added).

⁸⁸ *Id.* at 8896, ¶ 55.

These rules manifest the FCC’s policy judgment that CMRS providers should not be penalized for service outages—at least when they last for fewer than 180 days (well above the threshold for liability under the Staff Proposal here). To the contrary, the FCC has made clear that such providers are entitled to rely on a safe harbor when seeking renewal of their licenses even when they have sustained such outages.

Furthermore, as discussed above, the FCC requires CMRS providers to *report* outages, but does *not* reflexively penalize them whenever such an outage occurs.⁸⁹ And while the FCC requires the transmission of 911 calls,⁹⁰ even in that critical context it has recognized that providers will be held liable for failing to transmit such calls only where they failed to take reasonable care (*i.e.*, they acted negligently).⁹¹ As the FCC has explained, its “rules anticipate that *some disruptions in service may be unavoidable despite providers’ best efforts to mitigate risks of failure*. Therefore, we do not suggest that any failure whatsoever in a 911 network

⁸⁹ See 47 C.F.R. § 4.9(e) (requiring CMRS providers to “submit electronically a Notification to the Commission” in the case of specified outages, but not imposing liability or penalties for such outages). The staff’s proposed reporting obligation—which requires reporting of outages to CalOES “within 60 minutes of discovery of the outage” (Staff Proposal at 38-39 (emphasis added))—also conflicts with the less restrictive FCC rules, which require reporting of outages to the FCC “within 120 minutes” of discovery, 47 C.F.R. § 4.9(e)(1) (emphasis added).

⁹⁰ 47 C.F.R. §§ 9.4, 9.10(b).

⁹¹ See, e.g., *Matter of Lumen Techs.*, 2023 WL 8540521 at *2, *10-11, ¶¶ 6, 38, 41 (Notice of Apparent Liability “assessing the reasonableness of Lumen’s conduct in connection with ... 911 Outages” and alleging that, in allowing an outage to occur that prevented the connection of 911 calls, Lumen “failed to employ reasonable steps in designing and operating key aspects of its network”) (emphasis added); see also *Matter of Centurylink, Inc.*, 35 FCC Rcd. 14532, 14532, ¶ 1 (EB 2020) (order adopting consent decree, noting that the FCC’s 911 rules “ensure that telecommunications carriers take reasonable measures to ensure the transmission of the public’s 911 calls to emergency call centers”) (emphasis added); *Matter of Centurylink, Inc.*, 34 FCC Rcd. 10257, 10257, ¶ 1 (EB 2019) (order adopting consent decree, noting that FCC Enforcement Bureau investigated whether CenturyLink “reasonably designed and operated its 911 network to ensure reliable transmission of all 911 calls”) (emphasis added); *Matter of W. Safety Commc’ns, Inc.*, 34 FCC Rcd. 10267, 10267, ¶ 1 (EB 2019) (order adopting consent decree, noting that FCC Enforcement Bureau investigated whether West Safety Communications “reasonably designed and operated its 911 network to ensure reliable transmission of all 911 calls”) (emphasis added).

would violate section 9.4.”⁹² Indeed, in numerous recent enforcement actions involving the failure to transmit 911 calls, the FCC stressed that the underlying outage was not one that “result[ed] from an extraordinary natural disaster or other unforeseeable catastrophe,”⁹³ and that it reviewed whether a provider took “*reasonable steps* in designing and operating key aspects of its network.”⁹⁴ This is a far cry from the Staff Proposal’s strict liability regime.

The Staff Proposal would directly undermine and obstruct the FCC’s policy judgments by penalizing providers for *any* outage of more than 24 hours (not limited to outages that result in the failure of 911 calls⁹⁵) and doing so under a strict-liability standard that conflicts with the FCC’s requirement of at least negligence. The Staff Proposal also contains no general exception for “unforeseeable catastrophe[s],”⁹⁶ which the FCC has made clear do not give rise to liability even when they prevent the transmission of the most important types of calls (911 calls).⁹⁷ By second-guessing the FCC’s balancing of policies and by directly obstructing the FCC’s

⁹² *Matter of Lumen Techs.*, 2023 WL 8540521 at *10, ¶ 38 (emphasis added).

⁹³ *Id.* at *10, ¶ 39.

⁹⁴ *Matter of Lumen Techs.*, 2023 WL 8540521 at *2, *10-11, ¶¶ 6, 38, 41 (Notice of Apparent Liability finding that Lumen “failed to employ *reasonable steps* in designing and operating key aspects of its network”) (emphasis added).

⁹⁵ Under the Staff Proposal, CMRS providers must issue automatic refunds to all “impacted” customers whenever a covered outage of 24 hours or more occurs (*i.e.*, an outage involving a “community isolation [that] lasts at least 30 minutes and affects at least 25 percent of a providers’s coverage area in a single zip code,” Staff Proposal at 38, *citing* Cal. Code Regs. Tit. 19 § 2480.2(a)(3)); there is no prerequisite that the customer was in fact prevented from making a 911 call (or even any other type of call). *See* Staff Proposal at 45-46 & n.131 (recommending use of “Cal OES data to identify the impacted users”). Moreover, a “community isolation” is not exclusively tied to outages that limit the transmission of 911 calls; it also covers outages that limit users’ ability to “receive emergency notifications” (an undefined term). Cal. Code Regs. Tit. 19 § 2480.2(a).

⁹⁶ Staff’s proposed rules would only create an exemption for “declared state of emergency days by the Governor.” Staff Proposed General Order 133-D Redline, § 2.6.c. However, as discussed in CTIA’s expert engineer declaration as well as later in these comments, there are a wide variety of other incidents beyond a provider’s control that could impact service without triggering a formal disaster declaration *See* Settle Declaration at 5-6; *see also infra* at Section [V.B].

⁹⁷ *Matter of Lumen Techs.*, 2023 WL 8540521 at *10, ¶ 38.

objectives in “strik[ing] an appropriate balance between affording licensees operational flexibility and ensuring that licensed spectrum is efficiently utilized,”⁹⁸ the proposed Outage Prohibition and related enforcement mechanisms would be preempted based on well-established principles of conflict preemption.⁹⁹

C. The Penalties and “Customer Service” Provisions Violate Section 253(a) of the Communications Act, and Extending Liability to Facilities-Based Providers for Outages Affecting Resellers Would Exacerbate this Defect.

Section 253(a) of the Communications Act provides that “[n]o State . . . statute or regulation, or other State . . . legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.”¹⁰⁰

The FCC has explained that “a state or local legal requirement constitutes an effective prohibition if it ‘materially limits or inhibits the ability of any competitor or potential competitor to compete in a fair and balanced legal and regulatory environment.’”¹⁰¹ Thus, “an effective prohibition occurs where a state or local legal requirement materially inhibits a provider’s ability

⁹⁸ *License Renewal Order*, 32 FCC Rcd. at 8896, ¶ 55.

⁹⁹ *See, e.g., Geier*, 529 U.S. at 881 (proposed liability under state law “would have stood ‘as an obstacle to the accomplishment and execution of’ . . . important means-related federal objectives” established by U.S. Department of Transportation and therefore was preempted) (citation omitted); *Transcontinental Gas Pipe Line Corp. v. State Oil & Gas Board of Mississippi*, 474 U.S. 409, 422-23 (1986) (Congress’s decision to exempt certain gas sales from the Federal Energy Regulatory Commission’s public-utility regulation preempted states from reimposing such regulation on those same sales); *Fidelity Federal Savings & Loan Association v. de la Cuesta*, 458 U.S. 141, 155-156 (1982) (California state law was preempted because it “deprived” lenders of the “‘flexibility’” they enjoyed under a federal regulation); *see also AT&T Corp. v. PUC of Texas*, 373 F.3d 641, 645 (5th Cir. 2004) (“Conflict preemption arises . . . where the federal scheme expressly authorizes an activity which the state scheme disallows.”) (citation omitted).

¹⁰⁰ 47 U.S.C. § 253(a).

¹⁰¹ *Small Cell Order*, 33 FCC Rcd. at 9104, ¶ 37 (citation omitted).

to engage in any of a variety of activities related to its provision of a covered service” (*i.e.*, a telecommunications service such as CMRS).¹⁰²

Following appellate precedent, the FCC has specifically recognized that fees imposed by states or local governments can constitute such an effective prohibition and thereby trigger express preemption of state or local requirements under Section 253(a).¹⁰³

Here, the staff’s proposal to fine CMRS providers for covered outages and its proposed “customer service standard” (which would require CMRS providers to ensure that a “live agent” answers 100% of customer service calls within five minutes and 80% of such calls within one minute)¹⁰⁴ each run afoul of Section 253(a) because they would subject CMRS providers to “a massive increase in cost.”¹⁰⁵ The substantial burden imposed by the penalty provision would only be exacerbated if the Commission made facilities-based wireless providers liable for outages sustained by their resellers.

First, the penalties provision will likely significantly increase costs for CMRS providers and, in some instances, could cause them to sustain a loss on a per-line basis. In some cases, the fines levied (such as the Staff Proposal’s example of a \$100 fine for an outage that lasts 5 days or more for certain categories of customer¹⁰⁶) could dramatically exceed the customer’s monthly

¹⁰² *Id.*

¹⁰³ See *id.* at 9110-9111, ¶¶ 43-45 (citing, *inter alia*, *Puerto Rico Tel. Co. v. Municipality Of Guayanilla*, 450 F.3d 9, 18-19 (1st Cir. 2006) (5% gross revenue fee subjected service provider to a “significant” economic “burden” and thus violated Section 253(a)) and *Qwest Corp. v. City of Santa Fe, New Mexico*, 380 F.3d 1258, 1271 (10th Cir. 2004) (provisions requiring rents for use of public rights of way were “prohibitive because they create[d] a massive increase in cost” for the service provider and thereby violated Section 253(a))).

¹⁰⁴ See Staff Proposal at 41, 49; Ruling at 3 (asking whether this aspect of the Staff Proposal should be adopted).

¹⁰⁵ *City of Santa Fe*, 380 F.3d at 1271; see also *Small Cell Order*, 33 FCC Rcd. at 9111, ¶ 45.

¹⁰⁶ See Staff Proposal at 37.

payment—resulting in a loss to the CMRS provider. And even in cases where the fine is less than the monthly price paid by the customer, the CMRS provider could sustain a net loss per customer when its costs to provide service are taken into account.

CMRS providers offering service under the federal and/or California Lifeline/LifeLine programs are also significantly more likely to sustain such losses given that they typically receive no payments from their customers and rely solely on the limited subsidies they receive under these government programs. This surge in costs—rendering the provision of service not only unprofitable but a net loss to the business for many customers—operates as an effective prohibition that violates Section 253(a).

These concerns would also be exacerbated if the Commission applied the proposed penalty mechanism to facilities-based CMRS providers where a covered outage prevents the provision of service to the customers of any *resellers* (including both resellers with whom the facilities-based providers have direct contractual relationships and downstream resellers with whom they have no direct relationship).¹⁰⁷ Facilities-based providers obviously do not receive the financial benefit of the full monthly payments *due to resellers* from the resellers' end-user customers. Accordingly, if the facilities-based provider were made liable for outages affecting a reseller's customers (as opposed to its own customers) that would certainly result in an even greater financial burden that materially limits the facilities-based provider's ability to provide telecommunications service and to otherwise “compete in a fair and balanced legal and

¹⁰⁷ See Ruling at 4 (“Who should be responsible for paying the customer credit in the case of resold service?”).

regulatory environment.”¹⁰⁸ Indeed, this proposal could cause facilities-based providers to lose money when providing service to resellers. This runs counter to the goal of Section 253(a).

Similarly, the staff’s proposed customer service mandates will likely subject CTIA members to massive and unjustifiable cost increases that would materially inhibit their ability to provide service. In order to try to comply with the staff’s proposed—and wholly arbitrary—mandate to answer 100% of customer service calls within five minutes and 80% of calls within just 60 seconds,¹⁰⁹ CTIA members estimate that they would need to hire more customer care representatives at a substantial cost. Even then, it would be practically impossible to guarantee that every call will be answered within five minutes (or 80% of calls within just one minute) because there are often surges of customer service calls following major events such as natural disasters. Furthermore, the customer service mandates are particularly onerous during holidays, because incoming call volume is often elevated (*e.g.*, in response to activation and support for new phones gifted on Christmas morning) and it would be more costly to hire additional support coverage during those periods. To maintain the staffing necessary to satisfy the answering-time mandates during these periods would potentially create massive costs that would “materially inhibit[] ... provider[s]’ ability to engage in any of a variety of activities related to [their] provision of” telecommunications services.¹¹⁰ This includes—counterproductively—inhibiting the ability of CMRS providers to invest limited economic resources in network improvements

¹⁰⁸ *Small Cell Order*, 33 FCC Rcd at 9104, ¶ 37 (citation omitted). Compounding this distortion of the marketplace, any decision to attach reseller liability to facilities-based providers would be even more unfair because it fails to account for the fact that some resellers offload their wireless traffic onto their own networks whenever possible. For example, a cable MVNO has the ability to transport its wireless traffic over its WiFi network or using unlicensed CBRS spectrum.

¹⁰⁹ See Staff Proposal at 49 (proposing to require “live agents to answer 80% of the customer service calls within 60 seconds and 100% of the customer service calls within five minutes.”).

¹¹⁰ *Small Cell Order*, 33 FCC Rcd at 9104, ¶ 37 (citation omitted).

rather than hiring additional customer care personnel based on an unjustifiable mandate to answer every call within an arbitrarily defined time (within five minutes and, in 80% of cases, within just one minute).¹¹¹

D. The Penalties Provisions Violate the Constitution’s Contract Clause.

The proposed rule penalizing CMRS providers for violating the Outage Provision (for example, by forcing them to provide customer refunds or credits or make contributions to the California General Fund) would also violate the U.S. Constitution’s Contract Clause.

The Contract Clause of the U.S. Constitution prohibits the states from “pass[ing] any . . . Law impairing the Obligation of Contracts.”¹¹² Applying this provision, courts consider whether a state law “operate[s] as a substantial impairment of a contractual relationship,” including “the extent to which the law undermines the contractual bargain, interferes with a party’s reasonable expectations, and prevents the party from safeguarding or reinstating [its] rights.”¹¹³ If there is such an impairment, the analysis turns on “whether the state law is drawn in an ‘appropriate’ and ‘reasonable’ way to advance ‘a significant and legitimate public purpose.’”¹¹⁴

Here, there can be no serious question that the penalties provisions backing the Outage Prohibition operate as a “substantial impairment” of CMRS providers’ contractual relationships. First, customers are explicitly advised (and agree in their service contracts) that a particular level

¹¹¹ See, e.g., *City of Portland*, 969 F.3d at 1039 (affirming FCC’s *Small Cell Order* in relevant part and noting that “[t]he record . . . supports the FCC’s factual conclusion that high fees in one jurisdiction can prevent deployment in other jurisdictions.”).

¹¹² U.S. Const. art. I, § 10, cl. 1.

¹¹³ *Sveen v. Melin*, 584 U.S. 811, 819 (2018) (citations omitted).

¹¹⁴ *Id.* (citations omitted).

of wireless service—including uninterrupted service—is *not* guaranteed,¹¹⁵ whereas the Staff Proposal’s Outage Prohibition effectively mandates such a guaranteed level of service. Second, and directly relevant to the penalties mechanisms, CTIA members’ contracts provide for wireless subscribers to pay monthly fees (either on a postpaid or prepaid basis) and do not automatically discount those fees in the event that there is a network outage that interrupts the provider’s ability to transmit voice calls or other communications.¹¹⁶ The Outage Prohibition and penalties provisions, however, would “undermine[]” that contractual bargain by mandating “automatic”

¹¹⁵ See, e.g., AT&T Consumer Service Agreement, § 1.6 (“We do not guarantee that AT&T Services will meet your requirements, be of a particular quality or speed, or will be uninterrupted”), § 2.3 (“Wireless Service may be interrupted, delayed, or otherwise limited for a variety of reasons, including environmental conditions, unavailability of radio frequency channels, system capacity, network management, priority access by National Security and Emergency Preparedness personnel in the event of a disaster or emergency, coordination with other systems, equipment modifications and repairs, and problems with the facilities of interconnecting carriers”), available at <https://www.att.com/legal/terms.consumerServiceAgreement.html>; T-Mobile Terms & Conditions, “WILL MY SERVICE VARY? WHAT FACTORS MAY AFFECT MY SERVICE?” (“[Y]our actual Service area, network availability, coverage and quality may vary based on several factors, including your selected service, network capacity, terrain, weather, if you are on a private or public Wi-Fi network, using a non-T-Mobile device, or if your Device no longer supports network technologies compatible with or available on T-Mobile’s network or the networks of our roaming partners. Outages and interruptions in Service may occur, and speed of Service varies.”), available at <https://www.t-mobile.com/responsibility/legal/terms-and-conditions>; My Verizon Wireless Customer Agreement, “Where and how does Verizon wireless Service work? (“Wireless devices use radio transmissions, so unfortunately you can’t get Service if your device isn’t in range of a transmission signal. And please be aware that even within your Coverage Area, many things can affect the availability and quality of your Service, including network capacity, your device, terrain, buildings, foliage and weather”), available at <https://www.verizon.com/support/customer-agreement/>.

¹¹⁶ See, e.g., AT&T Consumer Service Agreement, § 2.15.1 (“You are responsible for all charges incurred on your Account. We bill most Wireless Service one month in advance.”); T-Mobile Terms & Conditions, “WHAT IS THE TERM OF THESE T&Cs?” (“[Y]ou are responsible for all Charges incurred through the end of, or resulting from, your Service term”) & “HOW WILL I BE BILLED FOR USE OF THE SERVICES?” (“You agree to pay all Charges we assess and bill you”); My Verizon Wireless Customer Agreement, “How does Verizon calculate my charges?” (“You agree to pay all access, usage and other charges that you or any other user of your wireless device incurred.”); see also *id.*, “What are my rights for dropped calls or interrupted Service?” (providing that postpaid Verizon customers may request credits if service is lost for more than 24 hours in coverage area, but only if Verizon is “at fault”) (emphasis added).

credits or refunds, regardless of fault¹¹⁷—effectively reducing the cost of service by regulatory fiat and contrary to the contractual terms whenever a service provider sustains an outage of 24 hours or more. This necessarily also interferes with CMRS providers’ reasonable expectations that their contractual provisions will govern (including being entitled to receive the full monthly service fee of service in accordance with their customer contracts) and prevents them from safeguarding and enforcing their contractual rights to receive such payment. Indeed, as explained above, in some cases, the fines levied could exceed the customer’s monthly payment—thereby resulting in a substantial loss to the CMRS provider. *See supra* at Section III.C.

Furthermore, the proposed rule is not drawn in an “appropriate” and “reasonable” way to “advance a significant and legitimate public purpose.” At the outset, while the Commission and CMRS providers are both interested in preventing outages, the Commission cannot pursue that goal in contravention of federal law. *See supra* at Section III.B.1 (explaining that Congress has preempted such state action). Furthermore, the Commission has previously recognized (correctly) that service quality is best advanced by competition in the marketplace.¹¹⁸ But even setting aside that obstacle to the Staff Proposal, the proposed penalties regime is not appropriately or reasonably tailored to advance the proposed objective. As explained above, CMRS providers already make extraordinarily expensive investments in their networks—the intensely competitive wireless services market demands this—and strive to provide excellent service at all times. The proposed penalties regime irrationally ignores this fact and incorrectly assumes that fining providers an arbitrarily set daily amount (increasing from a starting point of

¹¹⁷ *See* Staff Proposal at 45; Ruling at 4.

¹¹⁸ *See* Order Modifying Decision, D.16-08-021 at 18-20; *see also* Megerdichian Report at 9-21.

\$5 for some populations and \$10 for others, *see infra* at Sections III.F and IV.A) will lead to fewer outages. But no evidence supports this proposition. To the contrary, the evidence shows that this form of impermissible rate regulation will have the *counterproductive* effect of dampening providers' ability to make costly network investments they would otherwise make.¹¹⁹ This could even include investments designed to avoid outages.

In sum, adopting the Staff Proposal would be an unconstitutional violation of the Contract Clause.

As with federal preemption under Section 253(a) of the Communications Act (*see supra* at Section III.C), exposing facilities-based CMRS providers to penalties where a covered outage interrupts service to *resellers'* customers would only make matters worse.¹²⁰ As discussed above, facilities-based providers do not receive the benefit of the full monthly payment due to either direct or indirect resellers from the resellers' customers. Thus, if a facilities-based provider were penalized for outages affecting service that *a reseller* provides to the *reseller's* customers, that would result in an even more onerous interference with the facilities-based provider's investment-backed expectations and would significantly expand the number of scenarios in which it could sustain a per-line loss in the event of outages triggering an obligation to provide refunds. Contracts between facilities-based providers and their resellers that preexist the instant docket are unlikely to contemplate such liability.

The upshot is that any attempt to impose penalties on facilities-based providers would only exacerbate the serious constitutional defects of the Staff Proposal under the Contract Clause. Accordingly, in no event should the Commission make the proposed penalties

¹¹⁹ See Megerdichian Report at 23-26.

¹²⁰ See Ruling at 4.

mechanism attach liability to facilities-based providers for outages affecting the customers of their resellers.¹²¹

E. The Customer Service Mandates and Related Enforcement Mechanisms Violate the First Amendment.

Even setting aside their other infirmities, the proposed requirements (a) to ensure that 100% of customer service calls are answered by a live agent within five minutes and that 80% of such calls are answered within one minute¹²² and (b) to “[p]rovide a chat component” on a CMRS provider’s website¹²³ each violate the First Amendment and cannot be adopted. For the same reason, the proposal to penalize CMRS providers for failing to meet either requirement¹²⁴ would be unconstitutional.

At the outset, both proposed requirements unquestionably implicate the First Amendment rights of CMRS providers to freely communicate with their customers in the manner they choose and to convey information of their choice.¹²⁵ And since “all speech inherently involves choices

¹²¹ Adopting such a rule would also raise serious administrability concerns. For example, how would a facilities-based provider know which customers to provide credits to if an outage affects *customers of the reseller*—not the facilities-based provider’s own customers? *See infra* Section V.A for discussion of similar administrative issues.

¹²² Staff Proposal at 41, 49.

¹²³ *Id.* at 42.

¹²⁴ *See id.* at 46-47 (proposing daily fine for violations of the “Customer Service Standard”).

¹²⁵ Under well-established precedent, the “dissemination of information” is plainly “speech within the meaning of the First Amendment.” *Sorrell v. IMS Health Inc.*, 564 U.S. 552, 570 (2011). Indeed, “[t]he First Amendment protects ‘[e]ven dry information, devoid of advocacy, political relevance, or artistic expression.’” *IMS Health Inc. v. Sorrell*, 630 F.3d 263, 271 (2d Cir. 2010), *aff’d*, *Sorrell*, 564 U.S. 552; *see also NetChoice, LLC v. Bonta*, 2024 WL 3838423, at *9 (9th Cir. Aug. 16, 2024) (“It is ... well-established that the forced disclosure of information, even purely commercial information, triggers First Amendment scrutiny.”) (citations omitted); *U.S. West Communications v. FCC*, 182 F.3d 1224 (10th Cir. 1999) (transfer of customer proprietary network information among affiliates of communications provider for potential use in marketing constituted “speech” protected by the First Amendment).

of what to say and what to leave unsaid,” it follows that “one who chooses to speak may also decide ‘what not to say.’”¹²⁶

Here, the proposed call-answering and chat mandates seek to force CMRS providers to impart information to consumers in ways dictated by the state—both in terms of form (via calls with “live” customer care agents and via an online “chat” functionality) and timing (100% of calls must be answered within five minutes and 80% of those calls within just one minute). They are therefore classic examples of “compelled speech” that trigger First Amendment scrutiny.¹²⁷

The customer service mandates here trigger “strict scrutiny”—the most demanding level of constitutional review—under the First Amendment, for two independent reasons. *First*, out of the entire universe of Commission-regulated service providers across multiple industries including electric utilities, water utilities, and sewer utilities among others), the Staff Proposal singles out providers of voice communications services operating within California and subjects them to these extremely onerous and costly requirements.¹²⁸ Because the CTIA members subject to the proposed rules are engaged in speech protected by the First Amendment, these

¹²⁶ *Hurley v. Irish-Am. Gay, Lesbian & Bisexual Grp. of Boston*, 515 U.S. 557, 573 (1995); *see also id.* (“[A] speaker has the autonomy to choose the content of his own message.”).

¹²⁷ *See, e.g., Pacific Gas & Elec. Co. v. PUC*, 475 U.S. 1, 15-16 (1986) (plurality opinion) (CPUC could not, consistent with the First Amendment, force electric utility to deliver information to its customers in its billing envelopes; “[f]or corporations as for individuals, the choice to speak includes within it the choice of what not to say,” and that “speech does not lose its protection because of the corporate identity of the speaker”) (cited with approval in *Moody v. NetChoice, LLC*, 144 S. Ct. 2383, 2400 (2024)).

¹²⁸ *See, e.g., Time Warner Cable, Inc. v. Hudson*, 667 F.3d 630, 638-641 (5th Cir. 2012) (applying strict scrutiny to franchising rules that targeted a small number of cable providers); *see also Minneapolis Star & Tribune Co. v. Minn. Comm’r of Revenue*, 460 U.S. 575, 580, 591-92 (1983) (state tax applicable to only a subset of publishers triggered strict scrutiny, even though there was “no indication, apart from the structure of the tax itself, of any impermissible or censorial motive on the part of the legislature”); *Arkansas Writers’ Project, Inc. v. Ragland*, 481 U.S. 221, 228-229 (1987) (striking down an Arkansas law that imposed a sales tax on “only a few Arkansas magazines” even though there was “no evidence of an improper censorial motive”).

requirements are “inherently suspect”¹²⁹ and would withstand First Amendment scrutiny only if the Commission could show that the rules are “necessary to serve a compelling state interest and [are] narrowly drawn to achieve that end.”¹³⁰ *Second*, strict scrutiny applies for the independent reason that the call-answering-time mandates are content-based, as the Staff Proposal instructs that “[b]illing-related inquiries” (a vague term that raises additional constitutional concerns¹³¹) “must be addressed” and “[r]esol[ved]” by customer care agents.¹³² It is well-established that such content-based laws trigger strict scrutiny.¹³³

The Commission, however, cannot come close to meeting that exacting standard. Strict scrutiny would require the Commission to demonstrate (among other things) that its mandates are the “least restrictive” means of advancing “compelling” state interests¹³⁴—which the Staff Proposal clearly cannot, and does not even try to, do.

¹²⁹ *Time Warner Cable*, 667 F.3d at 638.

¹³⁰ *Id.* at 640-641 (quoting *Ark. Writers’ Project*, 481 U.S. at 231); *see also Reed v. Town of Gilbert, Ariz.*, 576 U.S. 155, 171 (2015) (strict scrutiny “requires the Government to prove that the restriction furthers a compelling interest and is narrowly tailored to achieve that interest”) (citation and internal quotation marks omitted).

¹³¹ *See, e.g., FCC v. Fox Television Stations, Inc.*, 567 U.S. 239 (2012) (invalidating regulatory sanctions as violation of constitutional due process where regulator failed to provide fair notice of what rule allegedly violated required).

¹³² Staff Proposal at 42; *see also id.* at 41 (proposed rules impose “standards for both answering and *resolving* customer service calls”) (emphasis added). Clearly, “resolving” a customer’s question or concerns focuses on the content of the matter discussed with the customer.

¹³³ As the Supreme Court has explained, “[c]ontent-based laws—those that target speech based on its communicative content—are presumptively unconstitutional and may be justified only if the government proves that they are narrowly tailored to serve compelling state interests.” *Reed*, 576 U.S. at 163. Moreover, a “[g]overnment regulation of speech” will be deemed content-based where it simply “applies to particular speech because of the topic discussed.” *Id.* That is precisely the case here, as the Staff Proposal explicitly directs CMRS providers to resolve customer billing-related inquiries (a particular topic to be discussed with customers).

¹³⁴ *United States v. Playboy Ent. Grp., Inc.*, 529 U.S. 803, 823 (2000) (“It was for the Government, presented with a plausible, less restrictive alternative, to prove the alternative to be ineffective, and [the government’s rule governing speech] to be the least restrictive available means”); *see also NetChoice, LLC v. Bonta*, 2024 WL 3838423, at *13-14 (noting that state compelled-disclosure rules “[f]ell well

Indeed, the Commission could not satisfy even “intermediate scrutiny” under the *Central Hudson* test for regulations governing “commercial speech”¹³⁵ or the more relaxed standard of review that some courts have applied to rules requiring disclosure of “purely factual and uncontroversial information” under *Zauderer v. Office of Disciplinary Counsel of Supreme Court*.¹³⁶

Here, even if strict scrutiny did not apply, at a minimum, the *Central Hudson* test—rather than *Zauderer*—would apply because the customer-service mandates are not merely transparency rules requiring CMRS providers to disclose purely “factual, noncontroversial information.” Customer service agents routinely offer customized advice, troubleshoot customer problems, and discuss disputed facts (such as billing disputes). This speech receives stronger First Amendment protection than the decision whether to post purely factual and uncontroversial disclosures under *Zauderer* and related cases.¹³⁷

short of satisfying strict First Amendment scrutiny” and that “[t]he State could have easily employed less restrictive means to accomplish its protective goals”). Furthermore, to satisfy strict scrutiny, “[t]he State must specifically identify an ‘actual problem’ in need of solving, ... and the curtailment of free speech must be actually necessary to the solution.” *Brown v. Ent. Merchants Ass’n*, 564 U.S. 786, 799 (2011) (citation omitted).

¹³⁵ Under *Central Hudson*, the government may restrict non-misleading speech only if it establishes that (1) it has a substantial state interest in regulating the speech, (2) the regulation directly and materially advances that interest, and (3) the regulation is “no more extensive than necessary” to serve the government’s interest. *Central Hudson Gas & Elec. Corp. v. Public Serv. Comm’n of N.Y.*, 447 U.S. 557, 566 (1980).

¹³⁶ 471 U.S. 626, 651 (1985). *Zauderer* applies “more deferential review to some laws that require professionals to disclose factual, noncontroversial information”—but only if the disclosure is not “unjustified or unduly burdensome.” *Nat’l Inst. of Family & Life Advocates v. Becerra*, 138 S. Ct. 2361, 2372 (2018) (“*NIFLA*”).

¹³⁷ See, e.g., *NetChoice, LLC v. Bonta*, 2024 WL 3838423, at *12 (state law requiring businesses to express opinions about impact of its services did not involve “‘purely factual and uncontroversial’” statements and thus was not subject to *Zauderer* standard).

But even if the *Zauderer* standard (rather than strict scrutiny or, at a minimum, *Central Hudson* scrutiny) could apply, the customer service requirements would fail to satisfy that standard because they are plainly “unjustified” and “unduly burdensome.”¹³⁸

As to the call-answering requirements, as explained above, these will subject CTIA members to massive costs without any showing in the Staff Proposal that a strict, five-minutes answering period (or an even shorter, one-minute answering period for 80% of calls) is necessary to advance the staff’s purported objectives. Indeed, the requirement could have the counter-productive effect of requiring customer care agents to rush through calls that are underway so they can meet the staff’s arbitrary requirement to jump to the next, incoming call, leading to diminished positive resolutions for customers. In this respect, the proposal would not only impermissibly compel speech but also burden *existing* speech. Furthermore, the widespread availability and popularity of a call-back function offered by many CTIA members whereby a customer can leave a phone number for a return call by customer care teams shows that the staff’s strict answer-every-call-within-five-minutes mandate is even more unjustifiable and unduly burdensome.

The same goes for the required chat functionality. The Staff Proposal does not (and could not) explain why this requirement is necessary to communicate useful customer care information. CMRS providers are of course free to offer their customers a variety of means to

¹³⁸ *NIFLA*, 138 S. Ct. at 2372; *see also Cal. Chamber of Com. v. Council for Educ. & Rsch. on Toxics*, 29 F.4th 468 (9th Cir. 2022) (concluding that California statute’s requirement that businesses display warnings about dangers of cancer from acrylamide in food and beverages likely violated the First Amendment and noting that “in context, the compelled disclosure appears unduly burdensome”), *cert. denied*, 143 S. Ct. 1749 (2023); *Am. Beverage Ass’n v. City & Cty. of San Francisco*, 916 F.3d 749, 757 (9th Cir. 2019) (*en banc*) (“Defendant has not carried its burden to demonstrate that the Ordinance’s requirement is not ‘unjustified or unduly burdensome.’ ... The required warnings therefore offend Plaintiffs’ First Amendment rights by chilling protected speech.”).

reach them (including by phone, via email or regular mail, or via online chat mechanisms)—but these are *choices* that providers, exercising their free speech rights, are entitled to make for themselves. The Commission cannot, consistent with the First Amendment, mandate a chat offering, especially where it has not shown—and could not show—that the other means of communication already offered are insufficient. That is especially so given the cardinal principle that speakers have “autonomy” to choose their messages,¹³⁹ which necessarily includes not just the substance of the message but also the medium used.¹⁴⁰ Moreover, if a CMRS provider (a small regional provider, for instance) does not currently offer any chat functionalities, the staff’s proposed requirement would subject the provider to great expense—aside from violating their autonomy to decide whether, when, and via what means to communicate with their customers—and thus would be unduly burdensome and unjustified.¹⁴¹

Since the proposed customer service mandates cannot pass muster under even *Zauderer*, it necessarily follows that they could not satisfy intermediate scrutiny under *Central Hudson*,

¹³⁹ *Hurley*, 515 U.S. at 573.

¹⁴⁰ See, e.g., *Cornette v. Graver*, 473 F. Supp. 3d 437, 473 (W.D. Pa. 2020) (discussing “communications mediums” and case law recognizing that choice of media to convey message, such as clothing, can be expressive and entitled to First Amendment protection) (citations omitted); Laurence H. Tribe, *American Constitutional Law* § 12–7, at 827 (2d ed. 1988) (“Expression and conduct, message and medium, are ... inextricably tied together in all communicative behavior”)

¹⁴¹ The chat functionality mandate for CMRS provider websites also would impermissibly burden interstate commerce in violation of the U.S. Constitution’s dormant Commerce Clause. Given the global nature of the internet, the proposed online chat obligation necessarily has extraterritorial effects on interstate commerce, and the resulting burden is clearly excessive relative to any asserted benefits (which the Staff Proposal does not even attempt to identify). See, e.g., *PSINet, Inc. v. Chapman*, 362 F.3d 227, 240–41 (4th Cir. 2004) (invalidating a Virginia law on the dissemination of material harmful to minors over the internet because any such restriction regulates conduct occurring entirely out-of-state); *Am. Booksellers Found. v. Dean*, 342 F.3d 96, 103–04 (2d Cir. 2003) (invalidating similar state law; “the internet’s boundary-less nature means that internet commerce does not quite ‘occur [] wholly outside [the state’s] borders.’”).

much less strict scrutiny.¹⁴² As a result, regardless of which standard of First Amendment review applies, the proposed requirements cannot stand.

F. The Staff Proposal to Increase Penalties Based on Customer Demographics is Unconstitutional.

The Staff Proposal is also constitutionally infirm because it would subject CMRS providers to much higher penalties—*double the amount*—for identical violations of the Outage Prohibition except for the sole distinguishing factor of whether the outage affects communities designated by the Commission (“Designated Communities”) as opposed to all other communities. In the former, case, the Designated Communities are treated as a preferred class of consumer entitled to double the amount of refunds or credits.¹⁴³ This disparate treatment is irrational and untethered to any goal the staff seeks to advance, and therefore would violate the constitutional guarantee of “equal protection of the laws” even under rational-basis review.

¹⁴² As noted above, under *Central Hudson*, the Commission would be required to show that its customer service requirements directly and materially advance a substantial state interest and that they are “no more extensive than necessary” to serve that interest. 447 U.S. at 566. And strict scrutiny requires proof of a “compelling” governmental interest and a regulation that is the “least restrictive” means of advancing that interest. *See United States v. Playboy Ent. Grp.*, 529 U.S. at 823. The Commission clearly could not meet either of these more demanding standards. The Staff Proposal does not even purport to articulate a substantial state interest that its customer service standards would serve, and the wholly arbitrary nature of its mandates shows that the requirements do not “directly and materially” advance any such interest. Certainly, there has been no showing (nor could there be one) that the arbitrary mandates are “no more extensive than necessary.” For example, a customer who left a callback number and received a call when a customer service agent became available or a customer whose call was answered within 10 (rather than five) minutes would still receive the same level of care support. As for the chat requirement, as explained above, the staff made no effort to show (and could not show) that other means of communication are insufficient.

¹⁴³ *See* Staff Proposal at 36 (“Noncompliance in DACs [“Disadvantaged Communities”] and AACs [“Areas of Affordability Concern”] should incur a higher base penalty amount.”); *id.* at 46 (“For outages that are not repaired within 24 hours, apply a base fine amount of \$5 per day as a customer credit. . . . If impacted customer’s place of primary use is located in a DAC or a Communications AAC, the base fine amount is \$10 per day as a customer credit.”); *see also id.* at 37 (illustrations of \$50 fine vs. \$100 fine based on affected customers).

The Fourteenth Amendment to the U.S. Constitution guarantees to all persons (including businesses) “equal protection of the laws.”¹⁴⁴ The Equal Protection Clause “is essentially a direction that all persons similarly situated should be treated alike.”¹⁴⁵ This concept of “equal protection” is the inviolate essence of the rule of law.¹⁴⁶

At a minimum, the Equal Protection Clause forbids state governments from engaging in arbitrary discrimination.¹⁴⁷ Accordingly, the Commission would need to show that any rule subjecting a CMRS provider to double the amount of penalties for a covered outage simply because its outage affected consumers in Designated Communities—whereas a similarly situated provider whose identical outage affected other consumers would pay the base amount—“must be rationally related to a legitimate governmental purpose.”¹⁴⁸ And “[t]he State may not rely on a classification whose relationship to an asserted goal is so attenuated as to render the distinction arbitrary or irrational.”¹⁴⁹

The Staff Proposal plainly fails that basic test. To the extent the staff’s purpose is to punish CMRS providers for covered outages and/or to deter future outages, increasing penalties

¹⁴⁴ U.S. Const. amend. XIV; see, e.g., *Hartford Steam Boiler Inspection & Ins. Co. v. Harrison*, 301 U.S. 459, 462 (1937) (“[T]he appellant company had been licensed to do business in the state and was entitled to equal protection in conducting that business.”).

¹⁴⁵ *City of Cleburne, Tex. v. Cleburne Living Ctr.*, 473 U.S. 432, 439 (1985).

¹⁴⁶ *Vill. of Willowbrook v. Olech*, 528 U.S. 562, 564 (2000).

¹⁴⁷ *Clark v. Jeter*, 486 U.S. 456, 461 (1988) (explaining that “we apply different levels of scrutiny to different types of classifications” and, “[a]t a minimum, a statutory classification must be rationally related to a legitimate governmental purpose”) (citing *San Antonio Independent School Dist. v. Rodriguez*, 411 U.S. 1, 17 (1973)).

¹⁴⁸ *Id.*

¹⁴⁹ *City of Cleburne, Tex. v. Cleburne Living Ctr.*, 473 U.S. 432, 446 (1985) (state requirement to obtain special use permit to house certain populations, but not others, lacked a rational basis in the record and violated constitutional requirement of equal protection of the laws); *Craig v. Giles*, 312 F.3d 220, 224-225 (6th Cir. 2002) (state prohibition on sale of caskets by anyone not licensed as funeral director was “not even rationally related to a legitimate governmental purpose” and thus violated equal protection and due process clauses of Fourteenth Amendment).

for certain Commission-preferred groups (*i.e.* Designated Communities) would not serve either goal. Outages are unintended events—often caused by factors beyond the provider’s control, such as a loss of power occasioned by a public safety power shutoff (“PSPS”) implemented by an investor-owned utility subject to the Commission’s jurisdiction, and there is no plausible basis for contending that the provider is more culpable or blameworthy if the outage happens to affect customers in Designated Communities or not. Nor is there any rational basis for supposing that the stiffer penalties for the Commission-identified communities would more effectively deter the occurrence of future outages—as noted, these are unintended and unfortunate events that CMRS providers strive to prevent. Subjecting service providers to higher penalties because an outage may randomly affect customers in Designated Communities rather than all other customers will not make outages any less likely to occur. If anything, the doubling of penalties is more likely to disincentivize providers from investing, or even offering service, in areas where the Designated Communities reside—contrary to the Commission’s asserted goals.¹⁵⁰

Even if the Staff Proposal is intended to serve a compensatory purpose, it is equally irrational. A customer falling within the general population is no less affected by an outage of 24 hours or more than customers in the Designated Communities. Wireless providers do not provide differential pricing based on the staff’s categorization, and the impact of an outage does not vary depending on the identity of the affected consumer. Indeed, the criteria that define the proposed Designated Communities (such as individuals living in areas exposed to higher than average levels pollution¹⁵¹) have nothing whatsoever to do with the severity of an outage.

¹⁵⁰ See Megerdichian Report at 25-26.

¹⁵¹ See Staff Proposal at 11 & n.50 (citing “CalEnviroScreen” as a tool to “identify communities that are most affected by many sources of pollution”).

Accordingly, subjecting wireless providers to a 100% increase in penalties simply because a customer in a Commission-designated area may be affected is not rationally related to any legitimate governmental purpose.¹⁵² To the contrary, it is wholly “arbitrary” and “irrational.”¹⁵³

In sum, the staff’s proposed approach contravenes the Constitution’s Equal Protection Clause and should be rejected.

IV. ADOPTING THE STAFF PROPOSAL WOULD VIOLATE CALIFORNIA LAW

A. The Staff Proposal Is Unsupported by the Record and Would Constitute an Abuse of Discretion if Adopted.

¹⁵² Exacerbating this defect, the Staff Proposal appears to determine “impacted” customers “based on the[ir] ... place of primary use.” See Staff Proposal at 46; Staff Proposed General Order 133-D Redline, § 2.6.g (“For outage tickets in a DAC or Communications AAC (based on the impacted customer’s place of primary use) that are not repaired within 24 hours, apply a base fine amount of \$10 per day for each additional day as an automatic customer credit for each customer.”). This, however, ignores the practical reality that wireless customers frequently make and receive calls from places *other than* their place of primary use (“PPU”)—that is one of the key benefits of wireless service; the user is not tethered to a single location. For example, a wireless customer may travel out of their PPU for business or to meet friends and family. In these frequently occurring situations, it makes absolutely no sense to penalize the service provider for sustaining a covered outage that has no effect whatsoever on the member of the Designated Communities who, during the relevant period, is far from the area where the outage occurred.

¹⁵³ *City of Cleburne*, 473 U.S. at 446. To the extent the staff’s proposal ties the higher penalties to racial demographics of the affected consumers (see Staff Proposal at 11 (identifying subcategories of the “DAC” communities and noting that the related concept of “Environmental and Social Justice (ESJ) communities ... are predominantly communities of color or low-income communities that are underrepresented in the policy-setting or decision-making process”)), this would be flatly unconstitutional under controlling precedent. Regulations based on racial classifications are inherently “suspect” and thus trigger “strict scrutiny.” See *Johnson v. California*, 543 U.S. 499, 505 (2005) (“We have held that ‘all racial classifications [imposed by government] ... must be analyzed by a reviewing court under strict scrutiny.’”) (citation omitted); *Students for Fair Admissions, Inc. v. President & Fellows of Harvard Coll.*, 600 U.S. 181, 206–07 (2023) (“Any exception to the Constitution’s demand for equal protection must survive a daunting two-step examination known in our cases as ‘strict scrutiny.’ ... Under that standard we ask, first, whether the racial classification is used to ‘further compelling governmental interests.’ ... Second, if so, we ask whether the government’s use of race is ‘narrowly tailored’—meaning ‘necessary’—to achieve that interest.”) (citations omitted); *Fellowship of Christian Athletes v. San Jose Unified Sch. Dist. Bd. of Educ.*, 82 F.4th 664, 693 (9th Cir. 2023) (“[T]he Constitution does not allow for ‘benign’ classification based on race, ethnicity, or sex.”) (citation omitted).

In addition to its myriad infirmities under federal law, the Staff Proposal also violates state law.¹⁵⁴

First, adopting the Staff Proposal would constitute an abuse of discretion because, as shown at length above, the recommended Outage Prohibition and related enforcement mechanisms are entirely unnecessary. Market forces are already delivering consumers high-quality services at low cost.¹⁵⁵

In fact, the record shows that the proposed rules would have unintended adverse consequences by, among other things, subjecting wireless providers to increased costs that dampen their ability to invest in their networks and otherwise achieve the customer service goals that the Staff Proposal purports to advance.¹⁵⁶ The record also shows that the Staff Proposal rests on misunderstandings and inaccurate characterizations of the frequency of network outages experienced by CMRS providers according to data maintained by the FCC and CalOES.¹⁵⁷

As a result, adopting the proposed rules would constitute an abuse of discretion and would lack any factual support. The Staff Proposal has not “adequately considered all relevant factors”—including the potentially massive costs imposed by the proposed rules, with no

¹⁵⁴ See Cal. Pub. Util. Code § 1757.1(a)(1), (4) (reviewing court may set aside a Commission decision that is an “abuse of discretion” or is “not supported by the [factual] findings”); see also *Securus Techs., LLC v. Pub. Util. Comm’n*, 88 Cal. App. 5th 787, 803 (2023) (court will consider “whether the decision was arbitrary, capricious, or entirely lacking in evidentiary support” and “must ensure that an agency has adequately considered all relevant factors, and has demonstrated a rational connection between those factors, the choice made, and the purposes of the enabling statute”) (citation and internal quotation marks omitted).

¹⁵⁵ See *supra* at Section II.A; see also Megerdichian Report at 9-21.

¹⁵⁶ See *supra* at Section [III.C]; see also Megerdichian Report at 23-26.

¹⁵⁷ See *supra* at 3-4 (discussing the Staff Proposal’s misunderstanding of outage data); see also *infra* at Section V.A.

resulting benefit—and therefore has failed to “demonstrate[] a rational connection between those factors [and] the choice made.”¹⁵⁸

Making matters worse, the proposed rules rest on irrational and arbitrary assumptions.

Without repeating the analysis detailed above, the defects include (among others):

- Failing to provide any evidentiary basis or cogent rationale for the arbitrary \$5 daily base rate for customer refunds or the \$10 daily amount for Designated Communities who are affected by covered outages;
- Failing to justify the extremely burdensome and onerous customer service mandates, which may be impossible to meet in certain situations, including the wholly arbitrary call answering periods (*see supra* at Section III.C);
- Failing to rationally justify the doubling of penalties for Designated Communities as opposed to all other customers where the covered outages are identical for both groups (*see supra* at Section III.F);
- Failing to connect penalties to customers who actually experience dropped or failed calls as a result of an outage—as opposed to, for example, those who are far from their primary place of use at the time of a covered outage yet are deemed “impacted” customers entitled to automatic refunds under the Staff Proposal (*see infra* at Section V.A; *see also* Settle Declaration at 6-7); and
- Crafting the proposed rules in a way that raises serious administrability concerns, including requirements that are inherently vague and confusing and/or are impossible to comply with (*see infra* at Section V.A).

The serious constitutional defects of the Staff Proposal (*see supra* at Sections III.D – F) only compound these problems under state law.¹⁵⁹

B. The Staff Proposal Invites an Unlawful Delegation to Staff

Finally, the Staff Proposal should be rejected—or, at a minimum, revised—because it contains multiple provisions that invite the Commission to unlawfully delegate substantive

¹⁵⁸ *Securus Techs., LLC v. Pub. Util. Comm’n*, 88 Cal. App. 5th at 803.

¹⁵⁹ *See* Cal. Pub. Util. Code § 1757.1(a)(6) (reviewing court may set aside Commission action that “violates any right of the petitioner under the Constitution of the United States”).

decision-making authority to the staff rather than purely “ministerial” functions.¹⁶⁰ A few examples suffice to illustrate the problem:

- Under the investment-in-lieu-of fine penalties mechanism, the staff proposed that the “Communications Division or its successor may *reject target projects or select other projects for investment*.”¹⁶¹ If adopted, this would impermissibly delegate sweeping, discretionary authority to the staff to select investment projects of their own choosing. Such a grant of unfettered authority certainly is not “ministerial,” as required by California law.
- For quarterly voice service measurement filings, the staff proposed that Communications Division “staff shall *determine all reporting requirements*, including but not limited to metadata fields, formatting, file type, and submission method” and “shall *update the templates as necessary*.”¹⁶² This, too, goes well beyond a “ministerial” function and should be stricken.
- The staff also proposed authority to “request, through a standard template, the underlying data, including but not limited to individual access line information, of...outage notifications” provided to CalOES.¹⁶³ This would improperly vest sweeping discretion in the staff to create new, non-existent, and expansive reporting obligations, as wireless providers are not required to deliver CalOES outage notifications based on “access line[s].” The proposed delegation is therefore unlawful.

¹⁶⁰ See, e.g., *Bagley v. City of Manhattan Beach*, 18 Cal. 3d 22, 24 (1976); *Cal. Sch. Emps. Ass’n v. Personnel Comm’n*, 3 Cal. 3d 139, 144 (1970) (“When the Legislature has made clear its intent that one public body or official is to exercise a specified discretionary power, the power is in the nature of a public trust and may not be exercised by others in the absence of statutory authorization”); *Schechter v. County of Los Angeles*, 258 Cal. App. 2d 391, 396-97 (1968) (“Merely administrative and ministerial functions may be delegated to assistants whose employment is authorized, but there is no authority to delegate acts discretionary or quasi-judicial in nature. An administrative board cannot legally confer upon its employees authority that under the law may be exercised only by the board.”); see also D.11-09-006, at 7 (Cal. PUC Sept. 13, 2011) (broad conferral of authority to CPUC Executive Director would “go[] well beyond the scope of ministerial matters for which the Commission may properly delegate its authority” and would be “inadequate to discharge [the Commission’s] Constitutional and statutory duties”); D.20-05-053, at 61-62 (Cal. PUC June 1, 2020) (modifying proposed decision to authorize Executive Director “to move PG&E into and through the Enhanced Enforcement stage[s],” in light of criticisms that the delegation “extends too far into the area of discretionary decision making”; as a result, “those determinations will now be made via a Commission resolution,” not by the Executive Director).

¹⁶¹ Staff Proposed General Order 133-D Redline, § 9.7 (emphasis added).

¹⁶² *Id.*, § 3.2 (emphasis added).

¹⁶³ *Id.*, § 5(d)(ii).

These unlawful delegations to the staff exacerbate the many other (and more serious) legal flaws in the Staff Proposal and reinforce the conclusion that the Commission should reject the Staff Proposal in full.

V. THE STAFF PROPOSAL’S WIRELESS SERVICE QUALITY RULES ARE NOT FEASIBLE OR ADMINISTRABLE.

In addition to lacking any legal, factual, or policy basis, the Staff Proposal’s requirements for wireless providers contain significant elements that would not be feasible for providers to implement or administer.

A. The Proposed Wireless Community Isolation Outage Repair Standard is Unworkable.

As a threshold matter, neither the Staff Proposal nor the proposed revisions to GO 133-D make clear how to identify the customers entitled to “automatic” customer credits in the event of a wireless outage. The Staff Proposal indicates that its approach is modeled on a customer credit requirement in an ILEC merger settlement,¹⁶⁴ but wireline customers are served at fixed locations, so identifying the customers affected by a wireline outage is straightforward. Wireless customers, by contrast, are mobile, but the Staff Proposal fails to adequately explain how to address this crucial difference.

The proposed revisions to GO 133-D indicate that outages will be “measured at the individual access line level”¹⁶⁵ and would require the assessment of penalties “as an automatic ...credit for each customer.”¹⁶⁶ Access lines, in turn, are defined based on having either a “service address” or a place of primary use in California.¹⁶⁷ The proposed rule also would apply

¹⁶⁴ Staff Proposal at 45.

¹⁶⁵ Staff Proposed General Order 133-D Redline, § 2.6.d.

¹⁶⁶ Staff Proposed General Order 133-D Redline, § 2.6.f.

¹⁶⁷ *Id.* § 1.3.a.

a higher base forfeiture for outages in Environmental and Social Justice areas “based on the impacted customer’s place of primary use.”¹⁶⁸

The Staff Proposal alternately indicates that penalties will be assessed “at the individual customer level,” and proposes to “[u]tilize CalOES data to identify the impacted users.”¹⁶⁹ The Staff Proposal suggests that CalOES “quantifies the [reported] outages by the number [of] impacted users,”¹⁷⁰ but wireless providers do not report on community isolation outages at the access line level. Indeed, unlike wireline and VoIP providers, wireless providers do not even report an estimated number of affected users. Instead, they report on the “estimated percentage of coverage degradation in the affected ZIP Codes.”¹⁷¹ CTIA is not aware that CalOES computes a number of affected users for *wireless* outages listed on its dashboard cited in the Staff Proposal or, if so, how it does so.¹⁷² Thus, for wireless outages, the CalOES reports and records do not identify the particular customers affected by the outage, and the “underlying data” for wireless providers’ CalOES reports would reflect information regarding the percentage of coverage degradation, not “individual access line information.”¹⁷³

The references to customers’ place of primary use are equally unhelpful in identifying wireless customers affected by outages. For example, if the Staff Proposal intends to require

¹⁶⁸ *Id.* § 2.6.g. See also Staff Proposal at 46 (“If impacted customer’s place of primary use is located in a DAC or Communications AAC, the base fine amount is \$10 per day as a customer credit.”).

¹⁶⁹ Staff Proposal at 46.

¹⁷⁰ Staff Proposal at 46 n.131.

¹⁷¹ See Cal. Gov. Code § 53122; 19 Cal. Code Regs. § 2480.3.

¹⁷² Staff Proposal at 46 n.131, citing <https://public.outage.ca.nga911.com/dashboard>.

¹⁷³ See Staff Proposed General Order 133-D Redline, § 5.d.ii. (“The Communications Division may request, through a standard template, the underlying data, including but not limited to individual access line information, of these outage notifications.”). See also Staff Proposal at 39 (“Since the telephone corporations are already required to report detailed records of these outages to CalOES, incorporating this measure for wireless services would add minimal administrative burden, if any.”).

customer credits for all wireless customers with places of primary use in the zip code affected by an outage lasting over 24 hours as reported to CalOES, it would be necessarily over-inclusive since the CalOES rule requires reporting if an outage affects coverage over only 25% of a zip code. If instead the intention is to require automatic bill credits to customers with places of primary use in the *portion* of the zip code affected by the outage, there is still no way to determine which customers those are based on the CalOES reports, for the reasons discussed in the prior paragraph. And the affected customers could change over the course of an outage if a wireless provider's restoration efforts restore service incrementally to customers before the coverage impact drops below the 25% reporting threshold.¹⁷⁴

Requiring wireless providers to apply bill credits based on customers' place of primary use also would be problematic because "place of primary use" does not apply to prepaid wireless service.¹⁷⁵ Yet prepaid customers represent a significant proportion of wireless customers,¹⁷⁶ including virtually all Lifeline/LifeLine customers.¹⁷⁷ And even if it were possible for wireless providers to provide mandatory bill credits based on customers' place of primary use, doing so would not align the bill credits with whether customers are *actually affected* by an outage. As discussed in CTIA's engineering expert declaration, wireless service enables mobility, so some customers with places of primary use in the zip code affected by the outage may have been

¹⁷⁴ See Settle Declaration at 8.

¹⁷⁵ 4 U.S.C. §116(c)(1); *see also* P.U. Code § 247.1(b) (the federal Mobile Telecommunications Sourcing Act, 4 U.S.C. §§ 116-126, "is incorporated herein by reference").

¹⁷⁶ See, e.g., Graeme Bruce, "A Closer Look at the Pre-Paying Mobile Consumer," YouGov.com (May 26, 2021) (36% of wireless customers are prepaid), <https://today.yougov.com/technology/articles/36097-closer-look-pre-paying-mobile-consumer>.

¹⁷⁷ Prepaid wireless services also raise other practical problems under the Staff Proposal because prepaid wireless customers do not receive bills and pay in advance for their service. As a result, it is unclear how a wireless provider could apply bill credits to prepaid wireless customers.

elsewhere during the entire duration of the outage, or may have left the affected area during the outage and thus experienced limited or no interruption of their service.¹⁷⁸ Wireless “family plans” add additional complexity. For instance, it is common for parents to include children on family plans even when those children reside elsewhere, such as at college. Nevertheless, all the lines on a family plan would have the same place of primary use.

Finally, the Staff Proposal fails to recognize that wireless providers do not track which specific customers were affected by any given outage. As discussed in CTIA’s engineering expert declaration:

Wireless networks are not designed to automatically identify customers affected by an outage. To do so, wireless providers would need to create a customer tracking system that would appear to have no use outside of this narrow purpose and could be expensive and complicated to implement.”¹⁷⁹

Such a customer tracking system also would raise significant other concerns—most notably, implicating customer privacy.

For all these reasons, the proposed Wireless Consumer Isolation Outage Repair Standard and associated penalty provisions are poorly designed and illogical as written, and should not be adopted.

B. The Proposed Wireless Community Isolation Outage Repair Standard Is Not Calibrated to Reduce Customer-Affecting Outages.

The Staff Proposal’s Wireless Community Isolation Repair Standard is not reasonably designed to create incentives for wireless providers to reduce outages because it would not adequately account for wireless outages that are outside the wireless provider’s control.

¹⁷⁸ Settle Declaration at 6-7.

¹⁷⁹ Settle Declaration at 7.

The Staff Proposal’s only exception to the penalty provisions for violations of the Wireless Community Isolation Outage Repair Standard would be for Governor-declared states of emergency.¹⁸⁰ However, outages are caused by many other circumstances that are outside the wireless provider’s control. As discussed in CTIA’s engineering expert declaration, “due to heavy snowstorms, flooding, wildfires, or similar events, it may be impossible to access a cell site for more than 24 hours in order to perform repairs, deliver portable generators, refuel generators, or repair or implement backup backhaul.”¹⁸¹ There are a great many instances, well beyond those listed, in which outages are caused by events or circumstances that wireless providers have no ability to control, including, among others, cable cuts caused by careless construction crews or vehicle accidents; weather events that are not accompanied by a Governor’s emergency declaration; PSPS events, particularly when combined with circumstances that limit or prevent the wireless provider from providing backup power; and intentional vandalism.¹⁸²

The only anecdotal example of a wireless outage mentioned in the Staff Proposal was a “situation when part of [Modoc] county went multiple days without wireless coverage, leaving residents stranded with no means of communication for assistance.”¹⁸³ But the record shows that the Modoc wireless outage was the result of “theft and vandalism.”¹⁸⁴ The Staff Proposal would

¹⁸⁰ Staff Proposed General Order 133-D Redline, § 2.6.c.

¹⁸¹ Settle Declaration at 5.

¹⁸² *See id.*

¹⁸³ Staff Proposal at 9 n.39, *citing* Comments of the Public Advocates Office on the Joint Summary and Presentations of the September 7, 2023 Workshop at 5 (“PAO Workshop Comments”).

¹⁸⁴ PAO Workshop Comments at 5, *citing* Joint Summary and Presentations of the September 7, 2023 Workshop at 12 (“Modoc County then described an outage starting on July 31, 2023, along the 299 Highway corridor *due to theft and vandalism* that resulted in two days of no coverage....”) (emphasis added).

nevertheless impose a fine on the wireless provider that was the victim of the theft and vandalism, even though such a fine would not make outages less likely or prevent future outages.

Similarly, wireless outages may result from failures of backhaul facilities provided by other telecommunications providers outside of wireless providers' control, or from necessary maintenance or repairs that wireless providers must perform on their own facilities.

Circumstances such as lightning strikes or wind-blown debris can cause outages, are highly unlikely to trigger a disaster declaration, and are outside wireless providers' control. And fallen debris, road closures, and curfews may preclude service providers from promptly repairing facilities for legitimate safety and disaster management purposes.

Because the proposed Wireless Community Isolation Outage Repair Standard is not reasonably calibrated to improve service quality, the Commission should reject it.

C. The Proposed Customer Service Standards Are Unclear and Impractical as Applied to Wireless Providers.

The proposed revisions to GO 133-D would require all telephone corporations, including wireless providers, to “[r]esolve billing-related inquiries by the next billing cycle.”¹⁸⁵ This requirement is unclear and impractical for wireless providers to implement.

First, neither the Staff Proposal nor the proposed revisions to GO 133 defines a “billing-related inquiry.” Wireless providers receive a wide variety of different questions and requests from customers. The proposal does not provide sufficient information for wireless providers to know which customer service calls would be subject to the requirement.

It also is unclear what action or outcome wireless providers would be required to achieve to comply with the rule. The revisions to GO 133-D would require wireless providers to

¹⁸⁵ Staff Proposed General Order 133-D Redline, § 2.7.a.iv.

“resolve” billing inquiries, while the Staff Proposal variously suggests that they must be “addressed and, if necessary, reconciled” or “corrected” by the next billing cycle.¹⁸⁶ It is unclear, however, precisely what it means to “resolve,” “address,” or “correct” a billing inquiry; whether and how these terms may differ from one another; and under what circumstances it would (and would not) be “necessary” to “reconcile” a billing inquiry.

The applicable deadline also is indefinite. The Staff Proposal and revisions to GO 133 state that wireless providers must act on billing-related inquiries “by the next billing cycle,” but it is unclear what this means. Does this require the wireless provider to resolve all “billing-related inquiries” before the next bill is issued? Such a requirement would be plainly unreasonable as to customer calls received late in a particular billing cycle (*e.g.*, one week or less before the next billing date). In addition, the term “billing cycle” has no obvious meaning in the context of prepaid service, where no “bills” are issued, and pay-as-you-go options—which are prevalent in the wireless marketplace—do not involve billing or payment in regular “cycles.”

Further, the Commission already prescribes detailed rules related to resolution of billing disputes for telecommunications providers in GO 168 (Consumer Bill of Rights Governing Telecommunications Services). As a result, there is no need for additional regulations, and the potential for conflicts between GO 133-D and GO 168 as to billing issues would only lead to confusion.

For all these reasons, the Commission should reject the proposed Customer Service Standard for wireless providers.

¹⁸⁶ Staff Proposal at 42, 49.

D. The Proposed Revisions to the Wireless Coverage Maps Rules Appear to Impose Impossible Requirements.

The Staff Proposal asserts that wireless providers “need to provide customers with the capability to identify the *exact coverage level for a specific address*” and “*ensure that customers can indeed place and receive calls* when outdoors at a specific location.”¹⁸⁷ The proposed revisions to GO 133-D would require wireless coverage maps to “show where wireless phone users can expect to receive signal strength adequate to place and receive calls when outdoors under normal operating conditions,” and require wireless providers to provide the Communications Division with coverage maps “capable of verifying coverage at exact address[es].”¹⁸⁸ The Ruling asks whether this is a reasonable requirement.¹⁸⁹ It is not.

As explained in CTIA’s witness testimony at the Workshop and discussed in CTIA’s engineering expert declaration, wireless networks are inherently variable.¹⁹⁰ It is not possible to guarantee an exact coverage level at a specific location at all times. Coverage at a given location will be affected at various times by factors such as sunspot and solar wind activity, and changes in tree foliage, among other factors.¹⁹¹

The requirement that wireless providers’ coverage maps “include a clear disclosure of equipment constraints” also is unclear and undefined. It would not be feasible for wireless providers to offer different coverage maps for every device that a consumer might use on the network, nor is it possible for a wireless provider to anticipate the potential limitations of any specific wireless device—particularly given that devices’ capabilities may be affected by the

¹⁸⁷ Staff Proposal at 31-32 (emphasis added).

¹⁸⁸ Staff Proposed General Order 133-D Redline, §§ 6.1; 6.2.c.

¹⁸⁹ Ruling at 7-8.

¹⁹⁰ See Settle Declaration at 8-9.

¹⁹¹ See *id.*

passage of time (which may weaken the maximum power of the battery) or the customer's own actions, such as damage to an antenna due to a dropped phone or the use of a poorly-designed phone case.

CTIA also reminds the Commission that the FCC's mobile Broadband Data Collection ("BDC") rules have put uniform standards around the process used by wireless providers to produce BDC coverage maps. The Commission is using those maps to facilitate distribution of \$1.86 billion in broadband deployment funding under the Broadband Equity Access and Deployment program. The Commission should consider using such maps to satisfy any wireless mapping obligations in the Staff Proposal.

The Ruling asks how else the Commission should "require" wireless providers "to validate claimed coverage maps,"¹⁹² but there is no reason for the Commission to do so. The record in this proceeding reflects that wireless providers have strong competitive incentives to provide accurate coverage maps, and wireless providers' customer trial periods, which are standard in the industry, minimize the risk of customers' subscribing to service that is unavailable at their location.

The Commission should therefore reject the Staff Proposal's modifications to the wireless coverage map rules.

VI. CONCLUSION

The Staff Proposal is unlawful and totally contrary to the record in this proceeding that shows there is no legal, factual, or policy basis to adopt wireless service quality rules. The Commission should reject the Staff Proposal and, as to wireless providers, retain the

¹⁹² Ruling at 8.

Commission's longstanding decision to recognize the efficacy of the competitive wireless marketplace to deliver optimal service quality.

Respectfully submitted September 3, 2024, at San Francisco, California.

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September 3, 2024

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

PETITION TO ADOPT, AMEND, OR REPEAL
A REGULATION PURSUANT TO PUB. UTIL.
CODE SECTION 1708.5

**WIRELESS SERVICE QUALITY REGULATION: AN ECONOMIC ASSESSMENT OF
MARKETPLACE AND ENFORCEMENT REALITIES**

Aren Megerdichian, Ph.D.

Expert Report Prepared on Behalf of CTIA

September 3, 2024

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I. INTRODUCTION

A. Qualifications

1. My name is Aren Megerdichian. I am an Executive Vice President at Compass Lexecon. I provide economic consulting services to clients on a wide range of matters involving litigation and regulatory investigations. I have submitted white papers and declarations involving regulation in the telecommunications industry to the Federal Communications Commission and the Department of Justice. I have presented my findings on the potential competitive effects of mergers to the Federal Trade Commission and the Department of Justice. I also have submitted expert reports and testified in U.S. District Court. Prior to joining Compass Lexecon, I served as Lecturer with the College of Business at San Diego State University and Lecturer with the Department of Economics at the University of California, San Diego. I hold a Ph.D. in Economics from the University of California, San Diego. My curriculum vitae is provided as an attachment to this report.

B. Background

2. As part of its rulemaking proceeding on telecommunications “service quality,” the California Public Utilities Commission (hereafter, “Commission” or “CPUC”) is considering amending its General Order (GO) 133-D.¹ Staff with the Commission’s Communications Division (hereafter, “Division Staff”) have put forth a proposal recommending amendments to GO 133-D.² Service quality requirements historically have applied primarily to plain old telephone service (POTS) providers.³ However, in addition

¹ Petition of the Public Advocates Office for Rulemaking to Amend General Order 133-D to Establish Minimum Service Quality Standards for All Essential Communications Services, Before the Public Utilities Commission of the State of California, September 29, 2021. See also Order Instituting Rulemaking Proceeding to Consider Amendments to General Order 133, Before the Public Utilities Commission of the State of California, March 23, 2022.

² California Public Utilities Commission, Communications Division, Service Quality Proceeding Phase One Staff Proposal, June 2024, filed June 27, 2024 (hereafter, *Staff Proposal (2024-06)*).

³ *Staff Proposal (2024-06)*, p. 8 (“While the current service quality standards and enforcement mechanism in GO 133-D focus primarily on POTS provided on time division multiplexing (TDM)

to amendments to GO 133-D recommended by Division staff that, if adopted, would apply to POTS, Division Staff also propose service quality requirements that, if adopted, would apply to wireless services. Appendix A to this report provides a summary of the recommendations put forth by Division Staff that apply to wireless services, including the following service standards and enforcement proposals:⁴

Division Staff Service Standards Recommendations

- Incorporate multiple thresholds to reflect increasing severities with escalating penalties.
- Wireless Community Isolation Outage Repair Standard: Provide a community isolation outage notification to Cal OES within 60 minutes of discovery of the wireless service outage.⁵ Provide the estimated time of repair of the outage, as well as a restoration of service notification when the outage is restored. The outage repair standard for wireless is based on whether outage tickets are repaired within 24 hours. Add a multiplier to the base fine amount based on the duration of the outages.
- Live agents must answer 80 percent of customer service calls within 60 seconds and answer 100 percent within five minutes. Provide chat and postal mail components. Billing-related inquiries must be addressed and, if necessary, reconciled by the next billing cycle. Outage-related inquiries are subject to the Wireless Community Isolation Outage Repair Standard (see above). Failure of these components will be assessed a daily fine for each day of noncompliance (see below).

Division Staff Enforcement Recommendations

- Reform the investment-in-lieu-of-fine alternative or consider other empirical enforcement mechanisms such as increasing the base amount for the investment-in-lieu-of-fine alternative, potentially requiring that the Commission direct the location and nature of the investment to improve service, or replace the investment option with another proven enforcement mechanism.

technology, GO 133-D also includes some regulatory requirements for VoIP and wireless voice services. These requirements include reporting major service interruptions and providing wireless coverage maps, both of which include specific reference to VoIP and wireless voice services.”).

⁴ See Appendix to this report and *Staff Proposal (2024-06)* for additional details.

⁵ For wireless service, a community isolation outage is defined as an outage that lasts at least 30 minutes and affects at least 25 percent of a wireless provider’s coverage area in a zip code.

- Eliminate chronic failure status and enforce penalties immediately upon failure to meet a standard.⁶ Assess penalties at the same frequency as the standard (e.g., if the standard is assessed on a daily basis, then assess the penalty for each day that the service provider fails to meet the standard).
- Limit exemptions to only declared states of emergency by the Governor of California.
- Add “automatic customer credit” as a fine mechanism. For existing customers, credits and refunds must be issued within 30 days from the end of the billing period in which the service standard violation occurred. For prospective customers, checks must be remitted within 30 days from the end of the current billing period. Service providers must maintain performance records of all standards and customer credit transactions at both individual customer level and aggregated summaries. For wireless outages, use the “Wireless Community Isolation Outage Repair Standard” (see above) to determine performance and assess penalty in the form of automatic customer credit. Assess compliance of this standard at the individual customer level. Utilize Cal OES data to identify the impacted users. For outages that are not repaired within 24 hours, apply a base fine amount of \$5 per day as a customer credit. If impacted customer’s place of primary use is located in disadvantaged communities (DAC) or communications areas of affordability concerns (AAC), the base fine amount is \$10 per day as a customer credit. Apply multipliers to the base fine amount based on the duration of the outage. For customer inquiries, use the “Customer Service Standard” to determine performance and assess a penalty in the form of monies to the general fund. Assess compliance of this standard at the company level. For each day of noncompliance, a daily fine is assessed. The daily fine amount is the equivalent to the interest amount for late surcharge remittances.

C. Assignment and Summary of Opinions

3. I have been asked by CTIA⁷ to assess, from an economic perspective, the recommendations put forth by Division Staff involving service quality standards and enforcement to wireless services. More specifically, my assignment is to evaluate the competitive health of the wireless marketplace in order to assess whether service quality

⁶ Currently, a fine is not assessed until a provider reaches chronic failure status—i.e., failure to meet the standard for three consecutive months. The first two months of noncompliance do not result in fines. See *Staff Proposal (2024-06)*, p. 25.

⁷ CTIA - The Wireless Association[®] (hereafter, “CTIA”) represents the U.S. wireless communications industry, including service providers, equipment manufacturers, mobile app developers, and content creators. See CTIA, Our Mission, available at <https://www.ctia.org/about-ctia/our-mission>.

regulation is needed and to assess the risks to the wireless marketplace if the Commission were to adopt the recommendations proposed by Division Staff. The remainder of this report presents my findings with respect to this assignment,⁸ a summary of which is provided as follows:

- There are several marketplace realities that point to a wireless industry that is highly competitive and not in need of regulation like the service quality recommendations in this proceeding.

Wireless providers invest substantially in spectrum and infrastructure. This has resulted in network coverage by multiple wireless providers to nearly all consumers in California and the United States more broadly. This gives consumers the ability to switch providers in response to changes in price and/or wireless service quality. The benefits of these investments are not limited to mobile wireless offerings. The investments have also brought to the marketplace fixed wireless access service offerings, which provide consumers and businesses with competitive alternatives to wireline broadband solutions. (Section II.A.)

Wireless prices have declined substantially over time. Data published by the Bureau of Labor Statistics shows the wireless services price index has declined by 37 percent, while the consumer price index for all goods has increased by almost 77 percent since 2000. Wireless services average revenue per unit (ARPU) also has declined substantially, including a very large decline—about 99 percent—in the average service revenue per gigabyte of mobile data between 2011 and 2022. (Section II.B.)

Wireless output has increased over time. The number of U.S. wireless connections, active smartphones, and wireless-enabled laptops, tablets, and routers active on networks each have increased substantially over the past decade. Mobile data traffic grew nearly 85-fold between 2011 and 2022, and mobile data usage per device increased over 28-fold during the same period. Minutes of use also increased during the period. The substantial increase in mobile data traffic represents the importance of wireless services in the many ways people communicate, obtain news and other information, transact with each other and third parties, and access entertainment, among countless other use cases for mobile devices powered by wireless technology. (Section II.C.)

Wireless network quality has increased over time. Higher wireless broadband speeds, which can enhance user experience, facilitate

⁸ I reserve the right to amend or supplement this report if additional information becomes available.

software applications, and improve communications facilitated through mobile data have increased substantially. Median U.S. mobile download speeds increased from 36 Mbps in 2020 to over 113 Mbps by mid-2024. Moreover, the American Consumer Satisfaction Index (ACSI) for the wireless industry shows an increase from 63 in 2005 to 76 in 2024. Most of the ACSI customer experience index benchmarks for mobile network operators—such as network coverage, call quality, call reliability, data speeds and reliability, variety of plans available, and ease of understanding bill—are above 80. (Section II.D.)

The marketplace realities described above reveal that the wireless industry is highly competitive and indicate that service quality regulation is not needed. The extensive use of wireless services by consumers now and in the future is not a basis for imposing service quality standards on wireless service providers. Quite the opposite: The continued growth in demand for wireless services and its expected expanded role in the U.S. communications landscape will continue to create incentives for wireless providers to compete vigorously, including by competing on service quality. Therefore, sound regulatory policy should continue to rely on the Commission’s principle that competition will ensure service quality in the wireless industry. (Section II.E.)

- Just as marketplace realities must be considered in assessing whether regulation is needed, it is also necessary to consider enforcement realities. The service quality standards and enforcement recommendations put forth by Division Staff are not based on sound economics and are likely to have the counterproductive effect of reducing wireless providers’ investment incentives and harming consumers.

There is a lack of economic basis for establishing the optimal level of outages or customer service answer times and what consumers would be willing to pay for wireless services that achieve those levels. Thus, there is a lack of economic basis for singling out and imposing service quality standards and enforcement mechanisms with respect to outages and customer service answer times. This creates a risk of imposing arbitrary and unnecessary regulation. (Section III.A.)

Division Staff have not provided any rigorous economic analysis examining the benefits and the costs of their recommendations. Given robust competition in the wireless industry and the lack of evidence indicating material deficiencies in service quality in the marketplace, it is more likely than not that the costs imposed by the regulation being recommended by Division Staff would outweigh any potential benefits. (Section III.A.)

Another deficiency with the Division Staff recommendations is that they do not fully consider cases where network outages are caused by

factors outside of wireless service providers' control. If the rationale for carving out states of emergency is that a wireless provider is not the cause of the outage during a large-scale natural disaster, then the same rationale should hold for smaller-scale disasters. This should apply to additional types of events, including cyberattacks, power grid failures, and temporary power shutdowns. The proposed regulation makes little sense from an economic perspective because it creates costs in the form of penalties or incremental infrastructure costs (e.g., backup power systems) for the service provider, yet it does not address the true cause of the service outage in certain cases. Under the proposed regulation, wireless providers would be expected to have lower incentives to invest in areas susceptible to natural disasters or poor power management. (Section III.A.)

Service quality standards and enforcement mechanisms can create risk of doing more harm than good by getting the market wrong and overregulating a competitive market that does not require it. Higher costs incurred by wireless service providers—be it penalties, additional spending on infrastructure, or hiring customer service personnel—are likely to be passed on to consumers in the long run in the form of higher prices. This is an enforcement reality that should be taken into account in evaluating the merits of the Division Staff recommendations. (Section III.B.)

The regulation recommended by Division Staff can harm consumers by adversely impacting wireless innovation and coverage. This would occur because the regulation raises wireless providers' costs and thereby lowers their expected profits from investing in new technologies, improving existing technologies, or expanding coverage. This reduces their investment incentives compared to a world without the regulation. (Section III.B.)

The recommendation by Division Staff to double penalties incurred by wireless providers for outages in certain areas provides a clear example of how investment incentives can be affected by the regulation. Enforcement recommendations that more heavily penalize service providers in one area over another can create disproportionate uncertainty and expected costs for the provider in the more-penalized area, reducing its incentive to invest in expanding coverage and doing business there, instead diverting resources to other areas with lower penalties under the proposed enforcement mechanism. This is counter to sound policy. (Section III.B.)

Another example of how the proposed regulation would reduce investment incentives is the potential impact to areas requiring small cell sites. I understand that backup power systems generally are not feasible for small cell sites. In such cases, service providers could not actually implement additional infrastructure to avoid outages due to

power failure. The service provider would have to incur the costs in the form of penalties, and yet the outages would keep occurring. Service providers' investment incentives in areas that require small cell sites would be expected to decline. (Section III.B.)

Finally, to avoid suboptimal allocations of resources, investment decisions should be made by service providers, not the Commission. Service providers have better knowledge of their networks and they have the incentive to deploy their investments in ways that will enhance service quality or extend coverage to areas that need it the most. (Section III.B.)

II. MARKETPLACE REALITIES

4. Marketplace realities should be taken into account when assessing whether the wireless industry needs service quality regulation such as the proposals put forth by Division Staff. As described in this section, wireless service providers invest heavily in infrastructure to provide wireless services to nearly all consumers in California and the rest of the country. Over the past few decades, the wireless marketplace has generated lower prices, greater output, and high-quality services. These marketplace realities are hallmarks of a well-functioning, competitive marketplace that ultimately enhance—not harm—consumer welfare, which is desirable from a policy perspective.⁹ The marketplace realities do not support imposing service quality regulation on wireless network providers.

A. Marketplace Reality: Wireless Providers Invest Substantially in Infrastructure.

5. Wireless providers in the United States have invested substantially in network infrastructure, expanding network coverage to new areas and creating better networks for existing coverage areas. Wireless providers' investments have provided nearly all consumers in California and in the United States more broadly with wireless network

⁹ The consumer welfare standard employed by the U.S. antitrust agencies and courts is intended to promote competition and protect consumers. See, e.g., Opening Statement of Professor Carl Shapiro, Senate Judiciary Committee – Subcommittee on Antitrust, Consumer Protection and Consumer Rights, “The Consumer Welfare Standard in Antitrust: Outdated, or a Harbor in a Sea of Doubt?” December 13, 2017, pp. 2-4, available at <https://www.judiciary.senate.gov/imo/media/doc/12-13-17%20Shapiro%20Testimony.pdf>.

coverage from multiple service providers. Multiple service providers compete to acquire subscribers, including by competing on price and service quality.

6. Between 1985 and 2022, U.S. wireless operators made over \$674 billion (\$992 billion in 2024 dollars) in capital investments.¹⁰ During the decade spanning 2013 to 2022 alone, capital investments totaled over \$309 billion (\$385 billion in 2024 dollars).¹¹ Moreover, in California alone, wireless capital investments totaled over \$35 billion (\$45 billion in 2024 dollars) during the decade spanning 2012 to 2021.¹² Investments in wireless spectrum licenses are also substantial. In the decade spanning 2011 to 2020, spectrum auctions pertaining to wireless services generated \$155 billion in auction revenues.¹³ These investments in infrastructure and spectrum licenses have contributed to a rapidly growing wireless infrastructure, including deployment of cell sites to expand or to improve coverage in existing service areas and to accommodate newer technologies

¹⁰ CTIA, CTIA's Wireless Industry Indices Report (July 2023) (hereafter, *CTIA Indices Report (2023-07)*), p. 47, Table 14 and Appendix B. Capital investments exclude the cost of spectrum licenses. Nominal dollars are expressed in 2024 dollars based on the June 2024 consumer price index for all goods reported by the Bureau of Labor Statistics (series CUUR0000SA0).

¹¹ *Id.*

¹² CPUC Annual Report of Telegraph and Telephone Corporation Employment, Investment, and Contracting in California As Required by Public Utilities Code 7912, August 26, 2014; CPUC Annual Reports of Telephone Corporations Customer, Employment, and Investment Information as Required by Public Utilities Code Section 914.

¹³ This includes auctions 92, 96-97, 101-103, 105, 107 and 1002. See FCC, "Auction 92: 700 MHz Band," available at <https://www.fcc.gov/auction/92>; FCC, "Auction 96: H Block," available at <https://www.fcc.gov/auction/96>; FCC, "Auction 97: Advanced Wireless Services (AWS-3)," available at <https://www.fcc.gov/auction/97>; FCC, "Winning Bidders Announced For Auction of 28 GHz Upper Microwave Flexible Use Service Licenses (Auction 101)," available at <https://docs.fcc.gov/public/attachments/DA-19-484A1.pdf>; FCC, "Auction of 24 GHz Upper Microwave Flexible Use Service Licenses Closes," available at <https://docs.fcc.gov/public/attachments/DA-19-485A1.pdf>; FCC, "Auction 103 – Upper 37 GHz, 39 GHz, and 47 GHz," available at <https://auctiondata.fcc.gov/public/projects/auction103>; FCC, "Auction 105 - 3.5 GHz," available at <https://auctiondata.fcc.gov/public/projects/auction105>; FCC, "FCC Announces Winning Bidders In C-Band Auction," available at <https://docs.fcc.gov/public/attachments/DOC-370267A1.pdf>; FCC, "Forward Auction," available at <https://auctiondata.fcc.gov/public/projects/1000>.

such as 5G.¹⁴ The number of cell sites in commercial use has increased by nearly 64 percent from 253,086 in 2010 to 414,571 in 2022.¹⁵

7. Investments in infrastructure by U.S. wireless providers have given nearly all consumers in California and nearly all consumers in the United States coverage by multiple wireless service providers. As of the end of 2019, nearly 100 percent of the population in California was covered by at least three wireless services.¹⁶ Moreover, as of the end of 2019, nearly 100 percent of the population in California was covered by at least three wireless services and at least one broadband provider, which gives consumers access to internet-based voice service offerings.¹⁷ Similarly, in the United States, the share of the population covered by at least three service providers was almost 100 percent at the end of

¹⁴ FCC, 2022 Communications Marketplace Report, December 30, 2022, pp. 73-74.

¹⁵ *CTIA Indices Report (2023-07)*, Chart 19 and Appendix B. CTIA notes that “[t]he 414,571 cell sites in active service at year-end 2022 include traditional macro cells, small cells, DAS nodes, and other cell-extending devices. The cell site count originally included repeaters and other cell-extending devices, some of which have been rendered obsolete by new technology generations. The extent to which one category or another may have grown or shrunk is not reported. The total count of operational sites declined, as it has previously when decommissioned sites were not entirely offset by newly operational sites. While CTIA tracks the total number of cell sites in service as of the end of each survey period, it does not track the number that are removed from service, nor the number of newly-added cell sites in any specific survey period, though we know that such removals and additions have occurred. We only track the number of operational sites. (Nor do we track base stations.)” *Id.*, p. 53.

¹⁶ Citing to *December 2019 Form 477 Fixed Broadband Data, 2010 Census Table P27*, Rosston and McDowall find that, as of December 2019, 99.8 percent of California households are in census blocks where at least three mobile wireless voice services are available. See Report of Dr. Gregory L. Rosston and Dr. Ana McDowall on Behalf of the California Cable and Telecommunications Association, May 9, 2022 (hereafter, *Rosston and McDowall (2022-05-09)*), ¶ 41. See also Reply Expert Report of Christian M. Dippon, Ph.D., Examining an Extension of Service Quality Standards to Mobile Wireless and Voice over Internet Protocol Services, On Behalf of Cellco Partnership d/b/a Verizon Wireless, May 23, 2022 (hereafter, *Dippon (2022-05-23)*), ¶ 43 and Table 3 (showing that AT&T, T-Mobile, and Verizon each account for nearly 100 percent of households covered in California) and ¶ 44 and Table 4 (showing additional coverage by cable MVNOs such as Charter (Spectrum) and Comcast (Xfinity)).

¹⁷ *Rosston and McDowall (2022-05-09)*, ¶ 41 (finding that, as of December 2019, 99.5 percent of California households are in census blocks with at least three mobile voice services and at least one broadband provider).

2019 prior to the T-Mobile/Sprint merger and was approximately 95 percent by the end of 2021, well after the merger closed in April 2020.¹⁸

8. The fact that nearly all consumers in California and in the United States more broadly have access to multiple wireless service providers means there are multiple providers that compete for wireless subscribers. Such a competitive marketplace gives nearly all consumers the ability to switch providers in response to changes in price and/or wireless service quality. In fact, wireless providers compete in part by marketing themselves as better alternatives to each other in terms of network reliability, speed, and coverage.¹⁹ Subscriber churn, which is a measure of disconnects by subscribers within a timeframe, has been examined in this proceeding and is shown to range from nine percent to 34 percent per year, which translates into tens of millions of churned wireless subscribers each year.²⁰ This demonstrates that subscribers can—and in fact do—switch wireless services. Such switching is indication of a well-functioning, competitive marketplace.

9. The benefits of the investments in spectrum and infrastructure are not limited to mobile wireless offerings. The investments have also brought to the marketplace fixed

¹⁸ In the United States, 89.6 percent of the population was covered by at least three service providers (3G or better) as of January 2012. By December 2019—prior to the T-Mobile/Sprint merger in April 2020—the share of the U.S. population covered by at least three LTE providers had increased to 99.0 percent. As of December 2021, the share of the population covered by at least three LTE wireless providers was 94.5 percent. See FCC, 16th Mobile Competition Report, March 21, 2013, pp. 50-51, Table 8; FCC, 2020 Communications Marketplace Report, December 31, 2020, pp. 51-52, Fig. II.A.34; FCC, 2022 Communications Marketplace Report, December 30, 2022, pp. 109-110, Fig. II.B.37.

¹⁹ See, e.g., Verizon, “Our Network,” available at <https://www.verizon.com/featured/our-network/>; Verizon, “From coast to coast, Verizon is unmatched in Network Quality,” July 13, 2023, available at <https://www.verizon.com/about/news/verizon-unmatched-network-quality>; AT&T, “AT&T 5G. Fast. Reliable. Secure,” available at <https://www.att.com/offers/network/>; AT&T, “AT&T rolls out 5G+ across the U.S.,” available at <https://about.att.com/pages/5g-plus.html>; T-Mobile, “New Third-Party Report Ranks T-Mobile Fastest in North America with the Best Video Experience in the U.S.,” February 23, 2024, available at <https://www.t-mobile.com/news/network/t-mobile-fastest-in-north-america-and-best-video-experience-in-us>; T-Mobile, “Experience America’s largest & fastest 5G network,” available at <https://www.t-mobile.com/coverage/network>.

²⁰ *Dippon* (2022-05-23), ¶¶ 47-50, Table 6, and Table 7, and stating the churn indicates “fierce competition between mobile wireless providers.”

wireless access (FWA) service offerings. FWA is a 5G technology that enables wireless broadband to homes and businesses across the United States, including those in “digital deserts” where consumers and businesses may have little or no access to high-speed wireline broadband solutions (i.e., cable or fiber).²¹ FWA offerings provide competitive alternatives to consumers and businesses looking for home or business broadband solutions, especially where wireline broadband options may be lacking. FWA service offerings provide ways for consumers and businesses to access high-speed broadband for internet-based communications, such as VoIP and video calling.

B. Marketplace Reality: Wireless Prices Have Declined Over Time.

10. Another marketplace reality that reveals the competitive health of the wireless industry is that wireless service prices have declined substantially over time. Between 2000 and 2023, the wireless services consumer price index (CPI) published by the Bureau of Labor Statistics (BLS) declined by 37 percent.²² In contrast, the CPI for all items in the U.S. economy increased by almost 77 percent during the same period. See Figure 1. Put differently, a typical wireless plan that hypothetically cost \$40 per month in 2000 should have cost approximately \$71 per month by 2023 based on the all-items CPI, but, in fact,

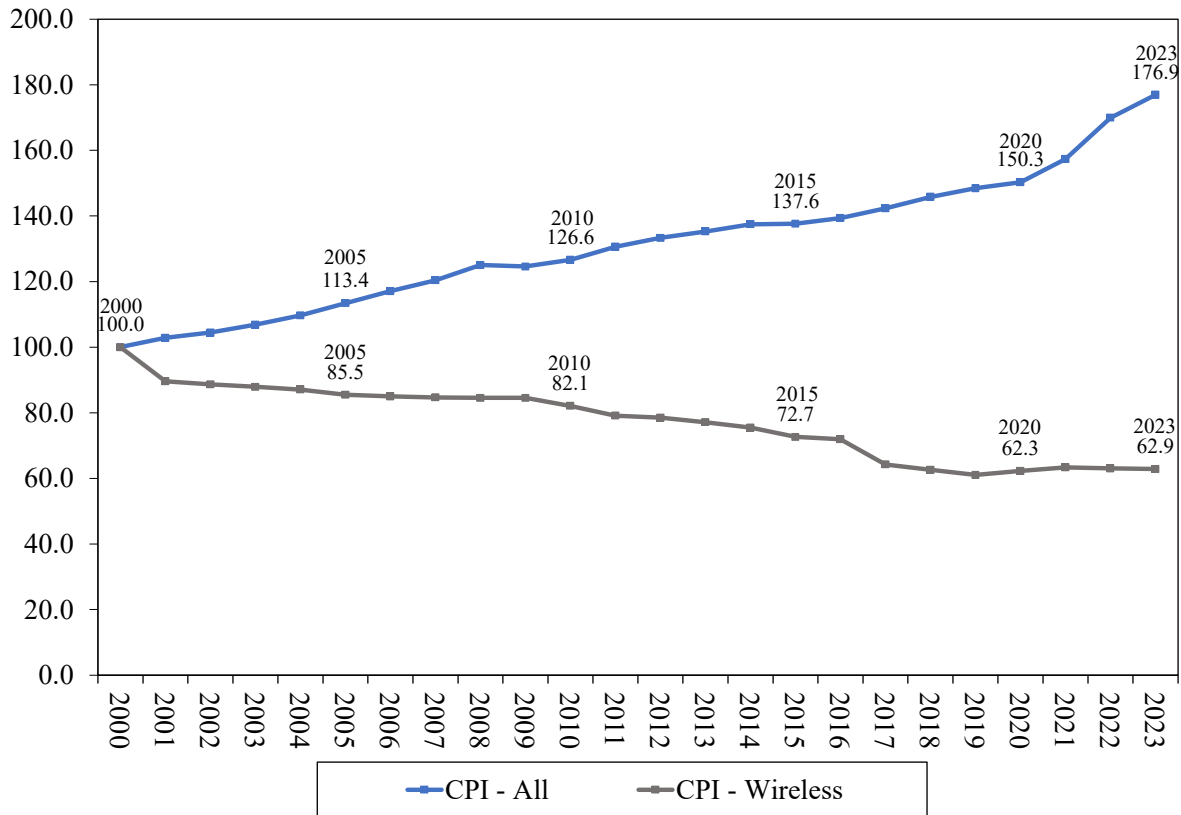
²¹ Verizon, “What is fixed wireless access (FWA) technology?” available at <https://www.verizon.com/about/blog/fixed-wireless-access>. See also T-Mobile, “A Window Into 5G Wireless Internet,” available at <https://www.t-mobile.com/home-internet/how-5g-home-internet-works>; AT&T, “Switch to AT&T Internet Air,” available at <https://www.att.com/internet/internet-air/>; Verizon, “Say hello to 5G Home Internet your way,” available at <https://www.verizon.com/home/internet/5g/>.

²² BLS defines wireless phone services as: “Personal wireless (also known as cellular) phone service where the telephone instrument is portable and sends/receives signals for calls through the air waves. Services priced are primarily specific plans offered by cellular companies. This also includes prepaid plans. All service charges, applicable per-plan charges or per-minute call charges, and other charges normally included in a cellular plan are eligible for pricing. Any service priced must be registered with the selected phone company.” See BLS, “Appendix 2. Content of CPI entry level items,” October 20, 2023, available at <https://www.bls.gov/cpi/additional-resources/entry-level-item-descriptions.htm>.

The BLS attempts to account for quality changes in its price indexes. Using alternative data and alternative hedonic modeling techniques to adjust prices for quality over time, BLS economists have documented that their alternative wireless price index declines between 2019 and 2022 compared to the official wireless CPI published by the BLS. See Craig Brown and Jeremy Smucker, “Alternative Data Sources and Hedonic Price Indexes for High-Tech Products in the U.S. Consumer Price Index,” available at <https://www.aeaweb.org/conference/2024/program/paper/92KSHyGT>.

an equivalent plan ended up costing only \$25 per month by 2023 based on the wireless price index.

Figure 1 – BLS Price Indexes, 2000-2023 (Indexed 2000=100)



Source: BLS Data Series CUUR0000SA0, CUUR0000SEED03.

11. Another metric indicative of declining wireless prices is the average revenue per unit (ARPU)—that is, the average revenue earned by wireless providers per subscriber per month.²³ Wireless service ARPU declined from \$48.6 in 2000 to \$34.6 in 2022, equivalent to a decline of about 29 percent during the period.²⁴ Moreover, the average service revenue per gigabyte (GB) of mobile data has declined from about \$196/GB in

²³ Unlike the consumer price indexes published by the BLS, ARPU does not attempt to adjust for product quality over time.

²⁴ *CTIA Indices Report (2023-07)*, Chart 17 and Appendix B. The FCC notes that while “[...] it is difficult to directly compare prices between providers or over time, because providers offer a variety of plans [...],” measures of ARPU are “frequently used as a proxy for price [...].” See FCC, 2022 Communications Marketplace Report, December 30, 2022, pp. 80-83.

2011 to just \$2.8/GB in 2022, representing a decline of about 99 percent during the period.²⁵

C. Marketplace Reality: Wireless Output Has Increased Over Time.

12. While wireless coverage has been expanding and prices have been falling, output has been increasing, which is another indication that the wireless industry is competitive and providing benefits to consumers. The estimated number of U.S. wireless connections increased from approximately 109 million in 2000 to 523 million in 2022, representing a nearly five-fold increase during the period.²⁶ The number of active smartphones in the United States increased from 111.5 million in 2011 to over 307 million in 2022, and the number of wireless-enabled laptops, tablets, and routers active on networks more than doubled from 20.2 million to 45.2 million in the same period.²⁷

13. A key metric of output in the wireless industry is mobile data traffic. As shown in Figure 2, the total U.S. mobile data traffic grew nearly 85-fold from approximately 867 million GB in 2011 to about 74 billion GB in 2022. Mobile data usage per device also increased markedly during the same period, with the average monthly data traffic per average smartphone growing over 28-fold from 0.5 GB in 2011 to 14.0 GB in 2022. Minutes of use also experienced growth within the same period, increasing from 2.3 trillion to 2.5 trillion minutes between 2011 and 2022.²⁸

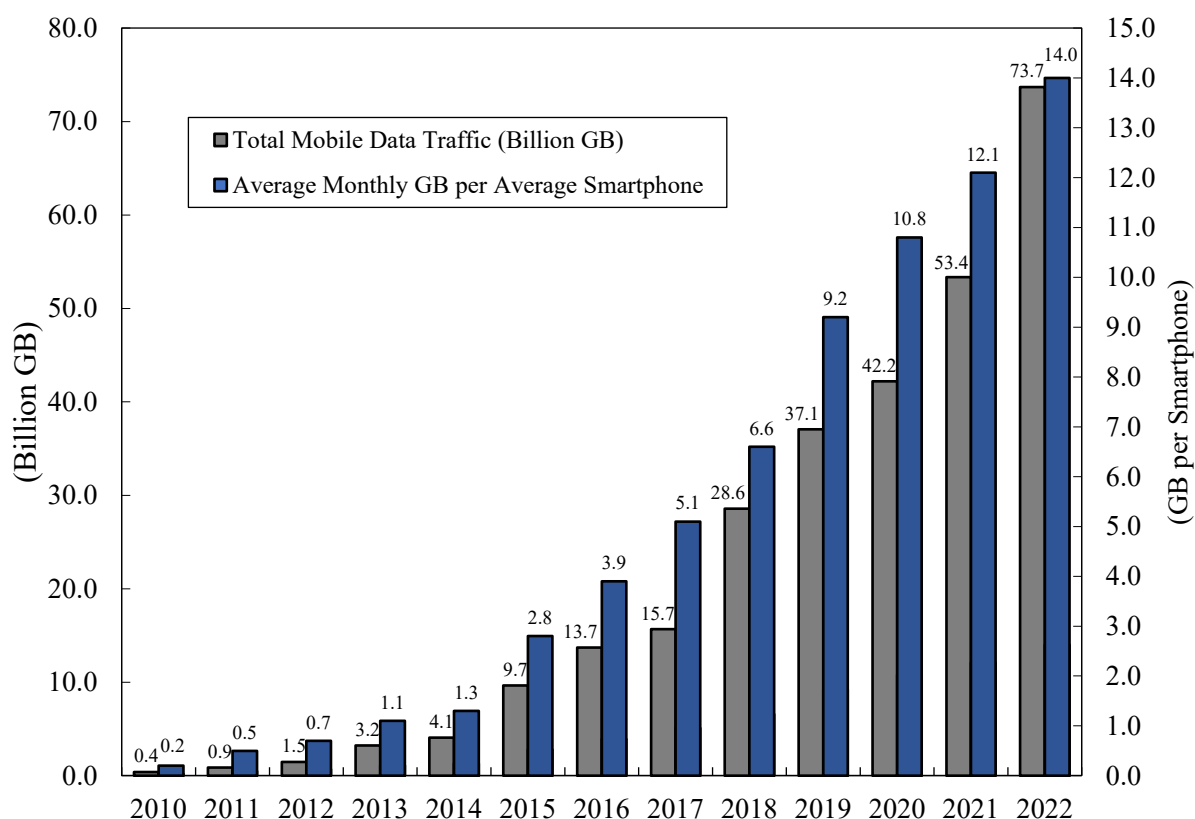
²⁵ *CTIA Indices Report (2023-07)*, Charts 2, 14, and Appendix B.

²⁶ *CTIA Indices Report (2023-07)*, Table 5 and Appendix B.

²⁷ *CTIA Indices Report (2023-07)*, Appendix B.

²⁸ *CTIA Indices Report (2023-07)*, Chart 2 and Appendix B.

Figure 2 – Mobile Data Traffic, 2010-2022



Source: *CTIA Indices Report (2023-07)*, Charts 2, 4 and Appendix B.

14. The substantial increase in mobile data traffic represents the importance of wireless services in the many ways people communicate, obtain news and other information, transact with each other and third parties, and access entertainment, among countless other use cases for mobile devices powered by wireless technology, at home or on the go. Streaming services are an especially noteworthy contributor to increasing mobile data demand by consumers. Ericsson estimates that video represented over 40 percent of mobile traffic volume in North America,²⁹ and a GSMA survey shows that the share of mobile internet users who engaged in watching “free online video” either every day or at least once per week increased from approximately 45 percent to about 60 percent over the

²⁹ Total video includes video on demand streaming services, social media-generated video, and other unclassified video services. Ericsson Mobility Report, June 2023, available at <https://www.ericsson.com/49dd9d/assets/local/reports-papers/mobility-report/documents/2023/ericsson-mobility-report-june-2023.pdf>, pp. 16-17, Figure 17.

same period.³⁰ Wireless service providers have recognized the growing demand for streaming content on wireless networks and offer plans that help consumers facilitate these consumption habits.³¹

D. Marketplace Reality: Wireless Quality Has Increased Over Time.

15. While network coverage and output have expanded, and wireless prices have fallen, the quality of wireless services has increased over time. This is evident from rising mobile broadband speeds and increasing consumer satisfaction.

16. A measure of quality in the wireless industry is mobile broadband speed. Mobile broadband speed is an important metric given how consumers rely on their wireless devices and services in the modern economy, as described above. Higher mobile broadband speeds can enhance user experience (e.g., streaming video) and facilitate new software applications (e.g., virtual reality), as well as improve communications enabled by mobile data, such as VoIP and video calls.

17. The median download speed for 4G LTE nationwide increased substantially from 11.0 megabits per second (Mbps) to 30.4 Mbps between 2014 and 2022.³² Moreover, the overall average U.S. mobile download speed increased from 19.3 Mbps in July 2016 to 31.2 Mbps in November 2018, and further increased to 151.5 Mbps by December 2022.³³

³⁰ GSMA, The State of Mobile Internet Connectivity 2023, October 2023, available at <https://www.gsma.com/r/wp-content/uploads/2023/10/The-State-of-Mobile-Internet-Connectivity-Report-2023.pdf>, p. 77, Figure A4.

³¹ For example, T-Mobile notes that “[v]ideo is the number one way people use wireless data [...]” and it offers “Binge On” to its subscribers, in which detectable video streaming is optimized for a subscriber’s mobile device, allowing them to “watch up to three times more video using the same amount of high-speed data.” Also, customers with qualifying plans can stream unlimited video from streaming services such as YouTube, Netflix, Hulu, Sling, and ESPN, among others, “without ever touching their high-speed data.” See T-Mobile, “Questions about Binge On? – What is Binge On?” available at <https://www.t-mobile.com/tv-streaming/binge-on>.

³² FCC, 2022 Communications Marketplace Report, December 30, 2022, p. 106, Fig. II.B.30.

³³ Ookla, “Speedtest,” July 2017, available at <https://web.archive.org/web/20170812155126/http://www.speedtest.net/global-index/united-states>; Ookla, “Speedtest,” November 2019, available at <https://web.archive.org/web/20200106224809/https://www.speedtest.net/global-index/united-states>;

The median U.S. mobile download speed increased from 36.0 Mbps in October 2020 to 97.1 Mbps in September 2023, and increased to 113.1 Mbps by June 2024.³⁴ These substantial speeds should come as no surprise given that nearly all of the population in the United States was within range of at least a 4G/ LTE signal in 2023, and 97.5 percent were within range of a 5G signal.³⁵

18. There is indication that consumer satisfaction with wireless services also has increased over the last few decades. The American Customer Satisfaction Index (ACSI)—a national indicator of the quality of economic output for goods and services as experienced by consumers—shows that the satisfaction index for wireless phone service increased from 63 in 2005 to 76 in 2024.³⁶ Most of the ACSI customer experience benchmarks for mobile network operators (MNOs)—such as network coverage, call quality, call reliability, data speeds and reliability, variety of plans available, and ease of understanding bill—are above 80 according to the 2024 data.³⁷ All of the MNO benchmarks increased between 2023 and 2024. For instance, the index for call center satisfaction increased by four points from 71 in 2023 to 75 in 2024. While there can be issues with the interpretation and reliability of such survey studies,³⁸ there is at least some

Ookla “Speedtest,” December 2022, available at <https://web.archive.org/web/20230201010554/https://www.speedtest.net/global-index/united-states>. As of February 2023, Ookla no longer reports mean download speeds. The last historical data for mean download speed is for December 2022. See Ookla, “Improving the Speedtest Global Index with Data on Median Speeds,” November 15, 2021, available at <https://www.ookla.com/articles/global-index-median-announcement-2021>.

³⁴ Ookla, “Speedtest,” October 2021, available at <https://web.archive.org/web/20211130112014/https://www.speedtest.net/global-index/united-states>; Ookla “Speedtest,” September 2023, available at <https://web.archive.org/web/20231108175622/https://www.speedtest.net/global-index/united-states>; Ookla “Speedtest,” August 2024, available at <https://web.archive.org/web/20240803232101/https://www.speedtest.net/global-index/united-states>.

³⁵ ITU, “United States Population coverage, by mobile network technology,” available at <https://datahub.itu.int/data/?i=100095&e=USA&s=19306>.

³⁶ American Customer Satisfaction Index, Wireless Phone Service, available at <https://www.theacsi.org/industries/telecommunications-and-information/wireless-phone-service/>.

³⁷ Id.

³⁸ See, e.g., discussion in *Dippon* (2022-05-23), ¶¶ 20-26.

directionally useful information in the ACSI data showing that consumer satisfaction with wireless services has increased over time. Combined with the performance of mobile broadband speeds described above, the evidence supports that wireless service quality has increased over time.

19. Finally, to the extent that a measure of wireless outages is an indicator of wireless quality, I am not aware of a reliable analysis of outages showing a material deficiency in the marketplace. Division Staff cite to Cal OES data purportedly showing that reported wireless outages increased by 75 percent between 2021 to 2023.³⁹ However, I understand that this data does not provide a reliable measure of outages, and it is unclear whether there was in fact much change in the number of reported outages during that time.⁴⁰

E. The Realities of the Wireless Marketplace Indicate That Service Quality Regulation Is Not Required.

20. The marketplace realities described above reveal that the wireless industry is highly competitive and indicate that service quality regulation—such as the outage and customer service recommendations made by Division Staff—is not needed. The ample availability of low-priced, high-quality wireless services allows consumers—should they have service quality concerns with their wireless provider—to switch to other wireless providers with better service quality and/or lower prices. This competition among providers to acquire new subscribers and to retain existing ones keeps wireless service quality at a competitively optimal level.

21. This trend is likely to continue into the near future. Wireless technologies—and the consumer services powered by those technologies—have taken over the communications

³⁹ *Staff Proposal (2024-06)*, p. 2.

⁴⁰ Engineering Declaration of Mark A. Settle, September 3, 2024 (hereafter, *Settle Declaration (2024-09)*), pp. 7-8 (noting that the reporting threshold for wireless outages changed from outages affecting 50 percent of the coverage area in a zip code to 25 percent, which “was likely a significant factor in the change in the number of reported outages from 2022 to 2023.”).

landscape,⁴¹ and are projected to continue to do so in the future. Industry projections suggest that the demand for wireless technologies is expected to continue growing substantially in the future, primarily driven by the growth in 5G mobile broadband technology:

- A GSMA report finds that 5G connections represented only 43 percent of total connections in the United States in 2022, but are projected to grow to represent 95 percent of total connections by 2030.⁴²
- According to a report by Ericsson, 430 million 5G subscriptions in North America are anticipated by the end of 2029, accounting for 90 percent of all mobile subscriptions, and average data usage is expected to reach 59 GB per smartphone per month in 2029.⁴³ As shown in Figure 2 above, the average monthly data traffic per smartphone was about 14 GB in 2022, meaning that Ericsson’s projection suggests more than a four-fold increase in data traffic per smartphone by 2029.
- IBISWorld notes that the wireless telecommunications carriers industry “is well-positioned for growth over the five years to 2027,” and that “enhanced speed of fourth-generation (4G) and LTE networks has already driven more customers to abandon landlines altogether.”⁴⁴ IBISWorld also notes that the share of households in the U.S. with only wireless service will continue increasing, while the share of households with both wireline and wireless service is projected to decline, attributable to the rollout of 5G networks.⁴⁵ IBISWorld forecasts that the number of mobile internet connections will grow from 334 million in 2022 to 348 million in 2028.⁴⁶

⁴¹ See, e.g., Paroma Sanyal and Coleman Bazelon, “Out of Sync: Outdated Financial and Operational Reporting for Competitive VoIP Providers,” Prepared for California Cable & Telecommunications Association, December 21, 2022, Figure 1 (showing the substantial decline in the number of wireline subscriptions in California and the increasing number of VoIP and wireless subscriptions between 2009 and 2021). See also discussion above on output in the wireless industry increasing over time.

⁴² GSMA, The Mobile Economy – North America 2023, p. 8, available at <https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/09/260923-Mobile-Economy-North-America-2023.pdf>.

⁴³ Ericsson, Mobility Report, June 2024, pp. 6-7, 12, available at <https://www.ericsson.com/49ed78/assets/local/reports-papers/mobility-report/documents/2024/ericsson-mobility-report-june-2024.pdf>.

⁴⁴ IBISWorld, Wireless Telecommunications Carriers in the US, March 2022, pp. 14-15.

⁴⁵ Id.

⁴⁶ Id.

22. The extensive use of wireless services by consumers and the expected continued growth of wireless services are not a basis for imposing service quality standards on wireless service providers. Quite the opposite: The continued growth in demand for wireless services and their expected expanded role in the U.S. communications landscape will continue to create incentives for wireless providers to compete vigorously—including by competing on service quality—to win their share of the growing base of valuable wireless subscribers.

23. Finally, it is instructive that the Commission did not regulate wireless services most recently in its decision in 2018, noting that it “has taken a more hands-off approach for non-traditional services [such as wireless and VoIP], with reliance on competition to ensure reasonable service and rates.”⁴⁷ It remains that, since 2018, the wireless industry has continued to exhibit the traits of a highly competitive marketplace as evidenced by the marketplace realities described above. Therefore, sound regulatory policy should continue to rely on the Commission’s principle that competition will ensure service quality.

III. ENFORCEMENT REALITIES

24. Just as marketplace realities must be considered in assessing whether regulation is needed, it is also necessary to consider enforcement realities—in this case, assessing the extent to which the proposed regulation is likely to have unintended consequences, most

⁴⁷ Order Modifying Decision (D.) 16-08-021 on Issue of Fines for CLECs and Denying Rehearing of Decision as Modified, in re Order Instituting Rulemaking to Evaluate Telecommunications Corporations Service Quality Performance and Consider Modification to Service Quality Rules, Before the Public Utilities Commission of the State of California, October 25, 2018, available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M234/K300/234300754.PDF>, pp. 18-20 (“At different times in this proceeding, the Commission discussed extending all service quality standards to VoIP and wireless. [...] Furthermore, from a regulatory standpoint, non-traditional services such as wireless and VoIP have always been treated differently from wireline services. First, the Commission has taken a more hands-off approach for non-traditional services, with reliance on competition to ensure reasonable service and rates. This began when these non-traditional services were emerging. Second, issues of federal preemption and state prohibitions under section 710 have resulted in the Commission taking a more limited regulatory approach to these technologies. We do not think that section 2896 requires the Commission to apply the same type of regulations to wireless and VoIP that it applies to traditional wireline.”).

notably harming consumer welfare. As described in this section, the service quality standards and enforcement recommendations put forth by Division Staff are not based on sound economics, and they are likely to have the counterproductive effect of reducing wireless providers' investment incentives and harming consumers.

A. The Proposed Service Quality Regulation Is Not Based on Sound Economics.

25. The service quality recommendations put forth by Division Staff are not based on sound economics for multiple reasons.

26. First, there is a lack of evidence suggesting that temporary service outages or customer service answer times are meaningful determinants of consumers' wireless product-choice decisions or that service quality related to outages and customer service is materially deficient in the marketplace. Thus, there is a lack of economic basis for establishing the optimal level of outages or answer times and what consumers would be willing to pay for wireless services that achieve those levels. For these reasons alone, there is a lack of economic basis for singling out and imposing service quality standards and enforcement mechanisms with respect to outages and customer service answer times. This creates a risk of imposing arbitrary and unnecessary regulation.

27. Second, in determining service quality standards and enforcement, it is important that associated costs be identified and considered along with any potential benefits. Division Staff have not provided any rigorous economic analysis examining the benefits and the costs of their recommendations. Given robust competition in the wireless industry and the lack of evidence indicating material deficiencies in service quality in the marketplace, it is more likely than not that the costs incurred by the service providers—including penalties, additional spending on infrastructure (e.g., backup power systems), or hiring customer service personnel—as a result of the recommended regulation would outweigh any potential benefits.

28. Another deficiency with the Division Staff recommendations is that they do not fully account for the fact that service outages can be caused by exogenous forces—that is, forces generated outside of the relevant economic system but that nonetheless impact

outcomes inside the system. One example is large-scale disasters. While Division Staff provide a carve-out for states of emergency declared by the Governor of California, they do not consider cases in which network outages occur due to emergencies that are serious enough to cripple infrastructure and create an outage but too small to warrant a declaration of a state of emergency. If the rationale for carving out states of emergency is that a wireless provider is not the cause of the outage during a large-scale natural disaster, then the same rationale should hold for smaller-scale disasters.

29. Natural disasters are one example, but the idea extends to other types of events that are outside the control of wireless service providers, including cyberattacks, power grid failures, and temporary power shutdowns. In the instance of the latter example, it is the power company—not the wireless provider—that would be the cause of an outage that may last hours or several days, but it is the wireless provider that incurs the costs associated with the outage in the form of penalties under the enforcement recommendations proposed by Division Staff. Thus, the proposed regulation makes little sense from an economic perspective because it creates costs in the form of penalties or incremental infrastructure costs (e.g., backup power systems) for the service provider yet does not address the true cause of the service outage in certain cases. Under the proposed regulation, wireless providers would be expected to have lower incentives to invest in areas susceptible to natural disasters or poor power management.

B. The Proposed Service Quality Regulation Can Harm Consumers.

30. Regulation can have unintended consequences. When a market is competitive and there is not a discernible and material market failure, imposing an unnecessary and inherently uncertain regulatory framework will create the undesirable effect of reducing investment incentives and increasing costs incurred by service providers. Ultimately, this

can wind up harming wireless service subscribers through higher prices and less (or slower) innovation and coverage compared to a world without the regulation.⁴⁸

31. As described in Section II above, the marketplace is replete with wireless providers that compete based on price and quality to retain their existing subscribers and win new subscribers from their competitors. This competition allows consumers to switch to a different provider if they are dissatisfied with their current provider's service quality and/or price. To the extent that a wireless service provider does experience more service outages or higher customer service response time than its competitors—and assuming these are important factors in consumer choice—supply and demand for wireless services determine the competitive market equilibrium level of price, output, and quality.⁴⁹

32. The reason imposing service quality standards and enforcement can do more harm than good in such a competitive marketplace is that the equilibrium level of service quality is economically optimal. Service quality standards and enforcement mechanisms can create a risk of getting the market wrong and overregulating a competitive market. Higher costs incurred by wireless service providers—including penalties, additional spending on infrastructure (e.g., backup power systems), or hiring customer service personnel—are likely to be passed on to consumers in the long run in the form of higher

⁴⁸ See also discussion in *Dippon* (2022-05-23), ¶¶ 37-38 (“Regulatory intervention only promises consumer benefits if the relevant market is not competitive. [...] ... the decision to regulate ... can only be done on the basis of full consideration of the special characteristics of the industry in question – its technology and other conditions of supply, the nature of its market – and of the varying mix of public purposes, economic and other, that regulation is supposed to serve. But the job is likely very badly done if it is not informed by a clear grasp of the common economic principles and considerations. [...] The full consideration of the special characteristics of the market that contains mobile wireless reveals that the relevant market is already competitive. With no evidence of market failure but rather evidence of fierce competition, market forces most effectively ensure that Californians receive high-quality mobile wireless service.”).

⁴⁹ Note that customer credits proposed by Division Staff can potentially be counterproductive in this respect. For subscribers who may in fact place a large value on their wireless service not having occasional outages, regulation that requires service providers to give credits to subscribers when outages occur is likely to help service providers retain the very customers who otherwise might have left and cost the provider the profits that would have left with the subscriber. With mandatory customer credits, the subscribers who would have left are more likely to stay because they are compensated by the service provider for the outage.

prices. As described above in Section III.A, there is a lack of economic basis for determining if subscribers would find higher prices worth the potential increase in quality from the regulation, if any. This is an enforcement reality that should be taken into account in evaluating the merits of the Division Staff recommendations.

33. Moreover, the regulation recommended by Division Staff can harm consumers by adversely impacting wireless innovation and coverage by reducing investment incentives compared to a world without the regulation. This stems from the fact that a wireless provider has finite capital from which to make capital spending outlays on any number of investments and projects in a given period and in a given area. Its investment decisions are based on expectations about the economics of the project—in particular, the capital costs incurred to service current and future subscribers, as well as competition among service providers for current and future subscribers. The regulation proposed by Division Staff will raise service providers' costs—including from penalties and infrastructure spending—and lower the expected profits from investing in the technology and service offerings subject to the regulation.⁵⁰

34. The recommendation by Division Staff to double penalties incurred by wireless providers for outages that are not repaired within 24 hours in certain areas provides a clear example of how investment incentives can be adversely affected by the regulation. Consider two adjacent geographic areas, A and B. They are identical with respect to population sizes and economic characteristics. If service providers must pay double the penalty in B than in A, then the economics of investing in A become more attractive than in B because, all else equal, A will be a lower-cost area to service. Enforcement

⁵⁰ In turn, this will reduce the projected internal rate of return that a service provider will achieve from investing in the technology, and therefore reduce the likelihood that it will invest as much as it would have in the technology. The internal rate of return is one of many measures that firms typically use to determine whether a capital spending project ought to be undertaken. The IRR is the implied discount rate at which the net present value of the cash flows from the project equals zero. One rule for deciding to undertake the investment is if the IRR exceeds the firm's investment hurdle rate (a minimum threshold that the IRR has to meet), such as the firm's opportunity cost of capital. See, e.g., Eugene F. Brigham and Joel F. Houston, *FUNDAMENTALS OF FINANCIAL MANAGEMENT*, 8th ed., 1998, pp. 397-399.

recommendations that more heavily penalize service providers in one area over another, can thus create disproportionate uncertainty and expected costs for the provider in these areas, reducing its incentive to invest in expanding coverage and doing business there, instead diverting resources to other areas with lower penalties. This is counter to sound policy.

35. Another example of how the proposed regulation would reduce investment incentives is the potential impact on areas requiring small cell sites. I understand that backup power systems generally are not feasible for small cell sites.⁵¹ In such cases, even if it were sound economic policy to impose regulation that would force service providers to incur the costs associated with the regulation when they are not the cause of the outages, service providers could not actually implement the additional infrastructure in some areas to avoid outages due to power failure. The service provider would have to incur the costs in the form of penalties, and yet the outages would keep occurring. Service providers' investment incentives in areas that require small cell sites would be expected to decline.

36. Finally, to the extent the Commission is considering the recommendation by Division Staff requiring that the Commission direct the location and nature of the investment in lieu of a fine, it is worth noting that such a requirement will put the Commission—not the service providers—in the role of network and investment planner. To avoid suboptimal allocations of resources, investment decisions should be left to wireless service providers. Wireless providers have better knowledge of their networks, and they have the incentive to deploy their investments in ways that will enhance service quality or extend coverage to areas that need it the most.

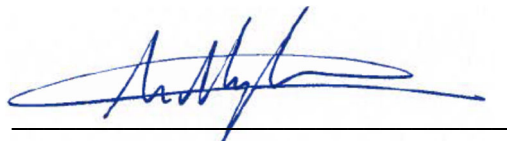
IV. CONCLUSION

37. There is no need to try to fix what is not broken. Service providers have made enormous investments in wireless infrastructure to expand coverage and compete for

⁵¹ *Settle Declaration (2024-09)*, p. 3 (“Regardless of whether they are sited in urban or rural areas, there is generally no acceptable backup power solutions for small cells.”).

consumers with low-cost, high-quality services. The benefits have accrued to wireless subscribers and are the result of an efficient allocation of resources from unfettered competition. A highly competitive wireless marketplace and a lack of evidence indicating material deficiencies in wireless service quality suggest that the proposed regulation would do more harm than good by creating costs without much benefit, and by reducing wireless providers' incentives to invest in their networks and to expand coverage. This can lead to a marketplace that is less competitive, which ultimately harms—not enhances—competition and consumer welfare.

I declare under penalty of perjury under U.S. laws that the foregoing is true and correct.

A handwritten signature in blue ink, appearing to read 'Aren Megerdichian', is written over a horizontal line.

Aren Megerdichian
September 3, 2024

APPENDIX: STAFF REPORT RECOMMENDATIONS

Service Standard Recommendations (Wireless):

- **Single Threshold versus Multiple Thresholds:** “Eliminate the use of single thresholds across outage-related service measures. See the *POTS Outage Repair Standard*, *VoIP Outage Repair Standard*, and *Wireless Community Isolation Outage Repair Standard* subsections for details. Incorporate multiple thresholds to reflect increasing severities with escalating penalties. See the *POTS Outage Repair Standard*, *VoIP Outage Repair Standard*, and *Wireless Community Isolation Outage Repair Standard* subsections for details.”⁵²
- **Out of Service Repair Intervals Standard:** “[...] The OOS standard must incorporate outages from both individual trouble ticket reports as well as community isolation outages to ensure all customers have the ability to access 9-1-1 services or receive emergency notifications. The threshold for compliance can remain at restoring an outage ticket within 24 hours, but penalties should increase in accordance with the length of outages. See the *POTS Outage Repair Standard*, *VoIP Outage Repair Standard*, and *Wireless Community Isolation Outage Repair Standard* subsections for details. [...] In addition to statewide level results, the OOS measure should also be reported and assessed at the census tract geography to compare against Disadvantaged Communities (DACs) or Areas of Affordability Concerns (AACs) to further the Commission’s ESJ efforts. Noncompliance in DACs and AACs should incur a higher base penalty amount. See the *Fines* subsection for details. Extend the OOS standard to VoIP and wireless voice services in addition to POTS. Refer to the *Adjusted Data* subsection for recommended changes on exemptions.”⁵³

Wireless Community Isolation Outage Repair Standard: “For wireless service, a community isolation outage lasts at least 30 minutes and affects at least 25 percent of a carrier’s coverage area in a single zip code. Telephone corporations are required to provide a community isolation outage notification

⁵² *Staff Proposal (2024-06)*, p. 34. See id., explaining “[f]or example, the OOS [out of service repair intervals] measure utilizes a single threshold standard of repairing outage tickets within 24 hours based on adjusted results. Under the current scheme, a noncompliant outage ticket that takes 24 hours and 1 minute to restore service is no different from another noncompliant outage ticket that takes five days to restore service in terms of enforcement. Both scenarios are counted as outage tickets that are not repaired within 24 hours, and therefore have the same impact on the telephone corporation’s OOS performance. From the customer’s perspective, however, not having service for just over a day is very different from not having service for five days. At the same time, treating a one-day outage as indistinct from a five-day outage provides a signal to telephone corporations that there is no regulatory difference between these different outcomes.”

⁵³ *Staff Proposal (2024-06)*, pp. 35-36.

to Cal OES within 60 minutes of discovery of the outage. Telephone corporations are also required to provide the estimated time of repair of the outage, as well as a restoration of service notification when the outage is restored. The outage repair standard for POTS and VoIP, which is based on whether outage tickets are repaired within 24 hours, also presents an appropriate measure to assess the QoS of wireless voice service, especially during a community isolation outage. Since the telephone corporations are already required to report detailed records of these outages to Cal OES, incorporating this measure for wireless services would add minimal administrative burden, if any. Similar to the outage repair standards for POTS and VoIP, staff recommends adding a multiplier to the base fine amount based on the duration of the outages. The initial compliance threshold for repairing outage tickets should remain at 24 hours. [...]”⁵⁴

Wireless Community Isolation Outage Repair Standard				
Outage Duration	24 to 48 hours	Above 48 to 72 hours	Above 72 to 96 hours	Above 96 hours
Multiplier	1x	2x	3x	4x

Answer Time Standard (Customer Service Standard): “Elaborate the answer time measure to incorporate standards for both answering and resolving customer service calls. Instead of merely assessing whether a live agent responded to a customer inquiry, the resolution of these inquiries is just as important and should also be assessed. Staff recommends renaming this standard to the *Customer Service Standard* since it encompasses both responding and resolving customer inquiries. The *Customer Service Standard* shall apply to POTS, VoIP, and wireless services. See below for details of the response and resolution components of the *Customer Service Standard*:
 Response component: Maintain the requirement of having live agents answer 80% of the customer service calls within 60 seconds. Add the requirement of having live agents answer 100% of the customer service calls within five minutes, whenever requested by customers. Provide a chat component on the carrier’s webpage to reach those who cannot access voice services. Provide a postal mail component for those who cannot access either voice or data services. Resolution component: Billing-related inquiries must be addressed and, if necessary, reconciled by the next billing cycle. Outage-related inquiries are subject to *POTS Outage Repair Standard*, *VoIP Outage Repair Standard*, and *Wireless Community Isolation Outage Repair Standard* respectively. For customer inquiries that fail either component of the *Customer Service Standard*, assess a daily fine for each day of noncompliance. Refer to the *Fines* subsection for details[.]”⁵⁵

⁵⁴ *Staff Proposal (2024-06)*, pp. 38-39.

⁵⁵ *Staff Proposal (2024-06)*, pp. 41-42.

Enforcement Recommendations (Wireless):

- **Investment in Lieu of Paying Fines:** “Reform the investment in lieu of fine alternative or consider other empirical enforcement mechanisms that have proven track records as the current option has been ineffective in improving statewide OOS performance. Specific reforms contemplated by staff include increasing the base amount for the investment in lieu of fine alternative, requiring that the Commission direct the location and nature of the investment to improve service, or replace the investment option with another proven enforcement mechanism.”⁵⁶
- **Chronic Failure Status:** “Eliminate chronic failure status and enforce penalties immediately upon failure to meet a standard. If a standard is assessed on a daily basis, then assess the appropriate penalty for each day that the telephone corporation fails to meet the standard. If a standard is assessed on a monthly basis, then assess the appropriate penalty for each month that the telephone corporation fails to meet the standard.”⁵⁷
- **Adjusted Data:** “Eliminate ‘adjusted’ and ‘unadjusted’ distinctions. Limit exemptions to only the following: Declared state of emergencies by the Governor of California[.]”⁵⁸
- **Fines:** “Add *automatic customer credit* as a fine mechanism. For existing customer credits must apply automatically as either bill credit or direct refund within 30 days from the end of the billing period in which the service standard violation occurred. For prospective customers, checks must be remitted within 30 days from the end of the current billing period. Telephone corporations must maintain performance records of all standards and customer credit

⁵⁶ *Staff Proposal (2024-06)*, pp. 42-44. The current option allows “telephone corporations to propose to invest twice the amount of the annual fine in their network ‘provided that the telephone corporation demonstrates that the expenditures are incremental, directed at the service quality deficiencies leading to the fine, and in an amount that is twice the amount of the tabulated fine.’ Moreover, the Decision concluded that the public interest ‘requires that telephone corporations subject to penalties be authorized to propose alternative means to expend twice the amount of the fine to improve service quality for customers.’” (Id., p. 42.)

⁵⁷ *Staff Proposal (2024-06)*, p. 44. Currently, a fine is not assessed until a provider reaches chronic failure status—i.e., failure to meet the standard for three consecutive months. The first two months of noncompliance does not result in fines. (Id., pp. 25, 44.)

⁵⁸ *Staff Proposal (2024-06)*, pp. 44-45. Currently, “[t]he performance of outage-related service measures is based on when an outage ticket is repaired. Despite utilizing a bright line standard such as 24 hours for outages, the results are “adjusted” to account for select exclusions. These exclusions include Sundays, federal holidays, and delays beyond a carrier’s control, including but not limited to catastrophic events. Using adjusted results to assess performance is a disservice to Californians and also contradicts the notion of essential services, which enable health, safety, and full participation in society.” (Id., p. 44.)

transactions at both individual customer level and aggregated summaries. All records are subject to periodic audits by the Commission and further enforcement if out of compliance. [...] For wireless outages, use the Wireless Community Isolation Outage Repair Standard to determine performance and assess penalty in the form of automatic customer credit. Assess compliance of this standard at the individual customer level. Utilize Cal OES data to identify the impacted users. For outages that are not repaired within 24 hours, apply a base fine amount of \$5 per day as a customer credit. If impacted customer's place of primary use is located in a DAC or a Communications AAC, the base fine amount is \$10 per day as a customer credit. Apply multipliers to the base fine amount based on the duration of the outage. [...] For customer inquiries, use the *Customer Service Standard* to determine performance and assess a penalty in the form of monies to the general fund. Assess compliance of this standard at the company level. Failure to achieve any of the requirements set forth in both the response and resolution components will result in a fine. For each day of noncompliance, a daily fine is assessed. The daily fine amount is the equivalent to the interest amount for late surcharge remittances.”⁵⁹

Other Reporting Requirements:

- “NORS report (FCC) – Keep this requirement. It provides critical information on outages for POTS, VoIP, and wireless services. Wireless Coverage Map (FCC) – Keep this requirement. This map must also have a customer-facing interface that has the capability to verify coverage at exact address with equipment requirements. Major Service Interruption report (FCC) – Keep this requirement. ETC Outage Report requirement (Commission) – Eliminate this requirement. All pertinent information is covered by the other three reporting requirements. GO 133-D quarterly reporting – Make necessary format and metadata modifications under staff’s discretion to accommodate the proposed changes set forth in this Staff Proposal. Community Isolation Outage report (Cal OES) – Make necessary metadata modifications, such as providing details on affected access lines, to accommodate the proposed changes set forth in this Staff Proposal. Annual Customer Notification (new reporting requirement) – Provide an annual report to customers that details their performance from the previous year against voice service standards.”⁶⁰

⁵⁹ *Staff Proposal (2024-06)*, pp. 45-47.

⁶⁰ *Staff Proposal (2024-06)*, pp. 47-48.

**ATTACHMENT – CURRICULUM VITAE
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EDUCATION

- Ph.D., University of California, San Diego, 2010
- M.A., University of California, Santa Barbara, 2005
- B.Sc., California State Polytechnic University, Pomona, 2000

EXPERIENCE

- Executive Vice President – Compass Lexecon, Apr. 2020 - Present
- SVP/VP/Sr. Economist – Compass Lexecon, Sept. 2010 - March 2020
- Lecturer, Teaching Associate – University of California, San Diego, Sept. 2005 - March 2010
- Lecturer – San Diego State University, College of Business, Aug. 2007 - Aug. 2009
- Senior Associate – LECG, Los Angeles, Feb. 2001 - Sept. 2004
- Intern – Office of Congressman Tom Campbell, Washington D.C., Sept. 2000 - Dec. 2000

MEMBERSHIPS

- Member, American Economic Association
- Member, American Statistical Association
- Executive Committee Member, Los Angeles County Bar Association, Antitrust Section

RESEARCH REPORTS AND PUBLICATIONS

- *The Importance of Licensed Spectrum and Wireless Telecommunications to the American Economy*, white paper prepared on behalf of CTIA, December 2022.
- *A Regression Approach for Predicting Fixed Wireless Signal Cancellation Rates*, technical paper prepared for AT&T, November 2019.
- *Economic Analysis of Optimal Sample Size in Legal Proceedings*, published in INTERNATIONAL JOURNAL OF STATISTICS AND PROBABILITY, July 2019, vol. 8, no. 4.
- *A Primer on the Competitive Relationship Between Mobile Virtual Network Operators and Host Mobile Network Operators*, white paper prepared on behalf of Verizon Wireless, submitted to the Department of Justice, September 2018.
- *Economic Arguments in the Wireless Radio Services Proceeding*, declaration prepared on behalf of Verizon Wireless, submitted to the Federal Communications Commission, October 2017.
- *Further Results on Interpreting Coefficients in Regressions with a Logarithmic Dependent Variable*, published in JOURNAL OF ECONOMETRIC METHODS, July 2017, vol. 7, no. 1.

- *Identification of Demand for Differentiated Products*, Doctoral Dissertation, Department of Economics, UC San Diego, June 2010.

PRESENTATIONS

- Moderator, *The Tech Antitrust Conference*, Palo Alto CA, January 2024.
- Panelist, *17th Annual Financial Horizons Conference*, UCSD Undergraduate Investment Society, May 2022.
- Panelist, *Professional Development Summit: Consulting, Strategy & Business Analytics*, UCLA Master of Quantitative Economics, April 2021.
- Presenter, *Winning the Battle of the Experts: Developing and Presenting Economic Testimony*, Los Angeles County Bar Association, May 2019 (joint with Jonathan Orszag and Robert McNary).
- Participating economic expert, price-fixing mock trial, New York State Bar Association Antitrust Law Section, May 2017.
- Presenter, *Econometrics or Just a Con? Uses and Abuses of Data and Statistics in Competition Cases*, Los Angeles County Bar Association, May 2015 (joint with Jon Tomlin and Lisa Kimmel).
- Presenter, *Demand Estimation, Optimal Pricing, and Product Downsizing*, Kellogg Corp., August 2010.
- Presenter, *Identification of Price Effects in Models of Demand for Differentiated Products*, UC San Diego Economics Department, Applied Microeconomics Seminar, November 2009.

EXPERT RETENTIONS

- Retained in *Petition to Adopt, Amend, or Repeal a Regulation Pursuant to Pub. Util. Code Section 1708.5*, Before the Public Utilities Commission of the State of California.
- Retained in *Brayden Stark et al. v. Patreon, Inc.*, United States District Court – Northern District of California, Case No. 3:22-cv-03131-JCS.
- Retained by CTIA to author a white paper estimating the economic impact of licensed spectrum and wireless services on output and employment in the United States. Submitted December 2022.
- Retained by AT&T to evaluate the reliability of a statistical sampling methodology put forth by Universal Service Administrative Co. (USAC) pursuant to federal universal funding deployment obligations, 2021.
- Retained in *Re Bestwall LLC*, United States Bankruptcy Court – Western District of North Carolina, Charlotte Division, Case No. 17-31795 (LTB).
- Retained in *LVI Holdings, Lasik Vision Institute, and TLC Vision Centers v. LCA Vision Inc d/b/a LasikPlus*, United States District Court – Southern District of Florida, Case No. 9:19-cv-81133-AHS.
- Retained by AT&T to author a technical report evaluating the reliability of a statistical methodology to validate the signal viability and propagation model failure rates of fixed wireless products in rural areas. Submitted November 2019.
- Retained in *Jason Toranto v. Rady Children's Hospital-San Diego et al.*, United States District Court – Southern District of California, Case No. 3:16-cv-01709-JAH-NLS. Expert report submitted February 22, 2019; Expert rebuttal report submitted March 20, 2019; Deposition testimony taken May 1, 2019.

- Retained by Verizon to author a white paper examining the competitive relationship between mobile network operators and mobile virtual network operators. White paper submitted to the Department of Justice, September 17, 2018.
- Retained by Verizon to author a declaration in the matter of Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services, Federal Communications Commission, WT Docket No. 10-112 (rel. August 3, 2017). Declaration submitted to the Federal Communications Commission as part of Verizon's comments, October 2, 2017.
- Retained by AT&T to prepare submissions to the Federal Communications Commission as part of the high-speed fiber buildout requirements agreed to as part of the AT&T-DIRECTV merger conditions. Submissions made to the Federal Communications Commission in Jan. 2016, Jul. 2016, Feb. 2017, Aug. 2017, Feb. 2018, Aug. 2018, Feb. 2019, and Sept. 2019.

SELECTED CONSULTING

- Matters in Progress
 - *Dale et al. v. T-Mobile*
 - *In Re Determination of Rates and Terms for Digital Performance of Sound Recordings*
 - *Putative Class v. Sutter Health*
 - *CA Public Utilities Commission Order Instituting Rulemaking Proceeding - Service Quality Standards*
 - *United States of America et al. v. Apple Inc.*
 - *Putative Class v. DIRECTV and DISH*
 - *In Re Bestwall LLC*
 - *Mesabi Metallics (Essar Steel) v. Cleveland Cliffs Inc. et al.*
 - *Putative Class v. American Express, Visa, Mastercard, et al.*
- *Putative Class v. MedStar et al. (2022-2024)*. Litigation. Analyzed the reliability of opposing expert's proposed damages methodology attempting to quantify the alleged economic harm to patients of a healthcare network from the alleged unauthorized data-sharing practices by the network.
- *In the Matter of Distribution of Cable Royalty Funds, CRB (2022-2023)*. Copyright Royalty Board proceeding. Analyzed and critiqued regression methodologies put forth by other participants' experts attempting to measure relative marketplace value of distant signal programming types.
- *Altitude Sports & Entertainment v. Comcast (2021-2023)*. Litigation. Analyzed competition and network carriage decisions by MVPDs and OTT providers.
- *In Re JUUL Labs Marketing, Sales Practices, and Products Liability Litigation (2021-2022, 2024)*. Litigation. Analyzed opposing experts' econometric methods and economic analyses quantifying the potential impact of marketing and sales practices on youth vaping.
- *AT&T (2021)*. Consulting. Evaluated the reliability of a statistical sampling methodology put forth by Universal Service Administrative Co. (USAC) pursuant to federal universal funding deployment obligations.
- *General Shale + Meridian Brick (2021)*. DOJ merger investigation. Analyzed competition in the brick manufacturing industry; employed econometric models to analyze the relationship between

manufacturing costs and plant utilization; analyzed potential divestiture remedies. Submitted and presented remedies analyses to DOJ.

- *Putative Class of Purchasers v. Chevron, ExxonMobil, et al. (2019-2021)*. Litigation. Analyzed the reliability of opposing expert's econometric analyses of pass-through of wholesale-to-retail gasoline prices in California; analyzed damages and class issues.
- *WESCO + Anixter (2019-2020)*. Competition Bureau Canada merger investigation. Analyzed competition in the electrical components distribution industry; assessed potential competitive effects based on price-concentration models. Submitted papers presenting analyses to Canadian Competition Bureau (joint with Jonathan Orszag).
- *In Re Determination of Rates and Terms for Digital Performance of Sound Recordings (Web V) (2019-2020)*. Copyright Royalty Board proceeding. Analyzed royalty rate structures, competition, and industry dynamics in the music streaming industry; performed benchmarking analyses, rebutted opposing experts' proposed royalty rates and terms.
- *Facebook (2019-2020)*. FTC investigation. Analyzed the potential effects of Facebook's API policies on output and competition in the mobile apps industry.
- *Putative Class v. Excellus Blue Cross Blue Shield et al. (2019)*. Litigation. Analyzed the reliability of opposing expert's proposed conjoint survey methods and market price model attempting to estimate benefit-of-the-bargain damages to the putative class from allegedly inadequate data security.
- *In Re Distribution of Satellite Royalty Funds (2019)*. Copyright Royalty Board proceeding. Analyzed and critiqued regression methodologies put forth by other participants' experts attempting to measure relative marketplace value of distant signal programming types.
- *Jason Toranto v. Rady Children's Hospital-San Diego et al. (2019)*. Litigation. Analyzed market definition, alleged conspiracy, and potential harm to consumer welfare resulting from alleged exclusionary conduct by defendants. Submitted expert report and rebuttal report; deposition testimony.
- *AT&T (2019)*. Consulting. Developed a regression methodology for predicting fixed wireless signal cancellation rates.
- *Ancor + Bemis (2018)*. DOJ merger investigation. Analyzed competitive overlaps between merging parties' flexible packaging product offerings; assessed potential competitive effects based on GUPPI models and win-loss data. Submitted letters presenting analyses to DOJ (joint with Janusz Ordover and Mary Coleman).
- *Verizon (2018)*. DOJ investigation. Analyzed the vertical relationship and horizontal competition between U.S.-based mobile virtual network operators and host mobile network operators. Submitted white paper to DOJ.
- *Putative Class v. Premiera Blue Cross (2018)*. Litigation. Analyzed reliability of opposing expert's proposed conjoint survey methods and market price model attempting to estimate benefit-of-the-bargain damages to the putative class from allegedly inadequate data security.
- *Thermo Fisher Scientific + Gatan Inc. (2018)*. FTC merger review. Analyzed the post-merger incentive to foreclose transmission electron microscope peripherals.
- *Marriott Vacations Worldwide + ILG Inc. (2018)*. FTC merger review. Analyzed competition and geographic markets for vacation timeshare products.
- *TopBuild + USI (2018)*. FTC merger review. Analyzed competition and geographic markets for residential and commercial insulation installation services.

- *Hershey (2017)*. Consulting. Estimated demand systems for chocolate and candy product segments; assessed unilateral effects from a hypothetical merger.
- *Verizon (2017)*. FCC proceeding. Analyzed the potential economic effects of the FCC's proposal to impose new buildout requirements on wireless licensees during spectrum renewal in an attempt to bring wireless broadband to underserved areas. Submitted declaration to FCC.
- *AGI Valley Yellow Pages v. YP.com et al. (2017)*. Litigation. Analyzed marketplace competition and employed parties' historical transaction data to show lack of effects from the alleged predatory conduct under Calif. UPA; rebutted opposing expert's damages model.
- *Mars Inc. + VCA (2016-2017)*. FTC merger investigation. Analyzed competition and geographic markets for pet hospitals based on customer draw data; conducted econometric analyses to quantify the effect of competition on pricing. Presented results to FTC (joint with Mark Israel and Mary Coleman).
- *In Re Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords III) (2016-2017)*. Copyright Royalty Board rate-setting proceeding. Analyzed royalty rate structures, competition, and industry dynamics in the music streaming industry; rebutted opposing experts' proposed royalty rates and terms to license the copyrights of songwriters and publishers.
- *Comcast (2016)*. Consulting. Advised on statistical sampling methodology for analyzing the accuracy of usage-based billing of Internet/data services to customers.
- *Plum PBC v. SunOpta and Cheer Pack (2016)*. Litigation. Estimated econometric models to determine the adverse effects of a product recall on sales and profitability.
- *Mars Inc. + Pet Partners LLC (2016)*. FTC merger investigation. Analyzed competition and geographic markets for pet hospitals based on customer draw data. Presented results to FTC (joint with Mary Coleman).
- *AT&T (2016-2019)*. Consulting. Assisted with compiling fiber-to-the-premises location data for biannual submissions to the FCC in requirement of the AT&T-DIRECTV merger conditions. Submitted data sets to FCC.
- *Dell + EMC/VMware (2015-2016)*. FTC merger investigation. Analyzed competitive effects in enterprise storage systems; developed vertical foreclosure model analyzing the post-merger incentive to foreclose server virtualization software. Presented results to FTC (joint with Daniel Rubinfeld).
- *Valspar v. DuPont et al. (2015-2016)*. Litigation. Estimated overcharge regression models on behalf of defendants to rebut plaintiff's claims of damages from alleged price fixing in the titanium dioxide industry.
- *AT&T + DIRECTV (2014-2015)*. FCC/DOJ merger investigation. Analyzed the competitive effects and efficiencies of the merger; developed economic models to assess the impact of the merger on AT&T's incentives to expand its fiber broadband footprint.
- *Nestlé USA (2014, 2016)*. Consulting. Estimated econometric models to determine the adverse effects of product recalls on sales and profitability.
- *Kellogg Co. (2014)*. Consulting. Estimated demand systems for cereal bars in the U.K. using supermarket scanner data; conducted merger simulation to assess unilateral effects from a hypothetical merger.
- *Sterigenics + Nordion (2014)*. FTC merger investigation. Developed vertical UPP models to assess foreclosure and pricing incentives of upstream and downstream firms.
- *HP v. Oracle (2012-2016)*: Litigation. Estimated forecast regression models on behalf of plaintiff to determine lost revenues resulting from alleged breach of contract.

- *In Re Optical Disk Drive Antitrust Litigation (2012-2015)*. Litigation. Estimated overcharge regression models to rebut direct & indirect plaintiffs' allegations of common impact and to discredit plaintiffs' proposed econometric methodology for damages; analyzed alleged bid-rigging in procurement auctions.
- *Western Pacific Kraft v. Duro Bag Manufacturing (2012-2014)*. Litigation. Analyzed data and other evidence on behalf of defendant to assess liability related to price-squeeze allegations and other alleged anticompetitive pricing practices in the paper bag industry.
- *In Re Chocolate Confectionary Antitrust Litigation (2013)*. Litigation. Estimated pass-through regression models to rebut indirect purchaser plaintiffs' damages model and allegations of commonality.
- *Verizon + Comcast/Time Warner/Cox/Bright House (2012)*. FCC/DOJ investigation. Developed UPP models to assess the potential impact of the agency arrangement and joint venture on pricing incentives and footprint expansion; analyzed coordinated effects theories.
- *Advantest + Verigy (2011)*. DOJ merger investigation. Developed econometric models to determine the relationship among profit margins, market concentration, and firms' bidding activity in the semiconductor testing equipment industry; assessed unilateral and coordinated effects.
- *Kellogg Co. (2007-2010)*. Consulting. Estimated demand systems using supermarket scanner data for cereals to assess optimal pricing and analyze the effect of product downsizing on sales.

Engineering Declaration of Mark A. Settle, P.E.

I. Qualifications

My name is Mark A. Settle. I am currently Senior Engineering Advisor at Wilkinson Barker Knauer LLP. I provide engineering advice to the firm's clients in the telecommunications industry in proceedings before federal and state agencies. I previously provided testimony in this matter during the Workshop hosted by the Commission on September 7, 2023 in Sacramento, California.

Previously, I was the Chief of the Policy and Rules Division in the Federal Communications Commission's Office of Engineering and Technology, where I oversaw rulemaking proceedings, requests for waivers, orders regarding spectrum allocations, use of unlicensed spectrum, interference mitigation techniques, and technical rules. I also served as a primary liaison between the FCC and NTIA and various Federal Agencies. Before joining the FCC, I was with NTIA where I worked on various spectrum management issues related to FCC rulemakings and ITU World Radio Conferences.

I am a Licensed Professional Engineer (P.E.) in the Commonwealth of Virginia. I received my M.S. in Electrical Engineering from George Washington University and my B.S. in Electrical Engineering from West Virginia Institute of Technology.

II. Overview

At the request of CTIA, I have reviewed the Staff Proposal and its proposed revisions to General Order (G.O.) 133-D to assess their engineering feasibility and impacts and implications for mobile wireless providers' networks.¹ As discussed in more detail below, I have concluded that:

- The proposed Wireless Community Isolation Outage Repair Standard rules would influence how wireless providers design, construct, operate, and deploy their networks.
- To attempt to comply with the proposed Wireless Community Isolation Outage Repair Standard, wireless providers would have to incorporate new considerations introduced by the Commission into how they design, construct, and operate their networks.
- Even if wireless providers modified their network design, deployment, and operation in every possible way to avoid violations of the proposed Wireless Community Isolation Outage Repair Standard (whether or not those changes are economically feasible), it would be impossible for wireless providers to prevent all violations of the proposed Wireless Community Isolation Outage Repair Standard due to the nature of wireless networks and other factors beyond wireless providers' control. In such cases, the proposed rules would impose penalties on wireless providers for circumstances beyond their control, and would have no impact on the incidence of outages.

¹ This report does not address the Customer Service Standard proposed for Section 2.5 of revised G.O. 133-D, as it does not appear to raise engineering issues.

- As a result, one of the most practical ways for wireless providers to avoid violating the proposed Wireless Community Isolation Outage Repair Standard rules in certain areas would be not to deploy wireless service there at all.
- The proposed rules for providing customer credits for violations of the Wireless Community Isolation Repair Standard will result in the provision of credits to customers that were not actually affected by the outages.
- Data on wireless outages reported to the FCC's Network Outage Reporting System (NORS) and the California Governor's Office of Emergency Services (Cal OES) shows that wireless customers are significantly less likely to experience outages than customers of other types of voice providers in California, and do not indicate that wireless outages are increasing in frequency or severity.
- The proposed changes to the wireless coverage map rules appear to require a degree of precision in wireless coverage mapping that is inconsistent with the inherent variability of spectrum-based networks.

I discuss each of these conclusions in more detail below.

III. Impact of the Proposed Wireless Community Isolation Repair Standard on wireless networks

A. Overview of wireless network architecture

To lay the foundation for my discussion of the impact of the proposed rules on wireless network design, construction, deployment, and operation, it is useful to briefly describe the key components of wireless networks that form the segments across which a wireless voice call—and in particular a wireless 911 call—travels.

- The first segment of a wireless call is the wireless “last mile,” which is the path over the radio network from the caller's mobile device to the antenna equipment at the cell site. This transmit/receive equipment is also sometimes called a base station and, in some wireless networks, an equivalent piece of equipment is used, such as an evolved Node B (eNB).
- The second segment of the call, often referred to as “backhaul,” consists of transporting the call from the cell site, base station, or eNB, to the wireless provider's Mobile Switching Center (MSC). This segment may be carried over fixed-line facilities (such as fiber) or radio equipment (such as a microwave link or, less commonly, a satellite link). The wireless provider may own these facilities itself or lease them from another provider.
- The third segment is the transmission of the call from the wireless provider's MSC to the switching facilities of the carrier that will terminate the call. For a 911 call, this will involve transporting the call to the 911 Selective Router or Emergency Services IP Network (ESInet). This transport generally will occur over fixed network facilities (typically high-capacity fiber) which may be owned or leased by the wireless provider.

- Once the wireless provider hands a 911 call off to the Selective Router or ESInet, it will be transmitted on facilities owned or leased by the public safety network to a Public Safety Answering Point (PSAP) or other first-responder facility. (For a non-911 call, the terminating carrier would transport the call to its own customer, essentially completing the backhaul and last mile connections on its own facilities to complete a call to its own customer.)

B. Wireless network planning considerations

Designing wireless networks is a tremendously complex process that requires balancing a large number of factors. Some of those factors involve the provider's available resources, such as what spectrum holdings it has in an area, while others have to do with external factors, including the topography of the area to be covered, the level of demand for service in the area, zoning restrictions, leasehold restrictions, and site access restrictions.

The need to balance technical and non-technical factors means that wireless network engineering must, by necessity, design around real-world variables that make it impossible for a provider to design and deploy an ideally engineered, "perfect" network that is also economically viable. Which sites are available and how much space is available at them are important factors. Rural areas are less likely to have a sizeable number of existing tall structures for providers to site equipment on. In urban areas, there may be more tall structures, but they can create their own RF engineering challenges.

In some areas, the best wireless network deployment and design option may involve "small cells," which consist of an antenna and base station, eNB, etc., placed on an existing structure such as a utility pole or street light. This may be the case in areas where conditions prevent the siting of a traditional large "macro" cell site, or where the density of users and the amount of available spectrum makes it necessary. To site small cells, wireless providers generally have to obtain permission from the owner of the structure (and often also from the local government, if it does not own the structure).

In designing and deploying their networks, wireless providers also have to consider local zoning regulations and whether local governments are hostile or receptive to wireless companies' siting efforts. While FCC rules limiting local governments' ability to delay most siting proceedings or impose unreasonable fees and costs have helped in recent years, some siting proceedings with local governments still take years to complete. Sometimes wireless providers' zoning battles with local governments simply fail. Other times, those disagreements are resolved by siting facilities at alternate locations that are considerably different from, and substantially less optimal from an RF engineering perspective than, those at which the wireless provider originally sought to deploy.

Wireless providers' network design efforts always involve planning to make backup power available for the provider's network equipment in the event of a failure of commercial electrical power. All of the factors discussed above that impact network design generally also affect wireless providers' ability to provide backup power at particular sites. For example, in high-density urban areas, providers' ability to locate fixed diesel generators and associated fuel tanks is typically very limited or strictly prohibited. In any locale, lack of space at a site or zoning and safety restrictions may prevent the deployment of fixed generators for backup power. Regardless of whether they are sited in urban or rural areas, there is generally no acceptable backup power solutions for small cells.

Wireless providers' network design efforts also involve building in redundancy to the extent feasible. The factors discussed above also affect the feasibility of redundancy efforts, as do other factors. For example, siting redundant equipment on towers may be limited by space constraints or requirements of the site owner. Wireless providers' options to provide redundant backhaul also often are limited. In some areas there may be only one provider of high-capacity circuits suitable for backhaul (e.g., in areas served by rural telephone companies). Even where backhaul circuits are available from different providers, they may be placed in the same conduit or on the same poles and therefore ineffective at providing redundancy against many potential types of damage.

C. The proposed Wireless Community Isolation Outage Repair standard

As described in the Staff Proposal and the proposed revisions to G.O. 133-D, wireless providers would face penalties for any Community Isolation Outages under Cal OES's reporting standards, lasting longer than 24 hours. Cal OES defines an "outage" as "a significant degradation in the ability of an end user to establish and maintain a channel of communications to make 911 calls or receive emergency notifications as a result of failure or degradation in the performance of a communications provider's network," and defines a community isolation outage that must be reported by wireless carriers as any outage that "lasts at least 30 minutes and affects at least 25 percent of a carrier's coverage area in a single ZIP Code." 19 Cal. Code Regs. §§ 2480.1 – 2480.2. The reporting threshold previously had required an impact on at least 50 percent of a carrier's coverage in a ZIP Code, but the standard was changed effective in October 2022.

Wireless providers would be assessed penalties as "an automatic credit for each customer," "measured at the access line level." Revised G.O. 133-D, § 2.4. The term "each customer" is not defined, but "access line" is defined as a "connection ... associated with a 10-digit NPA-NXX number ... and a service address or Place of Primary Use in California." Revised G.O. 133-D, § 1.3.a.

D. Attempting to comply with the proposed Wireless Community Isolation Outage Repair Standard would influence how wireless providers design, construct, and/or operate their networks

Wireless providers already make significant efforts to prevent outages. Outage-prevention is a prime factor in network design, construction, and operation. Nevertheless, from an engineering perspective, a regulatory obligation to effectively prevent outages that last over 24 hours would introduce additional constraints on network design, construction, and operation. Still, such changes may do little to influence actual downtime.

A Wireless Community Isolation Outage can result from a disruption in any of the segments of a call path discussed in section III.A. above. As a result, compliance with the proposed rules could in theory cause wireless providers to implement additional redundancy in each network segment on the wireless providers' side of the 911 Selective Router or ESInet. For example, a wireless provider might seek to deploy redundant base stations or eNBs at a cell site as fallbacks in case of equipment failure; ensure the availability of multiple redundant backhaul paths from the cell site to the MSC; provide additional backup power options for cell site equipment and backhaul facilities; or otherwise modify the design of the network to further avoid the possibility of outages over 24 hours. Because wireless providers already take significant steps to minimize outages, however, these additional steps may not be financially viable or technically feasible, as discussed immediately below.

E. Compliance with the proposed rules will not be possible in all cases

Even if wireless providers made every possible change to their network design, construction, and operation to minimize outages that they had not already implemented as part of their ongoing efforts, and without regard to whether such efforts are economically feasible, it will not be possible to prevent all outages lasting over 24 hours—that is, it will not be possible to prevent all violations of the proposed rules. For example, redundant backup power is useless if backhaul is lost; redundant backhaul circuits are useless if the conduit or overhead wires connecting both circuits to the tower compound is cut; and extra base stations are useless if backhaul is lost. In addition, these steps will be impossible in many cases. For example, the deployment of redundant network equipment such as base stations, eNBs, or backhaul at cell sites may not be possible due to space constraints or permissions from the site owner. In some instances, backhaul cuts must be overcome through temporary microwave or satellite deployments. Such solutions may be difficult or impossible in some areas, such as thickly forested sites or some sites in mountainous regions. Even in suburban or urban areas, line of sight for satellite backhaul may be blocked.

Other circumstances beyond wireless providers' control also can result in outages. These would include public safety power shutoff (PSPS) events, caused by an electric utility's decision to cut off commercial power and significant events such as flooding and wildfires. Yet the proposed rules would assess penalties on wireless providers for any of these events that are not accompanied by a disaster declaration from the Governor. In addition, it is not uncommon for cell site backhaul failures to be caused by construction crews working on roads or buildings and failing to appropriately avoid buried or overhead cables. Backhaul failure also can result from automobile accidents that knock over utility poles carrying backhaul cables. Other examples include lightning strikes to wireless infrastructure, animals damaging facilities, and copper theft or network vandalism.

In other cases, wireless providers' ability to restore an outage within 24 hours may be impeded by circumstances beyond their control. For example, due to heavy snowstorms, flooding, wildfires, or similar events, it may be impossible to access a cell site for more than 24 hours in order to perform repairs, deliver portable generators, refuel generators, or repair or implement backup backhaul. Wireless providers' ability to perform maintenance may be limited by the site owner. For example, in some areas, local governments force wireless providers to locate their facilities on electric transmission towers. This arrangement is disfavored by wireless providers due to the very limited maintenance windows that are available to access wireless equipment at such sites. But, where there are no other siting options, these limitations may impede the provider's ability to repair an outage within 24 hours.

In any of these cases where wireless providers are unable to prevent an outage or repair it within 24 hours, the proposed rules would penalize wireless providers for circumstances beyond their control. In such cases, the penalty provisions also would do nothing to reduce outages.

F. The proposed rules could affect wireless providers' decisions about where to deploy their networks and provide wireless coverage

Because, as discussed above, the proposed rules would require wireless providers to prevent outages that are sometimes impossible to prevent, the only way to comply with the rules in some cases could be simply to avoid providing wireless service at all in areas where compliance would be predictably difficult. This could lead wireless providers to decide not to provide service in areas that otherwise would be served (or are served today) absent the rules.

Areas affected by such decisions could include any of the types of areas affected by the problems discussed in the prior section, including in areas where local regulations, landlord permissions, or simply logistics prevent wireless providers from implementing additional redundancy or backup power. Wireless providers also might avoid siting facilities in areas where repair and recovery operations are likely to be difficult and/or take longer than 24 hours. This could include sites without paved road access, sites located too far away from the carrier's maintenance personnel, and sites at locations with emissions restrictions that limit or prohibit generator operation. It also could include areas where it is difficult or impossible to deploy temporary recovery cell sites such as Cells on Wheels (COWs) or Cells on Light Trucks (COLTs), either because of terrain or logistical challenges or due to local government restrictions.

As mentioned above, no backup power solution is generally available for small cells, so in instances where small cells are the only option to provide coverage, if providers choose to forgo deployments entirely, such areas will simply remain without coverage. This may prevent providers from providing coverage to terrain-shielded areas in hilly or mountainous locales. In towns and communities that have prevented tower construction through zoning ordinances or by imposing other deployment obstacles, the proposed rules could prevent the potential alternative of mounting small cells on poles from being seen as a viable solution.

Areas particularly impacted by PSPS events also might be viewed as undesirable for deployment under the proposed rules. PSPS events can have a significant impact on a wireless provider's network by turning off commercial power to large geographic areas for extended periods of time. Because PSPS events are generally pre-emptive shutoffs, there is no guarantee for wireless providers that the shutoff will be associated with a declared state of emergency. This exposes wireless providers to liability under the Staff Proposal if no declaration is made or the declared emergency is smaller than the shutoff area. PSPS events require timely, accurate communication from a utility in order to best limit the impact on wireless consumers, and generally the exact scope of a PSPS event is subject to change by the utility based on changes in information or forecast. Wireless providers who receive inaccurate or changing information may face difficulties in adjusting their networks on the fly to minimize the impact of, and recover from, these events. If the Commission continues to allow electric utilities to intentionally create power outages, but penalizes wireless providers if their networks suffer outages as a result, wireless providers may avoid deploying or providing service in areas where PSPS events are more likely to occur, such as rural areas that may be more vulnerable to wildfires, or areas served by electric utilities with a history of longer or less well-managed PSPS events.

IV. The proposed rules for providing customer credits for violations of the Wireless Community Isolation Repair Standard would surely result in providing credits to customers that were not actually affected by the outages

The penalty provisions of the Staff Proposal would assess, for outages exceeding 24 hours, penalties to be paid as "an automatic credit for each customer," "measured at the access line

level." Section 2.4. The Staff Proposal does not define the term "each customer," but "access line" is defined as a "connection ... associated with a 10-digit NPA-NXX number ... and a service address or Place of Primary Use in California...." Section 1.3.a.

This approach will almost certainly result in the payment of customer credits to customers that were not affected by the outage that triggered the penalty. A definition of "access line" based on a customer's service address or PPU has nothing to do with where a customer is at any given point in time. As a result, the Staff Proposal would require wireless providers to provide penalty credits to some customers that were unaffected by an outage. Some customers with a PPU within the ZIP Code affected by the outage may not be located in the outage area during the outage. These customers might be temporarily elsewhere (e.g., on vacation) or permanently residing somewhere else (e.g., children on a family plan that are away attending college).

Wireless networks are not designed to automatically identify customers affected by an outage. To attempt to do so, wireless providers would need to create a customer tracking system that would appear to have no use outside of this narrow purpose and could be expensive and complicated to implement. It is unclear, however, whether it would be possible to identify wireless customers affected by an outage with certainty, for example because wireless devices may disconnect from and re-connect to wireless networks for a variety of reasons (e.g., the user powers down the device or the device battery dies).

I also note that not all outages reportable to Cal OES will result in an actual loss of customers' ability to call 911. Wireless service can be provided to a consumer's device by a variety or combination of sources, including one or more macro sites (or "cell towers,"), small cells, or other facilities, which are frequently overlapping or duplicative in order to provide continuous service to mobile customers as they move. Additionally, many modern phones can access Wi-Fi networks for calls, so calls to 911 can default to Wi-Fi calling when the wireless provider's network is unavailable. All of these factors affect whether a given outage actually will degrade an individual customer's ability to place a 911 call. In addition, one carrier's outage may not affect customers' ability to call 911 because wireless providers are required to carry any 911 traffic even if it is traffic from the customer of another provider. 47 C.F.R. §9.10(b). If one provider's network is down in a given area, other providers' networks that cover the area and are compatible are obligated to handle the 911 traffic. Even if a wireless provider experiences a reportable outage due to loss of coverage, these factors work in concert to help ensure consumers continue to maintain their service. These factors make it possible that the consumer is never even aware of any issues.

V. The data show that wireless customers are significantly less likely to experience outages than customers of other types of voice providers in California, and do not indicate that wireless outages are increasing in frequency or severity

The Staff Proposal asserts that "[f]rom 2021 to 2023, both POTS and wireless outages increased substantially [. . .] wireless outages increased by 75 percent from 3,315 to 5,865 incidents." My review of the Cal OES outage data does not support this conclusion.

The Cal OES data do not show a significant difference in the number of wireless outages reported in 2021 (3,315) and 2022 (3,319). Additionally, the Staff Proposal's comparison fails to note that there was a significant change to the Cal OES reporting rules in late 2022: the reporting

threshold for wireless outage was significantly reduced, from a requirement to report outages affecting 50% of the coverage area in a ZIP Code to 25% of the coverage area in a ZIP Code. This change in the reporting threshold was likely a significant factor in the change in the number of reported outages from 2022 to 2023. Because the reports in 2022 and 2023 are not comparable due to the expanded reporting criteria, it is unclear whether there was any change in the actual number of wireless outages in 2023 compared to the year prior.

Cal OES reports also offer no insight into incremental service restoration. A wireless provider might report an outage that affected over 50% of its coverage in a ZIP Code, but restoration efforts over the course of the next 24 hours could reduce the affected area to an appreciable degree in multiple steps before the outage drops below the 25% reporting threshold or service is fully restored.

Another significant data point that the Staff Proposal does not account for is that the Cal OES data also show that wireless carriers' rate of outages on a per-customer basis is significantly lower than any other type of carrier. There were nearly 46 million wireless connections in California in 2022 (the most recent year for which data are available), compared to only 11.2 million wireline switched access lines and interconnected VoIP subscriptions *combined*. FCC, Voice Telephone Services as of June 30, 2022 (rel. Aug. 18, 2023) at Table S1 – Voice Subscriptions (in Thousands) – California. As shown in the Staff Proposal (p. 3, Table 1), in that same year wireless outages only accounted for 22% of total outages, even though wireless carriers provided over 80% of the voice connections in the state. Thus, wireless customers are significantly less likely to experience outages than any other voice customers in California.

VI. The proposed changes to the wireless coverage map rules appear to require a degree of precision in wireless coverage mapping that is inconsistent with the inherent variability of spectrum-based networks

The Staff Proposal proposes to require wireless providers to provide public coverage maps with a “customer-facing interface that has the capability to verify coverage at exact address with equipment requirements.” (p. 47) The proposed revisions to G.O. 133-D similarly would require wireless carriers to provide to Commission staff coverage maps “capable of verifying coverage at exact address, preferably using Geographical Information System shapefiles.” (Section 6.2.c.)

While wireless propagation models are generally sophisticated, this proposal appears to require a degree of precision that is inconsistent with the inherent variability of wireless networks and standard principles of wireless signal coverage mapping. As I explained in my testimony at the Commission's Workshop in this proceeding on September 7, 2023, customers' ability to make a call is largely a function of radiofrequency signal strength at the handset, and signal strength at a particular location at a particular time is affected by a variety of factors, including the type of handset the customer is using; whether the signal is physically obstructed (e.g., if the customer is inside a building or elevator); the terrain and topography of the area between the cell site and the customer device; weather and atmospheric radiation events such as sunspots; and other factors beyond the wireless provider's control.

Of these factors, the proposed coverage map requirements account for only the first—the limitations of the customer device. Yet, due to any of the above factors, the precise contours of the area where sufficient signal is available to place a call can vary from day to day and even minute to minute. This variability is probably most pronounced at the edges of the service contour, but it can

also occur within the contour, where coverage may be more challenging at a given point in time due to the types of factors discussed above.

From an engineering perspective, the proposed rule's requirement for a coverage map to specify the availability of a signal at an "exact address" also is problematic because an "address" could represent an area as small as a studio apartment or as large as a multi-acre farm. This is inconsistent with wireless coverage mapping techniques which are based on more specifically defined units.

For all of the reasons discussed above, providing coverage maps that will "verify coverage at an exact address" would require a degree of precision that is inconsistent with the basic characteristics of spectrum-based networks.

* * *

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge, information, and belief.



Mark A. Settle, P.E.

September 3, 2024

Declaration of Mark Settle (final)

Final Audit Report

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