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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Proceeding to Consider Service Quality Rules for Wireless Carriers.	Rulemaking 26-02-017

SUMMARY OF THE JUNE 25, 2026, WORKSHOP DISCUSSING SERVICE QUALITY RULES FOR WIRELESS CARRIERS

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SUMMARY OF THE JUNE 25, 2026, WORKSHOP DISCUSSING SERVICE QUALITY RULES FOR WIRELESS CARRIERS

1. PROCEDURAL BACKGROUND

On February 26, 2026, the Commission adopted Order Instituting Rulemaking (R.) 26-02-017 to consider whether the Commission's General Order (GO) 133 should be applied to wireless voice service, and if so, whether the existing standards and reporting requirements should be modified. GO 133 sets minimum service quality standards for telecommunications services and includes an enforcement mechanism.

On June 5, 2026, the assigned Administrative Law Judge (ALJ) issued a ruling noticing workshop.[1]

The ALJ held a one-day, remote workshop on June 25, 2026 via WebEx.

2. WORKSHOP SUMMARY

The workshop began with welcoming remarks by Commissioner Darcie L. Houck. The Workshop Agenda was divided into three sessions: customer service metrics, Cal OES wireless community isolation outages, and industry key performance indicators.

Session one consisted of advocacy panel and industry panel presentations. Session two started with presentations by Cal OES and the Carrier Oversight and Programs Branch. These presentations were followed by industry and community panel presentations. Session three ended the workshop with industry panel and advocacy panel presentations. Each presentation was followed by a question and answer session. Commissioner Houck closed the workshop with closing remarks.

[1] Administrative Law Judge's Ruling Noticing Workshop, June 5, 2026.

3. Session One: Customer Service Metrics

3.1. Advocacy Panel

This section is a summary of the advocates' presentations and of the information discussed at the workshop in the first session. The advocacy panelists were asked whether GO 133-E's customer service performance metrics and fine mechanism should be adopted for wireless carriers. The panelists representing the consumer advocates were the following:

- Itzel Berrío Hayward, Small Business Utility Advocates (SBUA)
- Madison Alcalay, Cal Advocates
- Paul Goodman, Center for Accessible Technology (CforAT)
- Regina Costa, the Utility Reform Network (TURN)

3.1.1. Small Business Utility Advocates

Small businesses increasingly rely on wireless to operate. SBUA supports extending the customer service standards of GO 133-E to wireless with modifications.

SBUA argued that customer service metrics should account for the distinct needs of small business. For example, small businesses often lack dedicated staff to handle billing disputes, so addressing each issue takes significant time and resources. This makes it infeasible for small businesses to resolve billing disputes within the 90-day window prescribed by GO 133-E.[2]

SBUA advocated for an enforcement mechanism that remedies harm to ratepayers. It argued that GO 133's general fund fine incentivizes compliance but fails to remedy harm. Customer credits are preferable as they incentivize compliance and remedy harm. SBUA advocated for automatic customer credits,

[2] General Order (GO) 133-E Section 2.3(a)(iv).

as small businesses often lack the time to request credits themselves. SBUA claimed that the customer should not be the one to bear the burden of pursuing relief when the carrier is the one who failed to meet a standard.

SBUA also stated that small businesses are the backbone of environmental social justice (ESJ) communities, which are often underserved by wireless service providers. This includes lower investment, higher trouble report rates, and slower infrastructure upgrades. SBUA argues that the Commission should monitor whether ESJ communities are receiving lower quality customer service, which would require disaggregating performance data. This would be an additional requirement that is not required by GO 133-E.

3.1.2. Cal Advocates

Cal Advocates argued that GO 133-E's customer service standards should be extended to wireless providers, with modifications to two standards and the imposition of one additional standard. Cal Advocates made the following customer service standard recommendations:

General Order 133-E Customer Service Standard Metrics	Cal Advocates' Recommendation
Maintain a local, toll-free or collect call telephone access line 24 hours a day, seven days a week.[3]	Adopt without modification.
Provide a postal mail component for customer service inquiries.[4]	Adopt without modification.

[3] GO 133-E Section 2.3(a)(i).

[4] *Id.* at Section 2.3(a)(iii).

Direct outage inquiries to outage standard.[5]	Adopt without modification if adopting a wireless community isolation repair standard.
Require customer representative to answer 80% of the customer calls within 60 seconds.[6]	Adopt with the following modification: Require customer representative to answer 80% of customer calls within 60 seconds and *add a second tier of 95% of calls answered within five minutes*.
Resolve billing issues within 90 days.[7]	Adopt with the following modification: Resolve billing issues within *45 days. If the billing issues extend to 60 days the carrier must make further attempts to resolve the issue with the customer and cannot send the customer to collection until the issue is resolved.*
None.	Add the following standard: *Provide a chat component on the carrier's webpage and app to reach those who cannot access voice services.*

Figure 3-1

[5] *Id.* at Section 2.3(a)(v).

[6] *Id.* at Section 2.3(a)(ii).

[7] *Id.* at Section 2.3(a)(iv).

Another tier should be added, requiring 95% of calls to be answered within five minutes, because wireless service quality is a public safety matter. Adding another tier ensures that customers who cannot reach a live service representative within 60 seconds will still receive a prompt response. This modification would improve customer access to live representatives.

Cal Advocates recommends a 45-day billing resolution window, as 90 days is too long for customers to wait, while 30 days is infeasible for providers, making 45 days a "happy medium."

These standards would allow customers to reach service providers in multiple ways, including a chat for those who are unable to access voice services. Chatbots should be used to provide general information but not to replace live customer service representatives. Any chatbot or automated system should have an option to speak to a live representative within the first 10 seconds of connection being made.

Cal Advocates argued fines should be applied regardless of what type of service is provided, meaning wireless providers should be fined the same as any other service provider. Cal Advocates recommended applying the GO 133-E fine mechanism to wireless providers who are noncompliant with customer service standards.[8]

3.1.3. Center for Accessible Technology

CforAT opened its presentation by sharing general principles that motivated its recommendations. First, service quality requirements are minimums, and meeting them is not an indicator of quality. Second, averages and percentages obscure the needs of the minority of customers who are having

[8] Fines are calculated using the following formula: # access lines x $5 x 10% x # days noncompliant/365.

issues with their carrier. 50% of customers receive service quality that is below average. Third, the cause of a service quality problem is irrelevant; carriers need to meet a minimum level of customer service regardless of whether the service quality problem was within their control. Overall, there seems to be a mismatched understanding of what service quality means.

CforAT argued that all communications must be in an accessible format, including 24/7 customer service lines and postal mail. For example, written communications should be in 14-point sans serif font. Websites should follow the Web Content Accessibility Guidelines version 2.2AA and all successor standards and confirmed by live user testing.[9,10] CforAT would also have providers train designated customer service representatives to specialize in assisting disabled individuals, to be available 24/7.[11] Additionally, the 24/7 customer service line and postal mail component must be available in languages other than English.

CforAT argued that GO 133-E's current metric requiring providers to answer 80% of customer calls within 60 seconds is insufficient. This metric would not require providers to answer the other 20% of calls in a timely manner, or even at all. CforAT advocated for enhanced reporting requirements, including a requirement to report the percentage of calls answered within two minutes, five minutes, 15 minutes, or never. It would also require providers to report, by ZIP code, where a customer made more than one customer service call within two weeks, one month, or three months.

[9] https://www.w3.org/WAI/standards-guidelines/wcag/.

[10] https://www.w3.org/WAI/standards-guidelines/wcag/wcag3-intro/.

[11] Representatives would specialize in assisting individuals with vision, hearing, mobility, and cognitive impairments.

CforAT also advocated for a new fine mechanism. According to CforAT's calculations, the fines resulting from one day of failing to meet service quality metrics are miniscule compared to Verizon's daily revenue from California customers.[12] The costs of service quality problems are greater than customers not receiving a service they paid for. Some customers rely on wireless to run their businesses, access healthcare, and receive their education. Accordingly, fines should escalate: for each day the provider fails to meet the service quality standard, the fine would double.[13]

CforAT pushed for a two-pronged enforcement mechanism using both general fund fines and automatic customer credits. The fines would incentivize providers to meet minimum service quality standards, while the customer credits would make customers whole and ensure providers are not paid for a service they did not provide.

3.1.4. The Utility Reform Network

TURN generally supported adoption of Cal Advocates' and CforAT's modified customer service standards, with a few changes of its own.[14] It is also important to understand how service quality outages affect different groups, including small businesses.

TURN advocates for a modification that would allow customers to immediately reach a live customer service representative. TURN emphasized the importance of being able to reach live representatives by telephone and using a web-based chat. Customers should not be transferred endlessly between artificial

[12] The fine would be about $6,300 and Verizon's daily revenue from California customers is about $370,000.

[13] Fines would be calculated as follows: (base fine x ($2^{\#\text{ days noncompliant}} - 1$))/3650.

[14] *See* Figure 3-1.

intelligence (AI) representatives. This wastes people's time, especially in cases where customers must drive to another location for better service to contact customer support. If it takes a long time for these customers to get a call back, they might be forced to stay away from their home or workplace for an extended period.

TURN also argued that the requirement that "outage-related inquiries must be directed to the appropriate standards" is unclear. This requirement is not clear about who would direct these inquiries, how they would do it, and where the inquiries would be directed. Further, reporting requirements should not be limited only to wireless community isolation outages. This is because outages in small communities often do not constitute wireless community isolation outages. These outages should still be recorded by the Commission. When customers call reporting a service quality problem, carriers should provide them with the contact information of the Commission's Consumer Affairs Branch.

TURN also argued that the Commission should periodically review the required service quality data in conjunction with the Consumer Affairs Branch's customer service data. The Commission should review the data to see if certain demographics have more difficulties with customer service than others. For example, some elderly customers have more difficulty navigating customer service than others. This might also affect those in tribal areas, people in areas with lower incomes, people in areas with lower signal quality, or those with older plans. This would allow the Commission to monitor the quality of customer service and the impacts on different categories of customers.

3.1.5. Question and Answer Session

ALJ Glegola noted that the American Customer Satisfaction Index has been cited in filings to this proceeding.[15] Wireless carriers regularly score in the low-to-mid-seventies for call center satisfaction. Other industries score similarly, with PG&E scoring in the high sixties, and the federal government and airline industry scoring in the seventies. ALJ Glegola asked if there were other data identifying issues with wireless service providers' customer service. None of the parties had relevant data available, but CforAT offered to locate and provide data on customer service for disabled customers.

ALJ Glegola stated that one of the declarations provided by carriers estimated that if the "shot clock" for a live agent answering a call within 60 seconds of the customer requesting it (80 percent of the time), instead of when the call was initiated would reduce the cost of complying by at least 20 times. ALJ Glegola asked if the panelists found that standard reasonable. SBUA said that standard is satisfactory as long as customers know that they can request a live agent and how to ask for one. Cal Advocates agreed that the standard would be acceptable as long as customers are able to request live agents and pushed for a standard of 90% of calls being answered within 60 seconds. CforAT agreed but highlighted that some customers have greater access to customer service than others. For example, sometimes new customers can access a representative faster than existing customers. TURN was skeptical of whether providers would live up to the requirement.

[15] https://theacsi.com/companies/.

3.2. Industry Panel

This section is a summary of the industry panel's presentations and of the information discussed at the workshop in the first session. The panelists were asked the cost of compliance of the GO 133-E performance standards, whether the GO 133-E fine structure should be adopted, and what incentives their company provides customers when it fails to meet customer service standards. The panelists representing the industry were the following:

- Stanley Vigil and Andy Umaña, AT&T
- John Consalvo and Leon Bloomfield, T-Mobile
- Connie Chaffins and Barry Carlsen, Verizon

3.2.1. AT&T

AT&T posited that the market sets its own standards, and providers must meet those standards to remain competitive. AT&T views customer service as an area where investment yields a competitive edge.

AT&T argued that a performance metric measuring the time it takes to answer a customer's call is an incomplete measure of customer service quality. Based on AT&T's testing, it is more important to customers to quickly return a solution than to quickly pick up a call. One size fits all benchmarks are also imprecise, because each customer has their own needs and the market is constantly changing. Customer opinion is a better measure of customer service quality than static metrics.

AT&T self-monitors whether it meets customer service standards using quantitative analysis, qualitative research, experience simulations, a balanced scorecard with Key Performance Indicators (KPIs), and independent third-party benchmarking. AT&T looks at the rest of the global industry to find innovations in customer service it can adopt. AT&T prioritizes customer service and

reputation. If AT&T finds it falls below standards, it is incentivized to innovate its customer service practices.

3.2.2. T-Mobile

T-Mobile said that its customer service standards are designed to get customers to recommend the company. To get these recommendations, T-Mobile aims to go above minimum standards. This allows T-Mobile to be competitive in the market.

T-Mobile argued that its customer service is already high quality, as evidenced by the customer service awards it has won. T-Mobile pointed to multiple practices it employs to retain customers. For example, the company moves customers in an area experiencing a disaster to the front of the customer service queue. T-Mobile also provides multiple channels through which customers can access customer service. T-Mobile offers a callback option so customers do not need to be put on hold and uses AI to route callers to the right specialist based on their account and history, which reduces transfers.

T-Mobile argued that the wait time metric is not a complete measure of customer service quality. A low wait time does not guarantee customer satisfaction. T-Mobile's customer service model is to focus on reducing transfers, keeping answer speeds at a level that customers want, and continuously training staff. T-Mobile customer service currently operates 17 hours per day and offers digital self-service options overnight. A "one-size-fits-all" standard could prevent T-Mobile from being flexible with its customer service hours.

T-Mobile argued that responding to competition, industry innovation, and customer input is better than following a rigid standard. T-Mobile currently uses the following metrics:

- Average Speed of Answer (ASA): Average time before a customer reaches a live agent.
- Care Net Promoter Score (NPS): Measures how likely a customer is to recommend the company after a care interaction.
- IVR Net Promoter Score (NPS): Measure how likely a customer is to recommend the company after accessing self-service customer support.

T-Mobile also predicted that the costs of compliance would be high. The customer service system is nationwide, so if California has higher service standards, it would be applied to every customer in the country. This would lead to higher costs and worse customer experience.

The highest cost would be full-time employees. T-Mobile staffs based on forecasted demand, but there can be unexpected demand due to unforeseen events, such as a natural disaster or internet video. This would make it costly to keep wait times down. T-Mobile asserts it might need to hire offshore employees to meet this demand. There would also be costs of providing additional workspaces, and IT costs of building out customer service systems to meet customer service metrics.

3.2.3. Verizon

Verizon prefers focusing on small interactions with individual customers over meeting blanket industry-wide standards. For example, customers value simplicity, as it can be difficult for them to understand their wireless bill. It can also be frustrating for them when they are transferred and have to explain their problem all over again. Overall, Verizon's customer service priorities are customer satisfaction, 24/7 digital and chat support, and allowing customers to schedule callbacks. Verizon is focused on finding solutions to customers' problems, rather than driving down wait times.

Verizon's customer performance standards are call answer time, providing live customer support between 8 a.m. and 5 p.m.,[16] providing 24-hour chat availability, striving to resolve all customer service inquiries in a timely manner, and real-time monitoring to ensure responsiveness. Answer time is important, but not determinative of customer service quality.

Verizon predicted significant additional costs of compliance. Verizon says it would be very expensive for Verizon to build call centers for only California, which it would have to do in response to California regulations. Other costs would come from administrative and personnel costs related to hiring and training, process implementation, and system modifications.

3.2.4. Question and Answer Session

ALJ Glegola asked for customer satisfaction metrics, including average call wait time, average time to resolution, and other data regarding KPIs. AT&T said most of that information is confidential, but the average handle time is 14 minutes and 37 seconds. T-Mobile said the data are confidential, but it can send the data confidentially. Verizon said the information is confidential, but it was covered in Verizon's latest filing.

Commissioner Houck raised public concerns about wireless carriers not answering customer calls. If the solution is that they can just switch providers, there is a problem if the customers are having issues with multiple carriers. Commissioner Houck then asked what the industry panelists thought was a reasonable standard for providers to ensure customers are getting their issues addressed in a timely manner. AT&T did not want to provide a prescriptive number and said the process should be more individualized. For example, if a

[16] Verizon erroneously reported the live customer support hours as 8 a.m. to 9 p.m. in its slides.

customer calls on their lunch break and resolution is expected to take a long time, that customer might prefer to call back later. AT&T would prioritize giving the customer choice and minimizing total interaction time.

Commissioner Houck clarified there is a difference between customers who call and are not helped and those who are answered by someone who cannot help, but who offers to call back or see if they can help get the problem resolved. Commissioner Houck asked if AT&T had any ideas on how to prevent customers from waiting weeks or months for a response. AT&T stated that customers who are unfamiliar with the customer service process should be guided through the process from beginning to end. Technology should also be used to support the customer. Verizon said providers should be held to a reasonable standard but did not give a specific metric. Verizon was clear that long wait times are not acceptable. T-Mobile answered that a priority is providing multiple channels for customers to access customer service how they want to, including digital and self-service. The demand for customer support varies based on daily circumstances, so it is unreasonable to set one standard wait time for each day. T-Mobile emphasized that if there is a poor wait time, customers will leave and find another provider, which incentivizes the carriers to drive down wait times.

4. Session Two: Outage Metrics, Cal OES Wireless Community Isolation Outages

4.1. Presentation on Cal OES Wireless Community Isolation Outages

This section is a summary of the Cal OES Wireless Community Isolation Outages presentations and of the information discussed at the workshop in the second session. Presentations were given by:

- Andrew Mattson, California Governor's Office of Emergency Services (Cal OES)
- Wylen Lai, Carrier Oversight and Programs Branch

4.1.1. Cal OES

Cal OES gave a presentation on Cal OES community isolation reporting. A community isolation outage occurs when a provider's users are unable to make 9-1-1 calls or receive emergency notifications. When this happens, the 9-1-1 system is still working, but customers are unable to access it. By law, wireless providers must notify Cal OES if an outage lasts at least 30 minutes and affects at least 25 percent of the carrier's coverage area in a single ZIP code.[17] Carriers must also post outages on their websites individually.

Reporting requirements are governed by SB 670 and SB 341.[18,19] Community isolation outages regulations can be found on Cal OES' website.[20]

Carriers email outage notifications to the Cal OES 9-1-1 inbox, where they are auto forwarded to the vendor, then scraped and plotted on the outage reporting dashboard. Wireless providers must list the affected ZIP Code, along with a descriptive term such as the name of a city, county, or community and must include the estimated percentage of coverage degradation in the affected ZIP Codes.[21] These notifications can be difficult to decipher, as the carriers

[17] The reporting threshold was lowered from 50% to 25% in 2022.

[18] https://www.caloes.ca.gov/wp-content/uploads/PSC/Documents/11b-SB-670-Bill-and-Leg-History.pdf.

[19] https://www.caloes.ca.gov/wp-content/uploads/PSC/Documents/11a-SB-341-Bill-Leg-History.pdf.

[20] https://www.caloes.ca.gov/office-of-the-director/operations/public-safety-communications/ca-9-1-1-emergency-communications-branch/community-isolation-reporting/.

[21] Cal. Code. Regs. Section 2480.3(b)(2).

sometimes include extraneous information or fail to communicate necessary information in an organized way.

Cal OES reports its community isolation outages data to the Commission. Data concerning specific outages cannot be released publicly. Aggregated data are typically reported through Cal OES' quarterly 9-1-1 advisory board. Cal OES disaggregates data based on whether it impacts legacy or next gen 9-1-1 and whether it is nonservice impacting or service impacting. In January 2026, there were 87,684 total minutes reported of community isolation outage. Cal OES has a dedicated 9-1-1 duty officer on call 24 hours a day, seven days a week to address significant outages.

4.1.2. Carrier Oversight and Programs Branch

The Carrier Oversight and Programs Branch shared high-level community isolation outage data for 2023 to 2025. In particular, the Carrier Oversight and Programs Branch flagged the number of outages exceeding 72 hours and those with missing data as areas of concern. The data are summarized in the below figures.

Cal OES Community Isolation Outages (2023–2025)

Year	Community Isolation Outages
2023	5,902
2024	5,615
2025	5,956

Figure 4-1

Cal OES Community Isolation Outages by Duration (2023-2025)

Outage Duration	2023	2024	2025	Percent to Total

Missing data	35	27	401	2.6%
Less than 30 min	--	--	3	0.0%
30 min to 1 hr	203	296	568	6.1%
1–2 hr	1,606	1,328	1,413	24.9%
2–4 hr	1,060	1,027	1,074	18.1%
4–6 hr	914	915	813	15.1%
6–12 hr	836	1,014	806	15.2%
12–24 hr	672	607	506	10.2%
24–48 hr	348	233	222	4.6%
48–72 hr	78	65	44	1.1%
Over 72 hr	150	103	106	2.1%
Grand total	5,902	5,615	5,956	100.0%

Figure 4-2

Average Outage Duration for Cal OES Community Isolation Outages Exceeding 72 Hours (2023–2025)

	2023	2024	2025	Percent to Total
Average Outage Duration (Days)	13.8	6.8	10.0	2.1%

Figure 4-3

4.1.3. Question and Answer Session

Commissioner Houck asked if Cal OES has any concerns about lowering the reporting threshold from 50% to 25%. Cal OES said it was difficult to decide on a metric, because a wireless outage that is significant in a small town with only one carrier might not be significant in an urban area with overlapping coverage. Cal OES thought the 50% threshold was too high, and the 25%

threshold has yielded good data, which would be even better if the reporting conditions are sharpened. Commissioner Houck asked if Cal OES had any feedback on how the reporting process could be sharpened up. Cal OES stated it would like to establish a Cal OES, Commission, and FCC task force that could meet to discuss reporting needs. Commissioner Houck asked if Cal OES has received any feedback from emergency responders surrounding the 25% threshold or the granularity of reported information. Cal OES stated local partners are likely not aware of the reporting metrics.

4.1.4. Industry Panel

This section is a summary of the industry panel's presentations and of the information discussed at the workshop in the second session. The panelists were asked:

(1) the drivers of community isolation outages

(2) whether the company estimates the number of impacted access lines for those outages

(3) whether the company provides automatic customer credits to those impacted by outages

(4) how community isolation outages impact access to emergency services and whether the company works with local agencies or mitigates impacts

(6) how the company plans to address outages over 72 hours and whether the company issues customer credits to those impacted by such outages

(7) the factors the company considers in determining whether to issue customer credits and whether those credits are automatically applied

(8) how the company would establish an outage repair standard using community isolation outage as a measure

(9) how the Commission should collect and incorporate consideration for ESJ, tribal, and rural communities

The panelists representing the industry were the following:

- Josh Mathisen and Raymond P. Bolaños, AT&T
- Andy Gormely and Leon Bloomfield, T-Mobile
- Andis Kalnis, Verizon

4.1.5. AT&T

AT&T advocated against community isolation outage standards. Community isolation outage data do not measure customer-level outage data and are not a substitute for real-time performance management operational tools or competitive incentives.

When there is a community isolation outage, that does not necessarily mean customers are unable to reach 9-1-1 due to intercarrier redundancy. When one provider is unavailable, 9-1-1 calls are routed over any available carrier's network. This allows customers to access 9-1-1 and receive emergency notifications through another available carrier's network in the case of a community isolation outage. AT&T also operates under an emergency operation plan to coordinate with public safety agencies, issue notifications, and prioritize restoration efforts. AT&T reports community isolation outages through an outage map and advocates community isolation outage reporting should be used for awareness and coordination, not used to determine when 9-1-1 and emergency alerts are available. Additionally, competition incentivizes network efficiency, speedy restoration, and provision of customer credits to those affected by outages.

The three carriers operate extremely high uptime, between roughly 99.73 and 99.88% of the time between 2021 and 2025. Only a small percentage of the

time was attributed to Cal OES reported outages. Outages are also growing fewer in number and shorter in duration over time. Further, outages are less severe than the data might suggest. The reported outages have increased, but the increase is largely due to changes in reporting thresholds, not performance. Average outages are short and outages longer than 72 hours are rare. The report might not be formally closed until underlying network conditions are fully cleared, even if temporary facilities and other mitigations members are improving service. A significant share of outages is either planned maintenance or caused by factors outside of carriers' control.

To minimize the impact on customers, AT&T uses AI and real-time operations reporting to detect and address network problems before customers notice them. Carriers use digital network models and AI-driven simulations to anticipate problems before they occur and take action in advance.

When outages happen, AT&T works to restore service as quickly as conditions allow. AT&T asserts that mandates cannot accelerate restoration when outages are outside providers' control.

AT&T can identify impacted customers during certain outage events and provide automatic credits. Wireless carriers are incentivized to know when customers are affected and to restore service quickly. If AT&T does not make things right with customers, it cannot be competitive in this market.

AT&T states that Cal OES community isolation outage reporting was intended to promote awareness and coordination, not to be used as a regulatory compliance tool. Outages are caused by a variety of factors, so static regulation cannot be properly applied to them. AT&T holds itself to the same performance expectations regardless of geography and demographics. Different outcomes are driven by differences in physical environments, power, and transport.

Regulation would not restore service more quickly in these regions. New mandates would not change the underlying causes of outages and could divert resources from network investment to compliance reporting.

4.1.6. T-Mobile

T-Mobile provided Cal OES data indicating wireless network uptime.

Wireless Network Uptime Reported by Cal OES (2021-2025)[22]

	2021	2022	2023	2024	2025
% network uptime	99.88%	99.85%	99.73%	99.85%	99.85%
% Cal OES reported outage time	0.12%	0.15%	0.27%	0.15%	0.15%

Figure 4-4

California Provider Coverage Availability (2023-2026)[23,24]

	2023	2024	2025	2026
% coverage availability	98.4%	98.6%	98.7%	99.1%
% no coverage availability	1.6%	1.4%	1.3%	0.9%

Figure 4-5

T-Mobile argued that outages cannot be categorically prevented. Natural disasters and extreme weather events cause outages and are completely out of

[22] Data provided by CTIA.

[23] Data derived from Opensignal's Mobile Network Experience Reports between January 2023 and January 2026.

[24] Coverage availability is defined by Opensignal as "a measure [of] what proportion of time people have a network connection, in the places they most commonly frequent."

carriers' control. T-Mobile does not use Cal OES to measure the impacts of outages.

The data show that outages are limited: there was over 99% uptime each year according to the aggregated Cal OES data. T-Mobile also points to the decrease in outages in the past three years. T-Mobile's own community isolation outages have likewise decreased in the past three years, and the outages that do happen do not materially impact the overall uptime or reliability of the network.

T-Mobile argued that the number of ZIP codes reported as experiencing community isolation outages have increased since 2021, but the increase is due to changed reporting requirements. In 2022, the community isolation reporting threshold decreased from 50% to 25%. Cal OES data show that the number of ZIP codes reaching the 50% threshold has decreased.

There are also special protections for 9-1-1 calls. For example, when one carrier is down, another is required by federal law to carry the call.[25] T-Mobile provides satellite service to maintain 9-1-1 connectivity during outages. Accordingly, 9-1-1 service is not always impacted when a community isolation outage takes place.

There are no data to show the number of impacted users in a community isolation outage. Customers move and may have other supplemental means of connectivity that cannot be tracked.

Outages lasting longer than 72 hours are outliers and rarely take place. Outages are most often caused by factors outside providers' control, including backhaul cuts, emergency disasters, and disruptions to commercial power. To

[25] 47 CFR Section 9.10.

mitigate outages, T-Mobile extends coverage around the loss, which is not reported to Cal OES. These temporary measures lessen the impact of outages.

Competition fuels T-Mobile's desire to reduce outages. T-Mobile says competition encourages all providers to reduce the number of outages that take place and to restore service as soon as possible.

4.1.7. Verizon

Providers compete with each other to reduce outages and restore service. They also work together to ensure emergency services are accessible when they are needed. Verizon is incentivized to improve its network, but there are physical factors that cause outages and prevent service restoration. Infrastructure improvements are also limited by local zoning requirements, as well as cost. Verizon cited Rootmetrics' 2H 2025 Report, which stated that Verizon, T-Mobile, and AT&T all scored well in national performance testing. Verizon also cited Cal OES' data showing high network uptime.[26] These data show that carriers are motivated by competition to improve their networks.

Moreover, Verizon errs on the side of overreporting and there is no way to withdraw false reports to Cal OES. It can be difficult to measure whether there is an actual outage. Verizon reports any areas that are potentially affected, so people are aware if there might be an outage in their area.

Outages are largely caused by factors beyond provider control. Infrastructure is susceptible to damage, theft, vandalism, natural disasters, and extreme weather. There are also location challenges: insufficient backhaul options, lack of space for backup power, and terrain and access constraints. Furthermore, other entities can contribute to outages, causing permitting and

[26] *See* Figure 4-4.

zoning issues, network dependencies, and frequency interference. Natural disasters and extreme weather can also extend the time to restoration.

Automatic credits for disrupted service are not feasible due to difficulties with identifying all affected customers. Customers experiencing an outage greater than 24 hours can call within 180 days to receive credits.

4.1.8. Question and Answer Session

ALJ Glegola asked whether the panelists knew the percentage of community isolation outages reported to Cal OES that are under their companies' control and how many outages impact customers. AT&T did not have exact numbers but reported that the majority of outages were due to transportation and power outages, out of provider control. Most outages within control are planned maintenance at night. AT&T will provide those data in the future. T-Mobile also lacked specific data and found that the largest contributing factors were outside the company's control: namely backhaul and power. T-Mobile mitigates these outages with generators, VSAT, and microwave. T-Mobile does not track outages with Cal OES data, but with tickets. The causes within T-Mobiles control are mostly planned maintenance at night. Verizon did not provide data either but stated that the vast majority of outages are caused by cable cuts, hardware failures, and power outages. The outages within control are caused by planned maintenance at night.

ALJ Glegola asked AT&T if outages are reduced thanks to competition, then why do carriers have a different number of outages? AT&T stated it has taken a very conservative approach to reporting, which has led to a drop in the number of reported outages. Overall, all three providers have a very small number of outages, and those numbers are very similar to one another.

ALJ Glegola asked if outages are more problematic in rural areas because there is less overlapping coverage. AT&T said Cal OES outages are less likely to be reported in urban areas because they tend to have more coverage. Although all three carriers being down is still rare in rural communities, there are more topographical challenges that prevent timely restoration. Verizon said overlapping coverage is more likely in urban areas, which reduces the number of outages. Fewer towers can be built in rural areas due to certain restrictions, including zoning and environmental issues, so those areas have less overlapping coverage.

ALJ Glegola then asked if it would be fair to limit community isolation events to a particular number. Verizon stated that it errs on the side of overreporting to ensure people are aware of potential issues. Setting a hard and fast number is not the right way to reduce impacts. Independently identifying ways to improve resiliency and roadblocks is a better approach. AT&T said most outages are outside of carriers' control, so setting a limit on outages is an ineffective approach. As technology improves and providers want to upgrade infrastructure, planned outages are also sometimes required. Cal OES reports are used for awareness around public safety, not for assigning penalties. T-Mobile said there is no way to put a hard and fast limit on outages. For example, people cutting cables without permission and extreme weather are common causes. Outages are largely out of carriers' control.

4.2. Community Panel Presentations

This section is a summary of the community panel's presentations and of the information discussed at the workshop in the second session. The panelists were asked about their communities' experiences with service disruption and outages. They were also asked about how the Commission should implement a

Corrective Action Plan enforcement mechanism to meet service quality standards. The panelists representing rural and tribal communities were the following:

- Supervisor Jessica Pyska, Lake County
- Linnea Jackson, Hoopa Valley Public Utilities District (PUD)
- Supervisor Rhonda Duggan, Mono County
- Matt Rantanen, Southern California Tribal Chairmen's Association (SCTCA)
- Supervisor Sue Hoek, Nevada County
- Ken Kehmna, Western Fire Chiefs Association (WFCA)

4.2.1. Lake County

Lake County depends on wireless service quality improvements as a matter of public safety. Lake County is rural and mountainous. The region is susceptible to wildfires, winter storms, power outages, and other emergencies. When wireless communications fail, people may lose the ability to call 9-1-1, receive emergency notifications, contact healthcare providers, and contact their families.

Lake County schools were recently closed and evacuated due to bomb threats. The wireless network was overwhelmed by the volume of calls by families trying to reach students and schools. Consequently, many parents were unable to reach their children.

Rural areas lack overlapping coverage and redundant infrastructure. Accordingly, the loss of a single backhaul connection or power source disrupts an entire area's communications.

Even where carriers invest in telecommunications infrastructure, some facilities continue to lack adequate backup capabilities, and heavy vegetation or

fuel loading around the tower sites can increase wildfire risk, which makes the facilities more vulnerable during emergencies.

There is no consistent and enforceable framework requiring wireless providers to restore service within a defined time frame, provide local emergency responders with outage information, or maintain performance standards during emergencies. Wireless customers deserve comparable protections to plain old telephone service (POTS) and VoIP customers. Lake County supports clear, technology-neutral standards that address outage reporting, restoration timelines, network resiliency, backup power, redundancy, customer communications, and emergency performance. The Commission should require providers to report performance at a local level, so that recurring failures in rural communities are not obscured by statewide averages. When outages repeatedly occur in the same area, providers should be required to implement corrective measures such as backup systems, redundant infrastructure, alternative routing, or necessary equipment upgrades. Repeated failures should trigger action, not simply additional reporting. Carriers must also plan for foreseeable surges in demand, such as seasonal tourism and foreseeable emergencies. The Commission should also implement infrastructure inspection and maintenance requirements, including vegetation management, defensible space around towers and telecommunication facilities, and a requirement for backup and emergency systems to be in place and regularly maintained.

4.2.2. Hoopa Valley Public Utilities District

Hoopa Valley is a sovereign tribal nation located in rural Humboldt County. The tribe is geographically isolated and consistently experiences a lack of reliable service, including routine outages. This lack of reliability is a threat to public safety and the tribe's critical functions. When an outage occurs, the

community cannot reach tribal law enforcement, who the Hoopa people call instead of 9-1-1, or other emergency services.

Hoopa Valley PUD stated that wireless carriers have historically treated tribal communities as a secondary priority. When outages take place, major carriers often take days to restore service. The lack of service most heavily impacts the most vulnerable populations, including tribal elders and disabled community members.

Hoopa Valley PUD encouraged the Commission to set strict service quality standards for wireless carriers. The PUD also recommended mandating automatic credits. The PUD urged the Commission to adopt tribal specific restoration timelines. There needs to be redundancy and at least 72 to 96 hours of required backup resiliency. Wireless networks also must be heavily monitored so emergency services never have multiple simultaneous outages.

The PUD also encouraged carriers to reach out to tribes and utilize their communications infrastructure.

Reliable wireless is needed for safety and tribal sovereignty.

4.2.3. Mono County

Mono County is a rural county in the Eastern Sierras and has around 13,000 residents. Disasters are no longer occasional; they are now the norm for mountainous areas. There is a lack of competition and options for Mono County residents. Physical constraints make providing service challenging. There is no single carrier that provides service throughout the entire county, and there are areas with no coverage at all. For instance, U.S. Highway six is a thoroughfare travelling cross-country, and the highway lacks service altogether.

Mono County urged providers to provide service in rural counties. Mono County has two-and-a-half million tourists each year, and these customers expect

service. Mono County is vulnerable to disasters, and service is needed in these emergencies.

4.2.4. Southern California Tribal Chairmen's Association

SCTCA stated that wireless carriers do not provide total coverage of tribal areas, but they are resistant to tribes operating spectrum licenses to provide their own wireless service.

There is often wireless coverage along thoroughfares adjacent to the tribe, but a lack of coverage towards the center of the tribe. In an emergency, tribal members must move to the edge of the reservation to call 9-1-1 or contact family. This can especially be a problem when there is an outage on the thoroughfare.

Although tribes are starting to build their own infrastructure to provide wireless service, SCTCA still urges providers to cover tribal communities to promote competition, redundancy, and choice for tribal communities.

4.2.5. Nevada County

In Nevada County, even bigger cities lack service. In emergencies, residents depend on wireless to access evacuations warnings, check road closures, and contact family members and emergency services. The network can get overloaded in these situations, and no one can access warnings. Visitors come to Nevada County and rely on wireless to navigate the rural areas, which poses a safety issue when service goes out. Residents lack service in their own homes and places of business. In particular, small businesses who rely on wireless for their payments systems are impacted by outages and lack of service. For these reasons, it is important that rural counties in California have access to wireless service.

4.2.6. Western Fire Chiefs Association

WFCA concurred with the experiences of the other community panelists. Lacking wireless service is a public safety concern. People need to be able to access wireless to make phone calls and contact emergency services. More people are moving towards wireless as their sole means of communication. There are also other important technologies that rely on wireless: wearable fall-detection technology, insulin pumps, cardiac monitors, and more. Elderly and disabled community members need more time than anyone to evacuate.

Some rural communities rely upon a single tower. Even if all three carriers use the tower, the system will be overwhelmed in the case of an emergency. This limits first responders' abilities to communicate with each other and the community. It can also make it difficult for first responders to get information in real time. It is important that community members get their emergency information directly from first responders, not from a chain of communication.

To prevent the network from going down, rural communities need more redundancy. In areas where there are no towers or only one tower, there needs to be infrastructure put in place so everyone can access wireless. These improvements are a matter of public safety and will save lives. Cost effectiveness and profitability should not be determinative of whether this infrastructure is built.

4.2.7. Question and Answer Session

Commissioner Houck asked if there is anything else important for the Commission to consider when addressing service quality regulations for wireless providers. Mono County said a growing challenge is that the prevalence of POTS lines has decreased in recent years, leaving residents without service altogether in the event of a wireless outage. With the consolidation of services between

large carriers, there are areas that have no coverage when service is needed. Rural communities need to contact carriers themselves to have these problems fixed. Nevada County expressed a concern for deferred maintenance. In disasters, Nevada County relies on generators, which might not function if not properly maintained. WFCA stated that access to wireless is not a luxury but a bare minimum. Wireless is necessary for early warning and detection in the case of a disaster. Emergency services are dependent upon a robust wireless backhaul. Although rural communities are less populated than urban centers, the people who live there are still important and their safety must be taken care of.

Victor Smith, Commissioner Houck's Deputy Chief of Staff, asked if there is any specific information first responders need from wireless providers in emergencies. WFCA said first responders often know about outages before providers, but it would like to be informed of providers' plans for addressing coverage gaps. WFCA offered to help carriers with zoning and regulatory hurdles.

5. Session Three: Outage Metrics, Industry Key Performance Indicators

Robert Osborn, the director of Communications Division kicked the last session off with a brief clarification. Uptime is a global measurement used to determine network availability as a whole rather than from a local user experience. Network uptime does not measure the effects of a local network outage on a community. There is a safety risk if even one customer is not able to call 9-1-1. It is possible for community isolation outages to coexist with reported uptimes. For outages, the scope and duration are important alongside the number of total outages.

5.1. Industry Panel Presentations

This section is a summary of the industry panel's presentations and of the information discussed at the workshop in the third session. The panelists were asked about KPIs, how their company monitors service quality, what geographical granularity is used to measure KPIs, how their companies account for ESJ, tribal, and rural communities, and how a Corrective Action Plan could be used to improve service quality. The panelists representing industry were the following:

- Josh Mathisen and Raymond P. Bolaños, AT&T
- Craig Sherry and Leon Bloomfield, T-Mobile
- Rommel Angeles, Verizon

5.1.1. AT&T

AT&T uses dynamic KPIs to accommodate changing network conditions. The KPIs include call drop rate, access failures, and data throughput. KPIs, other network performance measures, and predictors of future performance are used to improve performance in real time, not just on quarterly reporting cycles.

AT&T uses AI-enabled systems are used to detect and address issues to reduce outage frequency and duration. Real-time network management minimizes customer impact. This includes adjusting antenna configurations, reallocating capacity, and staging temporary infrastructure ahead of severe weather.

AT&T employs uniform performance standards across communities with the expectation that every community receives the same service quality. Physical conditions, including terrain, infrastructure availability, transport dependencies, and commercial power, affect how issues are resolved, but the expectation is the same reliable service for all customers, regardless of where they live.

The industry is incentivized by competition to improve performance. Carriers work to improve service quality to attract and retain customers. The wireless network has improved in the last five years, as evidenced by the results of third-party testing.

Static regulation is less effective and would shift focus from improving performance to after-the-fact penalties. AT&T pointed out that most of the community panelists' issues involve coverage, not service quality. A service quality penalty framework would not create coverage. AT&T is working to improve coverage where it can. If the penalty framework is used to push carriers to build new infrastructure, that might unintentionally drive carriers out of rural areas.

5.1.2. T-Mobile

T-Mobile stated that service quality is not just a compliance issue, but important to maintain competitiveness. T-Mobile uses four KPIs: (1) network availability, (2) call drop rate, (3) call failure rate, (4) call set up time.

Network availability measures the amount of time the network is operational and accessible to customers. T-Mobile's goal is to maximize uptime across all coverage areas, with immediate action on any degradation.

The call drop rate is the frequency at which established voice calls are unintentionally terminated. The call drop rate is tracked at network and cell site levels to identify and resolve trouble spots quickly.

The call failure rate is the percentage of attempted calls that fail to connect. This KPI is used to measure network reliability and make infrastructure investment decisions.

The call set up time is the time from call initiation to a connection being established. It measures network responsiveness and impacts customer interactions and 9-1-1 calls.

T-Mobile works to minimize and address outages regardless of where they take place. Every outage matters. This includes rural, ESJ, and tribal communities. T-Mobile strives to reach zero downtime.

T-Mobile works to improve quality to remain competitive in the market through innovation and investment in infrastructure. This competitiveness drives the industry to improve over time. Regulation is not necessary when competition already incentivizes T-Mobile to optimize performance.

T-Mobile has several methods of reducing outages. The company works to identify and address problems before outages can happen. T-Mobile monitors the network 24 hours a day, seven days a week, 365 days a year. T-Mobile uses a self-organizing network (SON) to automatically detect coverage gaps and use neighboring cell sites to expand coverage. This does not work as well in rural communities with limited coverage. T-Mobile works to prevent outages caused by commercial power failures, backhaul outages, and theft or vandalism. T-Mobile uses Starlink as a backup for its fiber backhaul infrastructure to its cell sites. This includes both permanent installations for sites with frequent backhaul outages and deployable technology to temporarily provide service and connectivity to 9-1-1.

5.1.3. Verizon

Rootmetrics sets third-party industry standards for wireless voice services based on testing networks' blocked calls,[27] call drops, and call set-up time. All

[27] Blocked calls are equivalent to call failures in Section 5.1.2.

three carriers have improved in these metrics since 2024 because of industry competition.

Verizon uses four KPIs: (1) cell availability, (2) voice over LTE (VoLTE) call drop rate, (3) VoLTE call ineffective rate, and (4) real-time transport protocol gap duration ratio average (RTP GDRA). Cell availability measures whether cell sites are up or down. If there is an outage on a cell site, that affects cell availability. A call drop is when a connection has been made, but it is suddenly dropped. The call ineffective rate measures the ability to make a call. The RTP GDRA measures the quality of the call, including whether the sound is garbled or cuts out.

Verizon proactively monitors all markets, including rural, ESJ, and tribal communities. Verizon makes performance and network investments that are driven by customer demand and intense competition.

5.1.4. Question and Answer Session

Robert Osborn asked whether 72-hour power backup requirements are effective in reducing outages. AT&T said it has always had a robust backup power plan, especially in California. T-Mobile stated it is always trying to improve its power-hardened footprint in a way that makes sense for a particular area, especially in high fire zones in California. T-Mobile reports these efforts in its resiliency plan. Verizon said cell site hardening is an important part of the company's strategy. Verizon's cell sites have battery backups and a generator when possible. There are also portable generators that can be deployed as needed. Verizon employs a diversity of fiber and works with fiber providers to restore cables when they are vandalized.

Robert Osborn asked T-Mobile if Starlink is a backup and how voice calls work. T-Mobile said phones automatically connect to Starlink when there is no coverage from the T-Mobile network, provided Starlink is part of that customer's

plan. Then users can make calls via WhatsApp, message through their phone's native messaging, or contact 9-1-1.

5.2. Advocacy Panel Presentations

This section is a summary of the advocacy panel's presentations and of the information discussed at the workshop in the third session. The panelists were asked about the general public's challenges with wireless service, whether those challenges differ based on geography, whether the Commission should enforce KPI-driven standards, how the Commission can incorporate consideration for ESJ, tribal, and rural communities, and what enforcement mechanism the Commission should use to improve service quality. The advocacy panelists were the following:

- Josh Srago, Cal Advocates
- Paul Goodman, Center for Accessible Technology
- Regina Costa, the Utility Reform Network

5.2.1. Cal Advocates

Cal Advocates emphasized the importance of metrics having a common baseline—the difference between 99.9% yearly uptime and 99.99999% yearly uptime is nearly nine hours. It can also be important to examine where outages are taking place. Even if downtime is only 1%, if it disproportionately affects certain regions or communities, that should still be addressed.

Wireless maps can be used to convey coverage data to customers, but they lack a common baseline. Maps showing 4G or 5G coverage are not useful for determining whether a call can be made. 4G refers to the generation of technology, not service quality. Network coverage in decibel-milliwatts is the best way to measure a customer's ability to place calls. Conveying coverage information in this form would help customers understand the difference

between coverage gaps and outages. Carriers already have these maps for planning. To promote customer transparency, the Commission should set requirements for these maps. The maps should be focused on voice, third-party validated, and based on reality.

Cal Advocates recommended several metrics:

- Network coverage in decibel-milliwatts
- Network availability per cell site
- Cell site community isolation outage time
- Cell site outage cause
- Voice call failures per cell site
- Voice call failure rate per cell site
- Voice call drop per cell site
- Voice call drop rate per cell site
- Network congestion

Outage causes should be measured because sometimes outages are out of carriers' control and it is important for the Commission to understand why outages happen so they can be addressed.

These metrics should be measured to address-level specificity. Data aggregation, averages, and medians can obscure customer experiences.

The service quality metrics are not intended to dictate how the network performs or where carriers build. Instead, they should promote transparency so that customers know what quality of service to expect.

5.2.2. Center for Accessible Technology

CforAT identified major challengers with wireless service that customers experience. Wireless customers expect to be able to use their phones anywhere, but none of the largest providers guarantee service anywhere in California.

Another challenge is that providers react to problems but do not try to anticipate them before they occur.

CforAT found industry KPIs insufficient. Industry KPIs measure customer experience, not service quality. Carriers need to set benchmarks and measure how often they are met. Potentially useful KPIs, such as call hand-off, can be hard to measure. CforAT recommended adopting Cal Advocates' recommendations, along with the following metrics:

- Call volume per cell site (during community isolation outages)
- Mean time to repair[28]
- Equitable distribution of new or updated technology

Equitable distribution of new or updated technology metrics would consist of an annual report on network upgrades in the provider's service territory, disaggregated by type of technology, and quarterly data, disaggregated by census block. Providers would also annually report the age and location of infrastructure currently in service in the field, broken down by three categories: under three years old, three to five years old, and over five years old. The important inquiry is whether some communities are being prioritized over others when it comes to updating old technology.

CforAT emphasized the importance of geographical granularity. Averages can be used to cover up "trouble areas." Accordingly, any outages that affect more than ten percent of served locations in a single ZIP code should be reported. Providers should also report any customer location that has experienced more than one outage in a six-month period. There should be exemptions for "cable cuts" to cut, stolen, or vandalized copper or coaxial cable

[28] Calculated: total time spent on repairs/# repair incidents.

infrastructure. The exemptions should be eliminated in areas that have not experienced theft or vandalism of cable within the past six months.

CforAT recommended a two-pronged fine and customer credit enforcement mechanism for service quality. Fines are a penalty to incentivize providers to meet the minimum standards of service quality. Customer credits make customers whole when they do not receive a minimum of service quality. Thus, the Commission's wireless service quality standards should require both general fund fines and automatic customer credits.

5.2.3. The Utility Reform Network

TURN agreed with Cal Advocates that call quality metrics should be adopted and with CforAT that KPIs are insufficient. There are other problems with poor service quality beyond a complete lack of service for a community. Reported data need to record the problems underlying averages. There are cases where a significant portion of households in an area have poor quality service, but a community isolation outage might not be reported. Thus, the poor service quality would not be reported in the outage data provided to the Commission. This could be a safety risk, so the Commission should be aware of this type of situation.

When the Commission performs service quality data analysis, it should analyze provider reporting in conjunction with customer feedback received by the Consumer Affairs Branch regarding poor service. This form of analysis would allow the Commission to identify disparities in service quality depending on demographic characteristics. TURN agreed with SBUA that small businesses have unique public safety obligations, and that small business outage data should also be disaggregated, if possible.

TURN also noted that the term "outage occurrence" is vague, and its meaning needs to be clarified.

5.2.4. Question and Answer Session

Robert Osborn asked Cal Advocates how coverage maps would work from a service quality and enforcement perspective. Cal Advocates explained the maps would be used for customer transparency, not to regulate how carriers manage their networks. If there were outages, customers would have the option of switching carriers, and they would be able to manage their expectations.

Robert Osborn mentioned that call drop rate data seem to be statewide, and asked Cal Advocates' thoughts on granularity and how that data should be reported. Cal Advocates said it depends on what data the networks have and recommended further investigation.