

**THIS IS NOT A DRILL: AN EXAMINATION OF  
EMERGENCY ALERT SYSTEMS**

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**HEARING**

BEFORE THE

**COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE**

**ONE HUNDRED FIFTEENTH CONGRESS**

**SECOND SESSION**

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**JANUARY 25, 2018**  
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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

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# **THIS IS NOT A DRILL: AN EXAMINATION OF EMERGENCY ALERT SYSTEMS**

**THURSDAY, JANUARY 25, 2018**

U.S. SENATE,  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,  
*Washington, DC.*

The Committee met, pursuant to notice, at 10:03 a.m. in room SR-253, Russell Senate Office Building, Hon. John Thune, Chairman of the Committee, presiding.

Present: Senators Thune [presiding], Wicker, Blunt, Fischer, Sullivan, Heller, Capito, Gardner, Nelson, Cantwell, Klobuchar, Schatz, Markey, Udall, Peters, Duckworth, Hassan, and Cortez Masto.

## **OPENING STATEMENT OF HON. JOHN THUNE, U.S. SENATOR FROM SOUTH DAKOTA**

The CHAIRMAN. Good morning, and welcome to today's hearing on our country's Emergency Alert Systems. I hope to hear from our panel this morning about what's working, what's not, and what we can do better to prevent false alerts like we saw with the Hawaii ballistic missile warning earlier this month.

Ensuring state and local governments have the proper tools and safeguards to properly alert the public of an impending emergency is absolutely critical. False alerts not only create unnecessary panic, but they undermine the integrity of the Emergency Alert System, leading to public distrust and confusion. What happened in Hawaii is inexcusable and must be addressed to ensure an incident like that never happens again.

It is essential that Americans have an Emergency Alert System that they can trust, and, overwhelmingly, by and large, I believe they do. There is much that is working well with the Emergency Alert System. In fact, it's arguably a model public-private program, operating as envisioned by this committee through the WARN Act.

Industry partners, including those represented here today, have been investing to improve the system and are working collaboratively with government and public safety officials to carry out the mission. We certainly do not want to overlook these successes, but as recent events have shown, there are problems that must be addressed.

Today's hearing will be the first of two hearings on Emergency Alert Systems. In the near future, we will hold a field hearing in Hawaii to further address the January 13 ballistic missile false alarm and to follow up on the issues that are discussed today.

Since the early days of the cold war, the United States has been building and improving an Emergency Alert System to warn our citizens, first from the risks of a Soviet attack and later expanded to include natural disasters like fires, floods, tornados, and tsunamis. We have continued to build on this lifesaving system to include AMBER Alerts, which seek the public's assistance when a child is in danger. Soon, we will also have Blue Alerts, which can be issued when there is an imminent and credible threat to a law enforcement officer.

From the beginning, our Emergency Alert Systems have harnessed the immense resources of commercial communications systems—broadcast television and radio in the beginning, and eventually cable and satellite TV and mobile phone networks—to reach the American public as quickly and effectively as possible.

Here is how the system works, or should work. Our alert system relies on Federal, state, and local officials authorized by the Federal Emergency Management Agency, or FEMA, to decide when an alert is appropriate and what it should communicate. These alerts are then sent to FEMA. When FEMA receives an alert, it validates that it is from an authorized entity before forwarding it to the broadcasters, mobile phone service providers, and others, who, in turn, send the alert out on televisions, radios, and mobile phones in the affected areas.

The Federal Communications Commission regulates the interface between those sending the messages and the communications companies that deliver the messages to us. Ensuring that people get the information they need and that alerts are credible and make sense to the recipients is an ongoing process, but it is fundamental that messages must be credible.

Messages sent in error like the Hawaii ballistic missile alert run the risk of undermining the entire alert system by reducing people's confidence in alerts. While we do not want to prevent authorized officials from communicating alerts to the public when they see fit, we must ensure that such officials are better trained. There are additional improvements we can undertake as well.

For example, there is no question that the National Weather Service's watch and warning system saves lives, but it can also be enhanced. That is why I included provisions in the Weather Research and Forecasting Innovation Act of 2017, which became law last spring, that require the National Weather Service to use the latest behavioral science and stakeholder feedback to improve its watch and warning system. We should make sure that lessons learned from one incident inform and improve future alerts.

The FCC is also taking steps to make improvements to the alert system through the use of better geo-targeting of messages, which is being considered at its current proceeding, that is, targeting messages to those who need to receive them and not sending them to those who don't. This helps avoid alert fatigue and also addresses the concerns expressed by some local officials during the California wild fires last year that an overly broad alert could result in traffic jams with those unnecessarily leaving their homes and hindering the evacuation of those who truly do need to leave.

As we'll hear today, the goal of providing timely emergency information to our communities is also advanced by private citizens,

like those amateur or “Ham” radio operators who have helped keep people connected after tragedies like Hurricanes Harvey, Irma, and Maria.

Today, I am pleased to welcome Ms. Lisa Fowlkes, Chief of the FCC’s Public Safety and Homeland Security Bureau; Mr. Scott Bergmann, Senior Vice President of Regulatory Affairs at CTIA—The Wireless Association; Mr. Sam Matheny, Executive Vice President and Chief Technology Officer of the National Association of Broadcasters; and Mike Lisenco, a representative of the Amateur Radio Relay League.

Thank you all for being here. I look forward to today’s discussion.

I will now recognize the Ranking Member, Senator Schatz, for any opening remarks that he may have, and I think he can speak personally to the impact of this issue.

**STATEMENT OF HON. BRIAN SCHATZ,  
U.S. SENATOR FROM HAWAII**

Senator SCHATZ. Thank you, Mr. Chairman.

For many people in Hawaii, one of the most harrowing hours of their lives started just a few minutes after 8 a.m. on January 13, 2018. Cell phones across the state lit up with a warning that a ballistic missile attack was imminent. For the next 38 minutes, both residents and visitors panicked. People were terrified as they scrambled to get in touch with loved ones. I know, because I was home in Honolulu that morning, and I started to get dozens of texts with screenshots of the push alert asking me what was happening.

Meanwhile, within a minute or two, officials at the Hawaii Emergency Management Agency had spoken to the Pacific Command and confirmed that there was no missile attack—only nobody told the rest of us. The people of Hawaii may be relieved about the false alarm, but they are also angry. All of this was avoidable, from the false alarm itself to the series of mistakes at multiple junctures surrounding the incident. Human and bureaucratic errors made the crisis worse, but there are also inherent flaws in the system itself.

We are here today because of problems in our Emergency Alert Systems, from Hawaii’s false alarm to issues in communications related to the recent California wildfires. So I want to thank Chairman Thune and Ranking Member Nelson for holding this hearing and for agreeing to hold a field hearing in Hawaii in the near future, and I want to thank the FCC, including Ms. Fowlkes, who came to a meeting I convened last week with FEMA, the DoD, and the Department of Homeland Security, for helping us determine what happened and how to fix it.

What happened in Hawaii raises some basic policy questions. Right now, any city, county, or state can choose to participate in this program on missile alerts, and when they do, they gain the technical ability to get the word out, but that does not make them experts in knowing when a missile is coming. That rests with the Department of Defense. It is increasingly clear to me that if we get all 50 states and all the territories and 3,007 counties across the country participating in this program, the likelihood of another

mistaken missile alert as a result of human or bureaucratic error is not zero.

Local officials have led on disaster response and recovery, but if the Federal Government knows a missile is coming, it is worth asking if they should be the ones to tell everyone. States are laboratories of democracy. They should not be the laboratories for missile alerts, which is why this is an important question for Congress to consider.

We have lively debates about federalism, about the role of local versus Federal Government. But a missile attack is Federal. A missile attack is not a local responsibility. Confirmation and notification of something like a missile attack should reside with the agency that knows first and knows for sure. In other words, the people who know should be the people who tell us.

That is why I'm introducing legislation with Senators Harris, Gardner, and others to make it clear that the authority to send missile alerts should rest with the Departments of Defense and Homeland Security. These agencies have to work with the state and local emergency management agencies when they get the word out so that the public is safe and informed.

Thank you again, Chairman Thune and Ranking Member Nelson, for your leadership on this issue, and I look forward to hearing from the witnesses on where we stand and what we can do better.

The CHAIRMAN. Thank you, Senator Schatz, and thank you for sharing your experience, and we all look forward to working with you to make sure something like that never happens again to your constituents or anybody else in this country.

So the Ranking Member, Senator Nelson, is here.  
Senator Nelson, an opening statement?

**STATEMENT OF HON. BILL NELSON,  
U.S. SENATOR FROM FLORIDA**

Senator NELSON. Thank you, Mr. Chairman. And, by the way, I thought yesterday's hearing down at the auto show on autonomous vehicles was outstanding. So thank you. I think there's going to be a lot of good to come out of that hearing.

The CHAIRMAN. I hope you're right. Very interesting.

Senator NELSON. If you were told that a ballistic missile was inbound, and your loved ones were spread out, what in the world would go through your mind? It's exactly what went through the mind of Senator Schatz. Regrettably, he knows the answer to that question, and he knows it's very real and it's very personal. He was there. He received the alert, and it's because of that personal connection to this situation and the leadership that he has shown in the aftermath that I'm going to be here simply to support him in this.

Nobody should have to go through what the folks of Hawaii did. But the flip side of that is we want to make sure that there is a system in place so if there is an inbound nuclear warhead, our people are alerted.

When disasters occur, Americans rely not only on emergency alerts, but also on our 911 system. But the infrastructure is aging, and, frankly, it has been left behind in the digital revolution. Congress must make modernizing the 911 system a national priority,

which is why I've worked with Senator Klobuchar to introduce the Next Generation 911 Act of 2017—we need a template for moving ahead on a bipartisan basis, and this is a good bill to start moving ahead on this issue.

The CHAIRMAN. Thank you, Senator Nelson. That's something, hopefully, this committee can work together on and get done for the good of all the people in this country and, of course, most specifically, for the people of Hawaii.

We do have a great panel, and we look forward to hearing from them this morning. We'll start with Ms. Lisa Fowlkes, who is the Chief of Public Safety and Homeland Security Bureau at the Federal Communications Commission, which has jurisdiction over the integration of all these forms of communication; Mr. Scott Bergmann, who is Senior Vice President, Regulatory Affairs, CTIA; Mr. Mike Lisenco, who is Chairman of the Advocacy Committee, Amateur Radio Relay League, and member of the Board of Directors; and Sam Matheny, Executive Vice President and Chief Technology Officer at the National Association of Broadcasters.

We'll start, Ms. Fowlkes, with you.

If you all could confine your oral remarks to five minutes or thereabouts, we will make sure that all of your testimony is made a part of the written record, and it will give us some time to ask questions.

So, Ms. Fowlkes, please proceed. Welcome.

**STATEMENT OF LISA M. FOWLKES, CHIEF,  
PUBLIC SAFETY AND HOMELAND SECURITY BUREAU,  
FEDERAL COMMUNICATIONS COMMISSION**

Ms. FOWLKES. Thank you. Good morning, Chairman Thune, Ranking Member Nelson, and members of the Committee. Thank you for the opportunity to appear before you to discuss our Nation's emergency alerting systems.

The false ballistic missile warning issued on January 13 by the State of Hawaii was absolutely unacceptable. It resulted in widespread panic, and the extended period it took to correct the error, nearly 40 minutes, compounded the problem. Looking beyond the immediate consequences of the mistake, which were serious in and of themselves, this cry of wolf damaged the credibility of emergency alert messaging, which can be dangerous when a real emergency occurs.

The Commission acted swiftly to open an investigation into the matter. That investigation is ongoing, but based on current information, it appears that the false alert was a result of two failures. First, simple human error. Second, the state did not have safeguards or process controls in place to prevent the human error from resulting in the transmission of a false alert.

Last week, the FCC sent two employees to interview representatives of the Hawaii Emergency Management Agency and other stakeholders. The Hawaii Emergency Management Agency tells us that it is working with its vendor to integrate additional technical safeguards into its alert origination software and has changed its protocols to require two individuals to sign off on a transmission of test and live alerts.

We are quite pleased with the level of cooperation we have received from the leadership of the Hawaii Emergency Management Agency thus far. We are disappointed, however, that one key employee, the person who transmitted the false alert, is refusing to cooperate with our investigation. We hope that person will reconsider.

Moving forward, the Commission will focus on ways to prevent this from happening again. Federal, state, and local officials throughout the country need to work together to identify any vulnerabilities to false alerts and do what is necessary to fix them. We also must ensure that should a false alert nonetheless occur, a correction is issued promptly in order to minimize confusion.

Emergency alerting systems provide timely and lifesaving information to the public, and we must take all measures to bolster and restore the public's confidence in these systems. While the incident in Hawaii is very present in our minds, we cannot lose sight of the fact that the Wireless Emergency Alerts, or WEA, has greatly enhanced public safety.

In the last 5 years, WEA has been used to issue over 33,000 emergency alerts. In California, WEA was used four times in response to the 2017 wildfires in northern California and 16 times for the Los Angeles area wildfires. WEA was also used extensively in all areas affected by the 2017 hurricanes.

The Commission has taken significant steps to enhance alert capabilities by leveraging advancements in technology. In September 2016, the Commission adopted rules to enable wireless alerts to contain more content and to enable support for alerts written in Spanish.

When the WEA program launched in 2012, participating wireless providers were generally required to target alerts to a county or counties affected by the emergency. As of last November, all participating wireless providers are now required to transmit alerts to a geographic area that best approximates the area affected, even if it is smaller than a county. To further improve WEA, next Tuesday, the Commission will vote on an order that would require participating wireless providers to target alerts with an overreach of no more than one-tenth of a mile and require carriers to preserve WEA alerts for 24 hours.

In closing, we look forward to partnering with emergency management professionals from your jurisdictions on the alerting capabilities that they need to use America's public alert and warning systems with confidence during times of crisis.

Thank you, and I look forward to any questions you may have.  
[The prepared statement of Ms. Fowlkes follows:]

PREPARED STATEMENT OF LISA M. FOWLKES, CHIEF, PUBLIC SAFETY AND HOMELAND SECURITY BUREAU, FEDERAL COMMUNICATIONS COMMISSION

Good morning, Chairman Thune, Ranking Member Nelson, and Members of the Committee. Thank you for the opportunity to appear before you to discuss our Nation's emergency alerting systems.

The false alert issued on January 13th by the State of Hawaii, in which recipients were warned of an imminent ballistic missile attack, was absolutely unacceptable. It resulted in widespread panic, and the extended period it took to correct the error—nearly 40 minutes—compounded the problem. Looking beyond the immediate consequences of the mistake, which were serious in and of themselves, this cry of

“wolf” damaged the credibility of alert messaging, which can be dangerous when a real emergency occurs.

The Commission acted swiftly in the wake of this incident to open an investigation into the matter. That investigation is ongoing—we had investigators on the ground in Hawaii just last week—but based on information gathered to date, it appears that the false alert was issued as a result of both human error and the state having insufficient safeguards and process controls in place to prevent that human error from resulting in the transmission of a false alert. The Hawaii Emergency Management Agency has advised us that it is working with its vendor to integrate additional technical safeguards into its alert origination software, and has changed its protocols to require two individuals to sign off on the transmission of tests and live alerts.

Moving forward, the Commission will focus on what steps need to be taken to prevent a similar incident from happening again. Federal, state, and local officials throughout the country need to work together to identify any vulnerabilities to false alerts and do what’s necessary to fix them. We also must ensure that corrections are issued immediately after a false alert goes out in order to minimize panic and confusion. Emergency alerting systems provide timely and life-saving information to the public, and we must take all measures to bolster and restore the public’s confidence in these systems.

The incident in Hawaii is very present in our minds. But I don’t want this incident to detract from the benefits of and success stories behind wireless emergency alerts. In this respect, I would like to describe the FCC’s efforts to support Wireless Emergency Alerts, commonly known as “WEA,” since the system was deployed in April 2012. In the last 5 years, WEA has been used to issue over 33,000 emergency alerts. WEA helps individuals take protective action in cases of threats to life and property. The National Weather Service alone has sent well over 21,000 WEA alerts. For example, we understand that local California officials used WEA four times in response to the 2017 wildfires in Northern California, and sixteen times for the Los Angeles area wildfires. Representatives from the California Governor’s Office of Emergency Services and officials in Marin and Mendocino Counties reported successful use of WEA to move citizens in their jurisdictions to safety. WEA was also used extensively in all areas affected by the 2017 hurricanes, including 21 WEA alerts sent in Puerto Rico alone.

WEA also helps to recover missing children. In 2016 alone, 179 AMBER Alerts were issued in the U.S. involving 231 children. Since the system was deployed in 2012, WEA has been credited with the safe return of 25 missing children. For example, on May 14, 2016, in North Las Vegas, Nevada, a 22-month-old child was abducted and driven off in a stolen car. An AMBER Alert was immediately activated and sent out to cell phones using the WEA system. The kidnappers took the child to their friend’s house, and while they were there, the WEA Alert began to arrive on everyone’s phone. The abductors tried to flee, but the friend took the child and the car keys, called 911, and brought the child to a police station. The child was safely rescued, and the kidnappers were arrested.

The Commission places the highest priority on ensuring that emergency management authorities and first responders have the most up-to-date tools available to respond to such events. Since WEA was first deployed in 2012, the Commission has taken significant steps to enhance federal, state, and local alert and warning capabilities to leverage advancements in technology.

In September 2016, the Commission adopted rules to enable wireless alerts to contain more content by increasing message length from 90 to 360 characters and by supporting embedded phone numbers and URLs. It also took action to enable support for alerts written in Spanish and make it easier for state and local authorities to test WEA, train personnel, and raise public awareness about the service.

The Commission also recognized that it is critical for emergency managers to be able to geographically target alerts to only those phones located in areas affected by an emergency. When the WEA program launched in 2012, participating wireless providers were generally required to send the alerts to a geographic area no larger than the county or counties affected by the emergency situation. As of last November, all participating wireless providers are now required to transmit alerts to a geographic area that best approximates the area affected by the emergency situation, even if it is smaller than a county.

But the Commission is not stopping there. Next Tuesday, the Commission will vote on an Order that would require participating wireless providers to target alerts with an overreach of no more than one tenth of a mile. Public safety officials strongly support our proposed action. For example, APCO recently hailed the Chairman Pai’s proposal as a “dramatic enhancement to WEA” that will provide public safety professionals with increased confidence that the system will be able to deliver emer-

gency information more efficiently.<sup>1</sup> State and local governments also support the Chairman’s proposal. For example, Harris County states that the Chairman proposal “will empower local public safety officials with the tools necessary to keep WEA relevant” and that if “adopted in a way that clearly outlines intended expectations and requirements, it will be the single most important improvement to the Nation’s alerts and warnings infrastructure in years.”<sup>2</sup>

Enhanced geo-targeting is one among several pertinent improvements currently before the Commission that would make WEA a more powerful tool for saving lives during emergencies. By matching alerts to phones actually located within the affected area, the Commission’s proposal would assist emergency response efforts and instill confidence in the public’s reliance on WEA. Because people will be receiving alerts that are relevant to them, they will be less likely to opt out of the program and more likely to take the alerts they receive seriously. We are also currently considering how to provide emergency managers with the ability to transmit alerts in languages in addition to English and Spanish, alerts that can contain pictures, and alerts that could provide the public with the ability to reply. While WEA is a powerful alert and warning tool, it is also important to note that it is only one among several tools available to emergency managers to alert and warn their communities.

For example, the Emergency Alert System, or EAS, is the traditional system used to provide alerts and warnings to the public over broadcast, cable and satellite systems, and remains a vital tool for emergency managers, state and local authorities. The Commission has been working to modernize the EAS to ensure that it remains a relied upon and useful tool. For example, just this past December the Commission adopted a new “blue alert” code for both EAS and WEA that will allow alert originators to provide targeted information to the public regarding threats to law enforcement and to help apprehend dangerous suspects. In addition, in November the Chairman circulated an item for the Commission’s consideration that would modernize and streamline the filing process for EAS state plans.

Over the past several years, the FCC has also worked closely with FEMA to conduct nationwide tests of the EAS to assess its reliability and effectiveness. The FCC has also successfully deployed the EAS Electronic Reporting System, or ETRS, a user-friendly database that allows the over 25,000 EAS participants to report test results in close to real time. The most recent test was conducted on September 27, 2017, and our initial analysis of the ETRS results shows improvements in most areas. For example, results indicate more than 95 percent of participants received the test alerts, and nearly 92 percent successfully retransmitted the alert—both up from the previous year. Further, more than twice as many EAS Participants retransmitted the Spanish language version of the alert than was the case in 2016. In all, we are encouraged by the results and will continue to strive to find ways to enhance the EAS as well.

In closing, we look forward to partnering with emergency management professionals from your jurisdictions on the alerting capabilities that they need to use the EAS and WEA with confidence during crises when every second counts.

Thank you for your consideration, and I look forward to any questions you may have.

The CHAIRMAN. Thank you, Ms. Fowlkes.  
Mr. Bergmann.

**STATEMENT OF SCOTT BERGMANN, SENIOR VICE PRESIDENT,  
REGULATORY AFFAIRS, CTIA**

Mr. BERGMANN. Chairman Thune, Ranking Member Nelson, and members of the Committee, on behalf of CTIA, thank you for the opportunity to testify about the critical and successful role of Wireless Emergency Alerts.

CTIA commends this Committee for its focus today on this issue and for your leadership on it over the last decade, extending back to the passage of the WARN Act in 2006 which created the Wire-

<sup>1</sup>Ex Parte Letter from Jeffrey S. Cohen, Chief Counsel, APCO, PS Docket No. 15–91 (Jan. 12, 2018).

<sup>2</sup>Ex Parte Letter from Francisco Sanchez, Deputy Emergency Management Coordinator, Harris County, PS Docket No. 5–91 (Jan. 19, 2018).

less Emergency Alert, or WEA, program, a partnership between the wireless industry, government, and public safety officials.

Since its launch 5 years ago, Wireless Emergency Alerts have become a critical resource for hundreds of millions of Americans who rely on mobile phones every day. Today, wireless providers serving more than 99 percent of U.S. subscribers voluntarily participate in WEA. More than 33,000 WEA alerts have been sent, helping to locate those in danger and warn of imminent threats or dangers.

CTIA members are deeply committed to ensuring that we remain a trusted and effective source for the American public. So the recent false alert in Hawaii underscores the importance of the functionality, integrity, and credibility of our Nation's Emergency Alert System. With that in mind, my testimony will address the vital role that WEA plays, our ongoing efforts to enhance its capabilities, and the importance of maintaining the system's integrity.

A decade ago, this committee recognized the value of Wireless Emergency Alerts to reach nearly every American. Now, as more than half of American households are wireless only, WEA has become an essential tool for public safety officials to reach Americans wherever they are. WEA is part of our broader national alerting system.

Federal, state, and local authorities transmit emergency messages to FEMA. FEMA authenticates and formats messages for distribution to the various national alerting systems, and wireless providers deliver authorized WEA messages to the targeted area as determined by alert authorities. Wireless providers do not control message content and do not exercise discretion over whether to transmit messages.

Because local authorities can target WEA alerts to a particular area, they're extremely effective at reaching those Americans directly impacted by an emergency. WEA's unique sound and vibration help ensure that everyone is aware of the alert. Wireless Emergency Alerts have helped to return abducted children; they have warned millions of people in the path of severe weather events, like flooding, tornadoes, and wildfires; and they've helped law enforcement catch terror suspects in the 2013 Boston Marathon bombing and 2016 Chelsea bombing in New York City.

We continue to expand WEA's capabilities. In the past year, the FCC has adopted rules to expand the content that authorities can send to consumers, adding additional characters, Spanish language, Blue Alerts, and downloadable content from embedded links, as well as support for additional state and local testing. We've supported these enhancements because our members are committed to the proven lifesaving success of WEA.

Next week, the FCC plans to adopt an order that further enhances WEA's geo-targeting capabilities. Today, WEA alerts can be targeted down to the cell sector level, a significant improvement over WEA's initial county level targeting. Given the expanding public safety mission for WEA, CTIA supports the FCC's proposed enhanced geo-targeting framework, which can help public safety minimize over-alerting through innovative, device-based solutions. Significant standards, deployment, and testing work still needs to be done to support this capability. For this reason, we'll be challenged

to meet the FCC's proposed timeline of November 2019, but the wireless industry will work intently to do so.

Finally, the false alert in Hawaii underscores that public confidence in our national alerting systems must remain our highest priority. Alert originators must send warnings appropriately and judiciously, FEMA must authenticate messages quickly and accurately, and providers must deliver messages to the targeted area. We commend this committee and Chairman Pai for working quickly to identify lessons learned from this event, and we appreciate Commissioner Rosenworcel's call for additional best practices.

There will be many lessons learned, but this event also demonstrated that the technical capabilities of the WEA system work. For this reason, policymakers and the public should have confidence that in the event of a real emergency, authenticated information can be disseminated rapidly and effectively through the Wireless Emergency Alert System. CTIA is proud of the critical role that WEA plays in our national alert system and is committed to working collaboratively to maintain public confidence.

Thank you for the opportunity to testify, and I look forward to your questions.

[The prepared statement of Mr. Bergmann follows:]

PREPARED STATEMENT OF SCOTT BERGMANN, SENIOR VICE PRESIDENT,  
REGULATORY AFFAIRS, CTIA

Chairman Thune, Ranking Member Nelson, and members of the Committee, on behalf of CTIA and our member companies throughout the wireless ecosystem, thank you for the opportunity to appear before you today to discuss the critical and successful role of Wireless Emergency Alerts within our Nation's emergency alert system.

CTIA commends the leadership of this Committee for its passage of the Warning, Alert, and Response Network (WARN) Act, which created the Wireless Emergency Alert (WEA) program, a public-private partnership between the wireless industry, government, and alert originators. The Wireless Emergency Alert system was launched in 2012 and is jointly implemented and administered by the Federal Communications Commission (FCC) and Federal Emergency Management Agency (FEMA). In the five years since the launch of the Wireless Emergency Alert system, it has become a critical resource for the hundreds of millions of Americans who rely on their mobile phones every day.

CTIA and its member companies are proud of the wireless industry's role in the Wireless Emergency Alerts system. Today, all four national wireless providers and dozens of regional providers, serving more than 99 percent of all U.S. subscribers, are voluntarily participating in the Wireless Emergency Alert system; transmitting thousands of alerts each year and helping our public safety professionals save lives.<sup>1</sup> Ensuring that Wireless Emergency Alerts remain a trusted source of emergency information for the American public is one of our highest priorities.

The mistaken alert that was issued in Hawaii on January 13, 2018 is of course at top of mind for policymakers, CTIA and its member companies, all WEA stakeholders, and the public writ large. The Hawaii incident underscores to *all* of us the importance of the functionality and integrity—and credibility—of our Nation's emergency alert systems. Any incident that affects the public's confidence in emergency alerts risks undermining the effectiveness of all alerting systems, including WEA. We lose the effectiveness of emergency alerting if people simply ignore or opt-out of receiving these critical messages.

For this reason, we are deeply committed to doing our part to ensure that Wireless Emergency Alerts remain a trusted and effective tool for public safety. With that in mind, I would like to address the program's success, the cooperative voluntary framework on which WEA operates, ongoing efforts to enhance the geo-

<sup>1</sup> *Wireless Emergency Alerts*, Order on Reconsideration, 32 FCC Red 9621, 9625 n.28 (2017); see also, CTIA, *How Wireless Emergency Alerts Help Save Lives*, <https://www.ctia.org/consumer-tips/how-wireless-emergency-alerts-help-save-lives> (last visited Jan. 23, 2018).

graphic targeting (geo-targeting) of alert messages, and, finally, the importance of maintaining the system’s integrity.

### The Success of Wireless Emergency Alerts

The Wireless Emergency Alert system is the newest and most effective means the Nation has for warning Americans of imminent dangers and other incidents requiring immediate action. A decade ago, Congress and this Committee wisely recognized the value of wireless in reaching nearly every American and set in motion the creation of the Wireless Emergency Alert system. Now, as more than half of American households have cut the cord and are “wireless only,”<sup>2</sup> alerts and warnings sent to our mobile devices are the obvious choice for public safety officials to make sure we can take action wherever we are, whatever we are doing.

Wireless Emergency Alerts delivered to wireless devices in a targeted area—with their unique sounds, high volumes, and forceful vibrations—save lives. The WEA system sends out Amber Alerts and shelter-in-place directives, warns citizens of fires, floods, and tornados, and otherwise keeps the public apprised of real threats. Because WEA messages are delivered to consumers with capable mobile devices in an area targeted by local authorities, they are an extremely effective mechanism for reaching those Americans that are directly impacted by an emergency. It is no wonder that some have called Wireless Emergency Alerts “the government’s most potent public notification system.”<sup>3</sup>

Since 2012, more than 33,000 Wireless Emergency Alerts have been sent to consumers with WEA-capable devices.<sup>4</sup> These messages have asked the public for help in locating someone in danger or warned Americans of imminent threats or disasters.

For example, in 2015, an AMBER Alert for a missing child was sent through the WEA system to wireless consumers in Minnesota. A citizen in the area received the alert on their smartphone, saw a black Honda Civic that matched the description issued in the alert, and called 9–1–1. Authorities responded and rescued the child from the abductor. This is just one of many such stories—a total of 910 children have been successfully recovered through the AMBER Alert system, as of January 8, 2018.<sup>5</sup>

Wireless Emergency Alerts have also been used extensively to warn the public of severe weather emergencies. This past fall, more than 300 Wireless Emergency Alerts warned people around Houston, Texas about Hurricane Harvey and its rising floodwaters, more than 200 Wireless Emergency Alerts warned Floridians about the strong winds of Hurricane Irma, and Wireless Emergency Alerts played a critical role in warning many Californians about the devastating wildfires.<sup>6</sup> In 2013, 29 children were saved from a tornado ripping through a soccer building in Windsor, Connecticut when the camp manager received a Wireless Emergency Alert seconds before the tornado touched down.<sup>7</sup> Even as the system was only months old in 2012,

<sup>2</sup>Stephen J. Blumberg & Julian V. Luke, Ctrs. for Disease Control & Prevention, Nat’l Ctr. for Health Statistics, *Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July–December 2016* (May 2017); see also, Alina Sleuth, Nat’l Pub. Radio, *The Daredevils Without Landlines—And Why Health Experts Are Tracking Them* (May 4, 2017), <https://www.npr.org/sections/alltechconsidered/2015/12/03/458225197/the-daredevils-without-landlines-and-why-health-experts-are-tracking-them>.

<sup>3</sup>Aaron C. Davis & Sandhya Somashekhar, *The only California county that sent a warning to residents’ cellphones has no reported fatalities*, Wash. Post, Oct. 13 2017, [https://www.washingtonpost.com/investigations/the-only-california-county-that-sent-a-warning-to-residents-cellphones-has-no-reported-fatalities/2017/10/13/b28b5af4-b01f-11e7-a908-a3470754bbb9\\_story.html?utm\\_term=.cd24bb9ecf9c](https://www.washingtonpost.com/investigations/the-only-california-county-that-sent-a-warning-to-residents-cellphones-has-no-reported-fatalities/2017/10/13/b28b5af4-b01f-11e7-a908-a3470754bbb9_story.html?utm_term=.cd24bb9ecf9c)[https://www.washingtonpost.com/investigations/the-only-california-county-that-sent-a-warning-to-residents-cellphones-has-no-reported-fatalities-/2017/10/13/b28b5af4-b01f-11e7-a908-a3470754bbb9\\_story.html?utm\\_term=.cd24bb9ecf9c](https://www.washingtonpost.com/investigations/the-only-california-county-that-sent-a-warning-to-residents-cellphones-has-no-reported-fatalities-/2017/10/13/b28b5af4-b01f-11e7-a908-a3470754bbb9_story.html?utm_term=.cd24bb9ecf9c).

<sup>4</sup>Mark Lucero, Fed. Emergency Mgmt. Agency, *Integrated Public Alert & Warning System 16* (Aug. 8, 2017), [https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.napsgfoundation.org%2Fwp-content%2Fuploads%2F2017%2F08%2FFEMA\\_IPAWS\\_Keynote\\_MarkLucero\\_20170708.pptx](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.napsgfoundation.org%2Fwp-content%2Fuploads%2F2017%2F08%2FFEMA_IPAWS_Keynote_MarkLucero_20170708.pptx)[https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.napsgfoundation.org%2Fwp-content%2Fuploads%2F2017%2F08%2FFEMA\\_IPAWS\\_Keynote\\_Mark-Lucero\\_20170708.pptx](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.napsgfoundation.org%2Fwp-content%2Fuploads%2F2017%2F08%2FFEMA_IPAWS_Keynote_Mark-Lucero_20170708.pptx).

<sup>5</sup>Amber Alerts, Nat’l Ctr. for Missing & Exploited Children, <http://www.missingkids.com/gethelpnow/amber> (last visited Jan. 23, 2018).

<sup>6</sup>See generally CTIA, *Hurricane Harvey: Resiliency & Relief*, <https://www.ctia.org/hurricane-harvey/> (last visited Jan. 16, 2018); Davis & Somashekhar, *supra* note 3; Richard Perez-Pena, Fire Alert Sent to Millions of Cellphones Was California’s Largest Warning Yet, N.Y. Times, Dec. 7, 2017, <https://www.nytimes.com/2017/12/07/us/cellphone-alerts-california-fires.html>.

<sup>7</sup>Rick Wimberly, *Powerful Wireless Emergency Alerts Success Stories at Congressional Hearing*, Emergency Management, Oct. 24, 2013, <http://www.govtech.com/em/emergency-blogs/alerts/Powerful-Wireless-Emergency-Alerts-Success-Stories-at-Congressional-Hearing.html>; see

public safety officials were using Wireless Emergency Alerts to warn the people in the path of Superstorm Sandy.<sup>8</sup>

Local emergency officials have also used Wireless Emergency Alerts to inform the public of ongoing law enforcement and terrorist threats, and to enlist their assistance. In 2013, Massachusetts authorities sent a shelter-in-place Wireless Emergency Alert while apprehending the suspects in the Boston Marathon Bombing.<sup>9</sup> And in 2016, the City of New York sent a description of the suspect in the Chelsea Bombing through a Wireless Emergency Alert, leading to the suspect's arrest within hours of the alert.<sup>10</sup>

For more than a decade, the wireless industry has worked diligently to develop and deploy this capability in its networks and devices. Through cell broadcast technology unique to the WEA system, mobile providers can broadcast Wireless Emergency Alerts from cell-sites in areas targeted by local emergency officials to wireless devices in a timely manner. Today, there are millions of devices throughout the U.S. that are capable of receiving these critical messages.

Wireless Emergency Alerts are part of the broader national alerting system, known as the Integrated Public Alert and Warning System (IPAWS), managed by FEMA. Through IPAWs, authorized federal, state, and local authorities, known as alert originators, transmit emergency messages to a FEMA-operated system. FEMA's system authenticates and formats the message for distribution across a variety of channels, including the WEA system. Of note, the substance and distribution channel of an alert is determined by the federal, state, or local government that originates the alert. Wireless providers deliver authorized WEA messages to the target area identified by the alert originator without input into the content of a message or discretion over whether or not to transmit it.

Reflecting the evolution of our mobile wireless networks and devices, the capabilities of the Wireless Emergency Alert system continue to advance in a remarkably short timeframe. In less than six years since the voluntary Wireless Emergency Alert system was first launched, the FCC has adopted various updates and improvements—and is poised to adopt another one next week. In 2016, the FCC put rules in place to increase the maximum alert length from 90 characters to 360 characters for LTE wireless systems and future networks, as well as support additional local and state testing capabilities, Spanish-language alerts, and embedded links and phone numbers. In particular, the FCC noted that allowing embedded references to be included in WEA alerts “will dramatically improve WEA’s effectiveness” and that commenters identified this capability as “the most critical among all of our proposed improvements to WEA.”<sup>11</sup>

CTIA’s member companies are working hard to add these new capabilities into the WEA system, and have already answered public safety’s call to ensure that alerts are capable of including embedded links so that consumers will be able to go to a website to see a photo of the missing child, or a suspected terrorist.

### Enhanced Geo-targeting Requirements

In the coming days, the FCC plans to adopt another order focused on the geo-targeting capabilities of the WEA system. The FCC initially mandated targeting at the county level, but many participating providers began voluntarily supporting geo-targeting of Wireless Emergency Alerts well below the county level to enable local officials to minimize over-alerting. An appropriately targeted WEA message can mitigate the possibility that an alert will cause distress or panic in areas not actually at risk and enhance public confidence in the emergency alert system. Today, participating providers deliver Wireless Emergency Alerts to a targeted area that best approximates the area identified by the alert originators down to the cell-sector level.

While the ability to geo-target Wireless Emergency Alerts down to the cell-sector level will remain a constant feature of the system, we share the expressed goal of public safety leaders to harness innovative location technologies to further minimize the possibility of over-alerting. For this reason, CTIA supports the framework for enhancing the geo-targeting capabilities of the WEA system that the FCC will consider next week. If adopted, a participating wireless provider would be required to

*also*, David Owens & Chloe Miller, *National Weather Service Confirms Two Tornadoes Monday*, Hartford Courant, July 2, 2013, [http://articles.courant.com/2013-07-02/news/hc-tornado-warn-0702-20130701\\_1\\_windsor-locks-dome-national-weather-service-confirms](http://articles.courant.com/2013-07-02/news/hc-tornado-warn-0702-20130701_1_windsor-locks-dome-national-weather-service-confirms).

<sup>8</sup>Wimberly, *supra* note 7.

<sup>9</sup>*Id.*

<sup>10</sup>David Goodman & David Gelles, *Cellphone Alerts Used in New York to Search for Bombing Suspect*, N.Y. Times, Sept. 19, 2016, <https://www.nytimes.com/2016/09/20/nyregion/cellphone-alerts-used-in-search-of-manhattan-bombing-suspect.html>.

<sup>11</sup>*Wireless Emergency Alerts*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 11112, 1113711137–38 (2016).

match the alert area by distributing the WEA message to 100 percent of the alert area that the carrier's network serves with no more than a tenth of a mile overshoot. To deliver this new capability, wireless providers will shift from a solely network-based approach to target the alert area to one that also harnesses location capabilities within mobile devices. Once available, this capability will give local alert originators an additional tool to minimize the possibility that someone will receive an irrelevant Wireless Emergency Alert.

The draft geo-targeting order proposes an aggressive implementation timeline that will present a significant challenge for wireless providers and device manufacturers. As the proposed Order notes, significant standards, deployment and testing work remains to support this enhanced geo-targeting capability throughout the chain of the alert—from alert originators to FEMA's gateway to wireless networks to mobile devices. If adopted, the wireless industry—including participating providers and device manufacturers—will work intently, as it always has, in an effort to meet the FCC's aggressive deadline.

#### **Maintaining Public Confidence After Hawaii**

The January 13, 2018 incident in Hawaii has underscored for all of us—government and industry alike—that the success of Wireless Emergency Alerts relies on the public's trust. Trust in the system hinges on execution. Alert originators must send Wireless Emergency Alerts appropriately and judiciously; the FEMA authentication and verification process must be expeditious and robust; and participating wireless providers must deliver WEA messages to the targeted area. Only this way will the public know that when a Wireless Emergency Alert is sent, the danger is real.

This Committee should be commended for focusing on what errors led to the mistaken Hawaii alert and on drawing out lessons learned. Going forward, we should strive to make sure that another harm does not take root—namely, the danger that the next time an alert is issued, that some will not take it seriously or refuse to evacuate.

CTIA and the wireless industry also commend FCC Chairman Pai for swift action to investigate the cause of this incident and appreciate FCC Commissioner Jessica Rosenworcel's recent recommendations and suggestions for new best practices around the training and use of our Nation's emergency alert system. Notably, Congress recognized the need to train and equip our alert originators to more effectively use our Nation's emergency alert system when the IPAWS Modernization Act became law in 2015. And in 2016, the FCC encouraged emergency management agencies to engage in proficiency training exercises that could help minimize system failures and ensure that any failures are corrected during a period when no real emergency exists. CTIA strongly supports all of these efforts and encourages FEMA and other public-safety authorities to offer training opportunities for alert originators that promise to bolster WEA's utility and credibility going forward.

While we expect there are many lessons to be learned from the experience in Hawaii, and many will be cautionary, we should also acknowledge that wireless networks and devices performed exactly as designed and effectively delivered and presented the alert message as received from the FEMA gateway. The speed and effectiveness of its delivery should give policymakers and the public confidence that in the event of a real emergency, the Wireless Emergency Alert system will disseminate information rapidly and accurately to Americans—wherever they may be.

\* \* \*

CTIA and the wireless industry are proud of the critical role that Wireless Emergency Alerts play in our Nation's emergency alert system, and are committed to continue working collaboratively with public safety professionals at every level of our government to maintain public confidence in Wireless Emergency Alerts.

Thank you for the opportunity to testify today. If CTIA can provide any additional information you would find helpful, please let us know.

The CHAIRMAN. Thank you, Mr. Bergmann.  
Mr. Lisenco.

#### **STATEMENT OF MICHAEL LISENCO, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO**

Mr. LISENCO. Good morning, Chairman Thune, Ranking Member Nelson, and distinguished members of the Committee. It is a great

privilege to address you this morning in my capacity as a member of the Board of Directors of the American Radio Relay League, the National Association for Amateur Radio.

ARRL has approximately 175,000 members throughout the United States, and we represent the interest of the 750,000 licensed amateur or ham radio operators in the U.S. Amateur radio is an avocational pursuit. We are radio experimenters and we are communicators, but there's also a very serious side to amateur radio. It is far more than a hobby.

With our license from the FCC comes a responsibility to promote emergency communications during times of disaster. The ARRL maintains memoranda of understanding with the U.S. military, FEMA, and DHS. We provide all of the emergency communications for the American Red Cross and the Salvation Army. To quote former FEMA Administrator Craig Fugate, "As much as we think we are sophisticated with technology, things break. Seeing how amateur radio in a disaster, in a crisis, oftentimes was the one thing that was still up and running, a ham transmitting can mean the difference between life and death."

Amateur radio operators are included in emergency communications plans in every state of the union. The role played by hams in disasters was on full display in the fall of 2017, which saw four major hurricanes make landfall in the United States and its territories. These storms caused significant damage of Florida, Texas, Puerto Rico, and the Virgin Islands. In advance of, during, and in the aftermath of each one, trained amateur radio operators using radio stations in their homes and portable and mobile facilities responded in large numbers.

Hams provided critical weather spotting information from their residences to the National Weather Service and the National Hurricane Center. They joined dozens of their brethren in Puerto Rico and the U.S. Virgin Islands after Hurricane Maria to provide restoration communications for the U.S. military, FEMA, DHS, and first responders. They provided health and welfare communications where no other method of communication was available.

They provided all of the communications for the Red Cross and the Salvation Army. The Red Cross requested an ARRL dispatched an additional 50 amateur radio operators equipped with emergency communications kits outfitted free of charge by ARRL to help restore communications in the immediate aftermath. And, as discussed in my written testimony, they did a multitude of other things, all at no cost to the public or to the Federal Government.

In Hawaii, our teams are prepared to assist in the case of any emergency, whether natural or manmade. For example, in the immediate aftermath of Maria, an amateur operator in Maui was highlighted on Hawaii News Now for his work in connecting a Maui family with relatives in Puerto Rico. He did so using an effective outdoor antenna and a station from his residence, which he would also utilize in the event of a disaster in Maui.

After the January false alarm, MSNBC's Left Field reported that, "In the case of electromagnetic pulse from a blast, 90 percent of the people will be without communication, and ham radio is actually one of the ways that you will be able to hear what is hap-

pening throughout the islands, whether or not people are OK, who is alive.”

While ARRL and the amateur radio community rarely need anything from the Federal Government, what we must have is an effective outdoor amateur radio antenna in order to practice our avocation on our properties. The ability to practice our craft is crucial to our being ready to perform when needed in a crisis. To do that, we must have some sort of effective outdoor antenna. Deed restricted communities undermine the ability of the amateur radio community to be ready when disaster strikes. These restrictions prevent any outdoor antennas of any size or height. Today, 90 percent of all new housing starts are done so under the restrictions, all of which preclude amateur radio antennas.

What Senators Wicker and Blumenthal have done with the Amateur Radio Parity Act is to strike a necessary balance between a ham’s desire to install an antenna and the HOA’s right to govern the size and placement of these antennas. It is important to note that the bill is different than the legislation opposed by Ranking Member Nelson in 2015. At that time, the distinguished senator from Florida expressed reservations about the legislation, stating that he supported amateur radio, but, “there must be a happy compromise.”

Based on his stated concerns, ARRL began intense negotiations with Community Associations Institute, the only national association for homeowners’ associations, lasting several months. These discussions culminated in a happy compromise endorsed by CAI and ARRL, as well as the American Red Cross and the Salvation Army, and the compromise bill has passed the House by voice vote twice. We hope that this committee will extend its support to the Wicker-Blumenthal bill, S. 1534, to ensure that the amateur radio community can continue to be relied upon when a disaster strikes.

Again, I thank the Committee for the opportunity to speak to you today about the role of amateur radio in a disaster. I look forward to answering any questions.

[The prepared statement of Mr. Lisenco follows:]

PREPARED STATEMENT OF MICHAEL LISENCO, ON BEHALF OF ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO

**I. Summary of Testimony**

1. In emergencies, prior to and during disasters and their immediate aftermath, when other communications systems have failed or are overwhelmed, volunteer Amateur Radio operators are ready, willing, able and prepared to provide alerting information, restoration communications; interoperable communications for first responders which lack that capability; health and welfare message traffic, and operations and support communications for disaster relief organizations and served agencies.

2. Radio Amateurs quickly re-establish communications during that critical window of time between a disaster’s occurrence and the re-establishment of normal communications.

3. Amateur Radio operators contributed substantially to the dissemination of accurate information following the recent missile alert in Hawaii; and Amateur Radio is a key component of communications planning in the event of an actual ballistic missile attack in Hawaii.

4. The extensive Amateur Radio deployment of 50 volunteers from the U.S. mainland to Puerto Rico, and the long-term dedication of more than 75 resident Amateur Radio operators in the first few days of the recovery effort following the devastation there was the best example of the value of Amateur Radio in disaster relief communications. Virtually all communications infrastructure on the Island was destroyed

or crippled by the high winds. Amateur Radio operators provided restoration communications for weeks following the hurricane, and in fact local radio Amateurs are still providing communications for power utilities.

5. The value of Amateur Radio in disasters, and in emergency alerting, weather spotting and in message traffic relay for served agencies is due not only to the extensive training and the ubiquitous geographic distribution of residential Amateur Radio stations throughout the United States. It is due also to the fact that hardened Amateur Radio stations with effective outdoor antennas capable of operation on multiple frequency allocations throughout the radio spectrum at a moment's notice are available ahead of time. Absent that, Amateur radio cannot provide the kind of volunteer public service communications for which it is deservedly well-known.

6. Had the level of devastation that occurred in Puerto Rico happened in Hawaii instead, the Amateur Radio response that was provided so effectively after Hurricane Maria could not have been provided to the same extent in Hawaii. The difference is that in Puerto Rico, there is not the same level of ubiquitous, preclusive private land use regulations that preclude the installation of effective outdoor antennas at the licensees' residences. These must be in place and operational well before a disaster occurs.

7. Given the prevalence and increasing numbers of private land use regulated communities in the United States, residential Amateur Radio antennas cannot be installed or maintained in most of them. An Amateur Radio licensee who must live in a deed restricted community currently will almost inevitably be subject to either (1) a complete prohibition of his or her Amateur Radio operation, or (2) the unlimited jurisdiction of a community association or architectural control committee or board which makes decisions concerning Amateur Radio antennas without any standards or limits whatsoever.

8. There is now pending before this Committee the Amateur Radio Parity Act of 2017. The House version of this Bill, H.R. 555 passed the House unanimously in January of 2017. The current Senate Bill, S. 1534 was introduced in July of 2017 by Senators Wicker and Blumenthal. This is a balanced, completely bipartisan bill that would fully protect both the entitlement of Amateur Radio volunteers to be able to utilize their FCC-issued licenses to provide emergency, disaster relief and public service communications, while at the same time protecting the aesthetic concerns and the jurisdiction of homeowners' associations. The Bill is supported by ARRL and the Community Associations Institute (CAI) which is the only national association of homeowners' associations. ARRL and CAI, at the urging of members of this Committee, cooperatively and carefully negotiated the precise, current language of the Bill, and both organizations have stated their support for it. Homeowner's associations can enact reasonable written rules governing height, location, size and aesthetic impact of, and installation requirements for, outdoor antennas and support structures for amateur communications. Absent this legislation, the volunteer emergency communications services provided by Amateur Radio will be precluded. We urge the Committee in the strongest terms to please approve and send this legislation forward without delay.

STATEMENT OF MICHAEL LISENCO ON BEHALF OF ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO

*“ . . . After sheltering in place, you basically turn on AM/FM radio for word from Hawaii Civil Defense and other authorities. The story we are working on for MSNBC Left Field is that, in the case of electromagnetic pulse from a blast, and they expect . . .90 percent of the people will be without communication, and ham radio is actually one of the ways that you will be able to hear what is happening throughout the islands, whether or not people are OK, who is alive, where that might be. Again, let's be very clear, this is a false alarm, but if it were to happen they have a system in place, a very specific, stringent, structured system for this, if this was to happen.”*

Joel Soboroff, reporting for MSNBC's *Left Field* from Waikiki Beach on Saturday, January 13, 2018. <http://www.msnbc.com/msnbc/watch/breaking-down-the-false-alarm-hawaii-missile-threat-1136479811623>

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Thank you, Chairman Thune, Ranking Member Nelson and other members of the Committee for this opportunity to testify on the topic of emergency alerting and emergency communications.

**The Amateur Radio Service**

I have had the privilege of serving for the past 5 years as a member of the Board of Directors of ARRL, the national association for Amateur Radio (formally known

as the American Radio Relay League, Incorporated). I also chair its legislative advocacy committee. ARRL is a Connecticut non-profit association which has for more than a century represented and advocated the interests of the Nation's 750,000 Amateur Radio operators, all of whom are licensed by the Federal Communications Commission to serve the public, especially in times of natural and other disasters. Amateur Radio exists for a number of reasons, principal among which (as the FCC regulations put it) is its value "to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications." The FCC has at various times described the Amateur Service as a "model of volunteerism" and a "priceless public benefit."

Amateur Radio operators are not first responders. But in emergencies, and during disasters and their immediate aftermath, when other communications systems have failed, volunteer amateur radio operators are ready, willing, able and prepared to provide restoration communications; interoperable communications for first responders which lack that capability; operations and support communications for disaster relief organizations and served agencies such as the American National Red Cross and the Salvation Army, and as ubiquitous sources of information for emergency alerting. Amateur Radio is durable and is not susceptible to the same disruptions caused by disasters as are broadband networks; cellular networks; and even public safety dispatch systems. This is because Amateur Radio does not rely on centralized or decentralized infrastructure. Because of Amateur Radio operators' technical self-training and flexibility, they can and do provide emergency communications with no infrastructure at all. Amateur Radio mobile and portable facilities can be established on site and at strategic locations off-site to provide reliable, immediate disaster relief communications instantly, within or outside the disaster area, over any path distance and to any location whatsoever. This flexibility makes it possible to provide communications for first responders and served agencies, as well as temporary interoperability facilities for first responders. As but a single example, in the aftermath of Hurricane Katrina, Amateur Radio operators provided communications from helicopters to first responders on the ground to facilitate rescue operations.

Amateurs are best known for their immediate responses to hurricanes, tornadoes, earthquakes, snow and ice storms, floods and other natural disasters, and their preparedness for immediate, organized deployment in large numbers. They are immediately available in large numbers during and in the aftermath of such events, and they provide communications in support of public safety and disaster relief agencies and state emergency response agencies without any advance request to do so. The level of organization and preparedness comes from regular drills, exercises and emergency simulations and they are integrated into emergency planning at all levels of government. ARRL conducts emergency communications certification courses that provide the educational background necessary for such serious work.

The large volume of public-spirited volunteer communicators in the Service stems from the fact that reliable, hardened Amateur Radio stations capable of local, regional or worldwide communications, with effective, outdoor antennas are widely and evenly distributed throughout the country, located in the residences of the licensees. There are, as the result, always going to be radio Amateurs inside and outside a disaster area, already on site before the disaster strikes, ready to transmit local conditions to first responders and state offices of emergency management. Because of this ubiquity, Amateur Radio serves as an early weather alerting service through programs designed to prepare the public for natural disasters and weather-related emergencies.

#### **Emergency Alerting Via Amateur Radio**

The Amateur Radio Service interfaces with the National Weather Service (NWS) and the National Hurricane Center (NHC). The SKYWARN program of the NWS provides thousands of volunteers nationwide to serve as the "eyes" of the NWS using Amateur Radio stations at their residences when severe weather is imminent. These spotters also provide critical meteorological data that cannot be observed at ground level by NWS radar systems. While there are some trained SKYWARN spotters who participate from their personal vehicles as mobile units positioned at certain strategic locations, the majority of SKYWARN participants provide their detailed observations from their home station locations. Effective and reliable stations and antennas are needed in order for these home stations to provide these detailed observations to NWS and NHC. The timeliness of SKYWARN reports submitted via Amateur Radio confirms what NWS sees on weather radars; it substantially increases the precision of severe weather forecasting; and it allows NWS to increase the warning and preparation times for those citizens in harm's way. The program works very well: according to statistics from the NWS, approximately 290,000 trained SKYWARN spotters—the majority being licensed Amateur Radio operators—

assist the NWS in providing accurate, reliable and immediate information on approximately 10,000 severe thunderstorms, 5,000 floods and 1,000 tornadoes on average each year.

The NHC, on the campus of Florida International University in Miami, is the second major National Weather Service program supported by Amateur Radio. For the past 32 years, volunteer operators at the NHC's dedicated Amateur Radio station (FCC callsign WX4NHC) have been present during any hurricane activation. Because reports arrive from the Atlantic and Pacific basins, High Frequency (HF) communication serves as a core component of this valuable NWS tool. The utility of HF communications in this life-saving effort requires that Amateur stations provide their information to the NHC via effective, reliable HF stations from the residences of licensees.

### **The Resiliency of Amateur Radio Disaster Relief Communications**

Radio Amateurs have proved over and over again that because of their training and their willingness to bring personal radio gear into disaster areas that they can quickly re-establish communications during that critical window of time between a disaster's occurrence and the re-establishment of normal communications. These are the times of great threat to life and property: the "hottest" phase of the disaster's aftermath. Radio Amateurs are also trained and prepared to provide supplementary communications after normal communications have been restored. We have always been interoperable. For us it is not a goal, it is a fact. Although we are not first responders, we have a long history of cooperating with first responders when needed to help them perform their essential tasks for the public.

The absence of disaster-susceptible communications infrastructure inherent in Amateur Radio insures a unique level of resilience in times of disaster and afterward. This is not found in broadband networks, conventional or trunked public safety communications systems or cellular architecture. Surely enough, improvements in public safety systems and interoperability permit more reliable communications and a better level of organization among disparate public safety agencies and at different levels of government. That said, however, no one should believe that current generation public safety interoperable networks, be they broadband or narrowband, and regardless of the way these networks are designed, will be sufficiently durable in all disaster incidents. Because of their system architecture, all are subject to disruptions, overload, or failure under certain circumstances. It will continue to be necessary in the future for Amateur Radio operators to provide emergency alerting data, temporary communications and facilities for first responders and disaster recovery agencies at the outset of local and regional disasters and it will be necessary to provide temporary interoperability between and among first responders and disaster relief agencies. Former Federal Emergency Management Agency (FEMA) Director Craig Fugate, at an FCC earthquake forum concerning emergency communications planning several years ago, stated that:

"Finally, I have got to get back to Amateur Radio. . . They are the first ones in the first days getting the word out as the other systems come back up. I think that there is a tendency (to believe) that we have done so much to build infrastructure and resiliency in all of our other systems, we have tended to dismiss that role -when everything else fails, Amateur Radio often times is our last line of defense. And I think at times we get so sophisticated, and we have gotten so used to the reliability and resilience in our wireless and wired and our broadcast industry, and in all our public safety communications, that we can never fathom that they will fail. They do. They have. They will. When you need Amateur Radio (operators), you really need them."

Amateur Radio is available, ready, willing and able to do provide these services at no cost to anyone. As former FEMA Administrator Fugate noted, Amateur Radio operators are always there, using their own radios, on their own frequencies, and "nobody pays them." Indeed, we will be there "when all else fails."

### **The Hawaii Missile Alert**

It is indeed an instructive time to discuss the value of Amateur radio in emergency alerting, emergency communications generally and disaster relief communications. Amateur Radio was involved in the effort to achieve normalcy in Hawaii after the recent ballistic missile alert. The Hawaii State Radio Amateur Civil Emergency Service (RACES) network was activated on UHF frequencies and also using a VHF inter-island repeater network. Amateur stations monitored the alert/cancellation activity. Only 20 hours earlier, the RACES network had completed an Amateur Radio communications exercise State Emergency Operations Center. The phone lines into the State EOC were soon overwhelmed and congested, and the website was over-

whelmed with public inquiries. At these times, Amateur radio volunteers are normally present at either or both of the state or county EOC offices and at the State Warning Point, Hawaii Emergency Management Agency.

The Hawaii false alert notice (*i.e.*, the cancellation notice) was circulated on various information mechanisms after 13 minutes. That was picked up and relayed through the Amateur Radio networks. The cellphone alert system could not be used for the cancellation notice until prior FEMA approval was obtained. Once that was obtained, the cancellation alert went out to the cellphone network after 38 minutes from the initial alert. There were lessons learned by the Hawaii Amateur Radio community from this event. The emergency communications certification training that Amateurs in Hawaii are given urges use of the warning siren as an alerting mechanism to trigger for Amateur Radio emergency communications networks, but in this case the sirens were not activated, thus causing some confusion. Amateur Radio emergency communications certification classes specifically teach about warnings, the three kinds of siren warning sounding in Hawaii (including the attack or wailing sound) and about preparedness for all hazards. This incident has expanded discussions in Hawaii about the means by which Amateur Radio networks are activated.

Hawaii Amateur Radio operators report that Amateur Radio played an important role in relaying the cancellation notice. For example, an early Coast Guard cancellation notice was relayed by an Amateur Radio operator to the Amateur Radio networks and disseminated very quickly. The State Warning Point waited to obtain FEMA authorization to send out a particular type of message that would show up on cellular phones similarly to the original alert message. Many people had received the warning first on their cell phones through the Wireless Emergency Alert (WEA) system, but a cancellation on that same system was substantially delayed; the result was that Amateur Radio networks disseminated validated cancellation information long before the cellular networks were able to do so.

There is no single model for effective communications in advance of, during and after disasters and emergencies. Emergencies range from a localized situation affecting one community, or an insular area such as Puerto Rico or the Virgin Islands, to regional events affecting multiple counties or larger areas. Wide area disasters may affect multiple states or entire regions of the country (such as a hurricane which, in its course, can impact states from Florida up the entire Eastern portion of the United States to Maine, as occurred in Hurricane Sandy, and/or the entire Gulf coast and southern United States into Texas as occurred with Hurricanes Katrina and Rita). Because of the differences in propagation at various times of the day and the distances and paths that emergency communications may need to cover, the ability for Amateurs to utilize any and all of their authorized frequency allocations [from medium-frequency (MF) through ultra-high frequency (UHF) and above] efficiently is necessary in order for the Service to be fully effective in disasters and emergency relief. All of these allocations require the use of an effective outdoor antenna.

#### **Hurricane Maria and Amateur Radio's Role in Recovery Operations in Puerto Rico**

Because of the utter devastation that occurred in Puerto Rico from Hurricane Maria recently, the approximately 500 local Amateur Radio operators who are actively and regularly available there for emergency communications purposes were not all available to provide restorative and other emergency communications because many of the operators were concerned at the outset with basic survival for themselves and their families. ARRL estimates that there were approximately 75 Amateur Radio stations throughout the Island providing communications at all times during the entire process—from before the Hurricane hit until very late in the recovery effort. Indeed, even today, local Amateur Radio operators are providing communications for power utility workers doing power grid restoration. However, it was obvious at the outset that additional resources were going to be needed. ARRL called upon the mainland Amateur Radio community to provide up to 25 two-person teams of highly qualified licensees. Amateur Radio volunteers responded immediately, without hesitation. Fifty of the Nation's most accomplished Amateur Radio operators responded within 24 hours to the call to deploy to Puerto Rico and provide emergency communications for a three-week tour of duty, sponsored by the American National Red Cross.

The group's principal mission was to move health-and-welfare information from the Island back to the U.S. mainland, where that data was used by the Red Cross. The group remained on the island for 3 weeks. ARRL equipped each two-person team with a modern digital HF transceiver, special software, a wire antenna, a power supply and all the connecting cables, fitted in a rugged waterproof container.

In addition, ARRL sent a number of small, 2,000-Watt portable generators as well as solar-powered battery chargers of the variety the U.S. military uses on extended deployments, and some VHF and UHF equipment for local use. ARRL's Ham Aid program adapted and provided nearly \$75,000 in Amateur Radio equipment to the volunteers that deployed to Puerto Rico and to the ARRL members resident in Puerto Rico. Some of this equipment is still being used in Puerto Rico for the recovery effort. Because Hurricane Maria devastated the island's communications infrastructure, without electricity and telephone service, and with most of the cell sites inoperative, millions of Americans were cut off from communicating. Shelters were unable to reach local emergency services. Nor could people check on the welfare of their family members. The situation was dire and the Amateur Radio response was timely in order to address the crisis. Referred to as the "Force of 50," the Amateur Radio volunteers provided communications for local law enforcement and utility managers; island-to-mainland health-and-welfare traffic, and outgoing communications from the more remote areas of Puerto Rico in the mountains to San Juan and other municipios. Fire officials in Puerto Rico facilitated safe passage, food, shelter, and water for the volunteers at fire stations on the island, as needed. The volunteers initially gathered at the convention center in San Juan, which served as the Puerto Rico Emergency Management Agency (PREMA) headquarters. The Force of 50 and local radio Amateurs staffed VHF and HF nets at the American Red Cross temporary headquarters, despite severe damage to their own homes. The nets covered nearly two-thirds of the island. In addition to the health and welfare traffic and Red Cross information transfer, the volunteers handled traffic to and from the power company, Autoridad de Energía Eléctrica (AEE), and state and local authorities relative to power restoration efforts. Twelve team members were assigned to provide communication for engineers tasked with repair to the island's power distribution centers.

The Red Cross Headquarters net, staffed by radio Amateurs, provided 24-hour operation in preparation for an anticipated emergency involving the Guajataca hydroelectric dam. Amateurs provided notices to residents in the districts of Quebradillas, Isabela, and San Sebastián of the danger. An Amateur volunteer was stationed in Quebradillas to provide emergency communication if needed and to maintain contact between AEE and its Monacillo control center. An Amateur Radio station was installed and an operator embedded at the Puerto Rico Emergency Operations Center (PREOC). Local radio Amateurs established VHF communication capabilities at 51 hospitals throughout the island, so they could have direct contact with the PREOC. The Amateur embedded at the PREOC served as liaison between the PREOC and the FEMA Emergency Support Function (ESF-2) task force, relaying information among the Red Cross, ARRL, FEMA, and the ESF-2 task force.

Two team members deployed in the westernmost end of the Island. "Team Oeste (Mayagüez)" were stationed at a Red Cross shelter in Mayagüez, providing the only emergency communication link from that city to San Juan initially. That team relayed needs and conditions of those living in and around Mayagüez and coordinated water delivery and other urgent necessities, such as non-perishable food items, extended-life dry milk, blankets, baby formula, and dust masks. They provided communications for the medical staff set up at the Palacio de Recreacion y Deportes, a sports facility in Mayagüez converted to a medical facility. Lists of medical needs were relayed to the Red Cross as well as to FEMA and Puerto Rico's Emergency Management Agency. An HF station with data transfer capability and a VHF/UHF station were set up in the FEMA disaster field office, and volunteers reported in by radio from around the island to post situation reports. Amateur operators were also posted at four power-generation facilities, at the request of the power company. Superacueducto, the water utility, asked for several Amateur Radio Operators to help in re-establishing water flow from Arecibo to San Juan. Four Amateur Radio volunteers were positioned to accompany and provide VHF communication at Red Cross distribution centers on a daily basis. Two volunteers also were sent to Culebra Island to establish VHF and HF communication there. Those volunteers provided the first communications from Culebra following the storm.

Critical to the value of the Amateur Radio response to Hurricane Maria were the partnerships that had been established long before the event. ARRL has national partnerships with, *inter alia*, the American Red Cross, the Federal Emergency Management Agency, and The Salvation Army. ARRL worked closely with the Red Cross in Puerto Rico and, due to the work of local volunteers associated with ARRL in Puerto Rico, a network of relationships across the island has been in place for many years. Amateur Radio emergency and disaster preparedness through building partnerships allows our volunteers to be integrated into response in an effective way on exceptionally short notice. The radio Amateurs in Puerto Rico are extremely well-organized, and, given the severity of the damage and personal deprivations suffered

by everyone, including the vast majority of local Amateur Radio licensees, they responded in large, and sufficient, numbers. They are deserving of a great deal of credit for their performance in the face of tremendous personal loss and sacrifice.

ARRL worked with partners such as U.S. Army Military Affiliate Radio Service members, the National Hurricane Center, and the Salvation Army Team Emergency Radio Network (SATERN) so the broader Amateur Radio response was coordinated and made effective use of each group's strengths and assets.

There were several lessons learned from this extensive test of Amateur Radio's emergency capabilities. Throughout Puerto Rico, normal communications were disrupted, isolating communities and hampering emergency response. Amateur Radio operators extensively utilized conventional, analog VHF systems and HF radio e-mail systems to successfully pass lifesaving messages between government and non-government entities. Through our volunteers deployed from the mainland to Puerto Rico and the resident ARRL Puerto Rico Section, radio Amateurs effectively integrated into the FEMA Joint Field Office (JFO) in ESF-2 (Communications). This allowed for an effective flow of information between Amateur Radio volunteers throughout the island and Federal responders responsible for communications restoration. The Department of Homeland Security SHARES program also played a key role in providing Amateur Radio support to JFO ESF-2 when the volunteers there were at the end of their tour. Finally, radio Amateurs provided support to military responders when clear channel HF communications were needed for military missions. Among other things, Amateur Radio operators provided HF communications for the military when helicopters were out of line-of-sight range and needed to communicate with base stations obscured by the extremely mountainous terrain in Puerto Rico.

#### **Effective Outdoor Antennas are Critical to the Amateur Radio Response in Disasters**

The expertise radio amateurs have with HF communications is tremendously valuable when frequency selection, interference and propagation hinder response and where, as in Hurricane Maria, there is a large volume of message traffic between the U.S. Mainland and geographically separated Caribbean islands. In this case perhaps the most urgent lesson learned is that *the value of an active and engaged group of local Amateur Radio operators with pre-existing effective outdoor antennas cannot be overstated. Local radio amateurs understand their communities, the threats faced, and the response culture better than do volunteers from the outside.* The "Force of 50" would not have been successful but for the exceptional spirit of volunteerism by Puerto Rico radio Amateurs and their relatively unfettered ability to erect effective outdoor antennas, and the fact that those local Amateur stations were in place and ready to provide communications long before the 2017 hurricane season. It was local radio Amateurs, using stations at their residences and portable stations who initiated restorative communications operations before the Force of 50 arrived, and they continued those efforts many weeks after the Hurricane.

Amateur Radio operators need very little from the Federal Government. We do what we do because we love the medium and we are public spirited volunteers who derive personal satisfaction from using our avocation for the benefit of people in need of help. We do, however, have a very urgent need that will cost no one anything, nor create any controversy whatsoever. The Amateur Service, in order to ensure the continuation of emergency communications readiness, absolutely requires some relief from the ubiquitous presence of, and the exponential increase in unreasonable and unnecessary private land use regulations in the United States that, essentially universally preclude the ability of licensed radio amateurs to erect and maintain any effective outdoor antenna at all. This is without any doubt the largest threat to the Amateur Radio community's ability to respond to disasters, severe weather, and other threats to lives and property in the United States.

Perhaps the most important element of the ability of local radio Amateurs throughout Puerto Rico to be immediately ready to provide the restorative communications that they did provide very effectively is that they had the ability, long before the Hurricane arrived, to install and maintain effective outdoor antennas for the HF and VHF and UHF bands at their residences. There is not yet in Puerto Rico the prevalence of preclusive private land use regulations that now exists in the rest of the United States, but the situation is dire in most other suburban, urban and exurban areas. It is important in analyzing this issue to view the Amateur Service as a decentralized network of individual stations working together in emergency situations and in preparing for the same. The essentially uniform distribution of Amateur Radio stations in residential areas makes those individual stations very important in a given weather disaster in the area where those stations are located when commercial communications systems are disabled or overloaded, or in other

areas for purposes of relay of message traffic. Amateur stations are often called on to report severe weather, and the geographic distribution of stations in residential areas is critical for this function as well. Furthermore, while modern Amateur stations are portable, and transportable to remote disaster locations, it is critical to have stations located at one's residence in order to regularly participate in disaster preparedness training exercises and drills. It is impossible to prepare adequately for the use of Amateur Radio communications in emergencies when the ability to self-train and self-educate by means of an effective, reliable Amateur Radio station at one's residence is precluded by the inability to install a functional outdoor antenna.

#### **Private Land Use Regulations Increasingly Preclude Amateur Radio Disaster Response**

There is no substitute for the ready availability of a residential Amateur Radio station in daily operation from a licensee's residence. The licensee cannot be expected to have the ability to communicate into or from a disaster site unless he or she has a station with an effective outdoor antenna capable of operation on multiple frequency bands at once, which is ready to be pressed into service from the licensee's residence at a moment's notice. The major value of Amateur Radio emergency communications is during the first hours, days or weeks of a disaster when commercial and public safety communications facilities are not functional or are overloaded. Stations must be ready to operate when needed and emergency communications are most often conducted from a licensee's residence. For some disabled persons, home stations represent their only opportunity to participate in emergency communications. Private land use regulations which exclude Amateur Radio stations from entire communities preclude emergency communications readiness.

According to the Community Associations Institute, 90 percent of new housing starts in the United States are subject to private land use regulations. This is because, now, essentially all lenders for land developers in the United States require, as a condition for funding a new housing development, all require a declaration of covenants be filed with the subdivision plat. Given the prevalence and increasing numbers of private land use regulated communities in the United States, residential Amateur Radio antennas cannot be installed or maintained in most of them. An Amateur Radio licensee who must live in a deed restricted community currently will almost inevitably be subject to either (1) a complete prohibition of his or her Amateur Radio operation, or (2) the unlimited jurisdiction of a community association or architectural control committee or board which makes decisions concerning Amateur Radio antennas without any standards or limits whatsoever. Those private land use regulations (or the application of them) which prohibit outdoor Amateur Radio antennas or transmissions, and thus preclude Amateur Radio entirely; those which fail to permit the installation of effective outdoor Amateur Radio antennas; and those which do not constitute the minimum practicable regulation to accomplish the (aesthetic) goals of a homeowner's association are unreasonable and unnecessary.

#### **The Amateur Radio Parity Act of 2017**

There is now pending before this Committee the Amateur Radio Parity Act of 2017. The House version of this Bill, H.R. 555 passed the House unanimously in January of 2017. An identical predecessor House Bill, H.R. 1301 passed the House unanimously in the 114th Congress. The current Senate Bill, S. 1534 was introduced in July of 2017 by Senators Wicker and Blumenthal. This is a balanced, completely bipartisan bill that would fully protect both the entitlement of Amateur Radio volunteers to be able to utilize their FCC-issued licenses to provide emergency, disaster relief and public service communications, while at the same time protecting the aesthetic concerns and the jurisdiction of homeowners' associations. The Bill is *unopposed*: it has the support—in writing—of both ARRL and the Community Associations Institute (CAI) which is the only national association of homeowners' associations. ARRL and CAI, *at the urging of members of this Committee*, cooperatively and carefully negotiated the precise, current language of the Bill, and both organizations have stated their support for the present version.

The Bill calls on the Commission to enact rules that prohibit the application to Amateur Radio stations of deed restrictions which preclude Amateur Radio communications. Also prohibited are those deed restrictions which do not permit an Amateur Radio operator living in a deed-restricted community to install and maintain an effective outdoor antenna on property under the exclusive use or control of the licensee; and those restrictions which do not impose the minimum practicable restriction on Amateur communications to accomplish the lawful purposes of a Homeowner's Association (HOA) seeking to enforce the restriction. Amateurs who wish to install an antenna in a deed restricted community may be required to notify and obtain prior approval of the HOA. HOAs can preclude Amateur antennas in common

areas (*i.e.*, property not under the exclusive use of the licensee). HOAs can enact reasonable written rules governing height, location, size and aesthetic impact of, and installation requirements for, outdoor antennas and support structures for amateur communications but the effective outdoor antenna requirement is paramount. We are in desperate need of this legislation, and without it, the volunteer emergency communications services provided by Amateur Radio will be precluded. We urge the Committee in the strongest terms to please approve and send this legislation forward without delay.

ARRL is grateful for the opportunity to submit this testimony and to make our concerns known to the Committee. We look forward to the opportunity to bring to your attention the good work of a large number of volunteers who look forward to every chance to serve their country whenever and wherever they are needed.

The CHAIRMAN. Thank you, Mr. Lisenco.  
Mr. Matheny.

**STATEMENT OF SAM MATHENY, CHIEF TECHNOLOGY  
OFFICER, NATIONAL ASSOCIATION OF BROADCASTERS**

Mr. MATHENY. Good morning, Chairman Thune, Ranking Members Nelson and Schatz, and members of the Committee. My name is Sam Matheny, and I am the Chief Technology Officer at the National Association of Broadcasters.

On behalf of the thousands of free local television and radio broadcasters in your hometowns, thank you for inviting me to testify on the Emergency Alert System and how broadcasters fulfill their roles as first informers and how innovation will allow broadcasters to do even more to keep viewers and listeners safe during emergencies.

Broadcasters take seriously their role as the most trusted source of news and emergency updates. Whether it's preparing listeners and viewers for the coming storm, directing them to needed supplies and shelter during the disaster, or helping rebuild in the aftermath, local stations are part of the communities they serve, and broadcasting is sometimes the only available communications medium in an emergency when wireless networks fail. Morning Consult recently found that the American people turn to broadcasters in times of emergency by a factor of more than three to one.

Broadcasting is unique for the following reasons. First, broadcasting covers virtually everyone. Broadcast signals reach more of the U.S. population than any other communications medium. Broadcasting is localized. Local broadcast stations can deliver market-specific information as well as national alerts. Broadcasting has no bottlenecks. An emergency alert can reach millions of people simultaneously without concern over network congestion.

Broadcasting is redundant. There are numerous independently operated stations in each market that deliver alerts. Broadcasting is resilient. Stations often operate with backup equipment, generators, and fuel supplies to keep stations on the air.

Broadcaster information is actionable. Radio and television can provide enough information to enable people to understand what is happening and what steps they should take. And, finally, broadcasters are trusted. They are members of the local community and speak not just as an authority, but as a neighbor.

But broadcasters do more than just deliver messages to the public. Broadcasters are also the backbone of the Emergency Alert System. Working with the government since the 1950s, broadcasters have operated and evolved a nationwide wireless network to deliver

emergency alerts. This daisy chain of broadcast stations ensures that emergency alerts can be delivered independent of internet connectivity and even when power outages disrupt other forms of communication. In fact, broadcasters serve as primary entry points for emergency communications to the public and are thus part of the solution from beginning to end.

Because broadcasting plays such an important role in this critical communications infrastructure, it is vital that the government support and foster broadcasting. I'd like to briefly outline three key areas for your consideration.

First, the Next Generation Television Standard, ATSC 3.0, which was recently approved by the FCC, has many features that will improve emergency alerting, including the ability to wake up sleeping devices, more precise geo-targeted alerts, and sending rich multimedia files such as weather radar images, evaluation maps, and even video files with detailed explanations about the emergency and what to do. New regulatory hurdles should not be placed in our way as we deploy Next Gen TV.

Second, broadcasters are in the final and most complicated phase of the incentive auction, the repack phase. Nearly 1,000 television stations will be moving to new channel assignments, and this will also impact over 700 FM radio stations on co-located towers. Broadcasters need the time and money required to make these moves successfully and without impairing the public's ability to access emergency alerts. I ask for your support of the Viewer and Listener Protection Act, sponsored by Senators Moran, Schatz, and eight of their colleagues, and urge its passage, as no station should be forced off the air due to a lack of funds or unreasonable time constraints.

And, third, broadcasters have been working with the wireless phone manufacturers and service providers on market-based solutions to activate FM chips in smartphones. Our market efforts have been successful with one very notable exception—Apple. We believe Apple should be encouraged to activate FM, the FM tuner, in future models of their iPhone as it will improve people's access to vital information in times of disaster.

In conclusion, in emergencies large and small, our nation and your hometowns benefit from a strong and vibrant broadcast industry. FEMA calls broadcasting a redundant, resilient, and necessary alerting pathway. I agree.

Thank you for having me here today. I look forward to answering any questions.

[The prepared statement of Mr. Matheny follows:]

PREPARED STATEMENT OF SAM MATHENY, CHIEF TECHNOLOGY OFFICER,  
NATIONAL ASSOCIATION OF BROADCASTERS

### **Introduction**

Good morning, Chairman Thune, Ranking Member Nelson and members of the Committee. My name is Sam Matheny and I am the chief technology officer at the National Association of Broadcasters (NAB). On behalf of the thousands of free, local television and radio broadcasters in your hometowns, thank you for inviting me to testify on the Emergency Alert System (EAS), how broadcasters fulfill their role as first informers and how innovation will allow broadcasters to do even more to keep viewers and listeners safe during emergencies. In addition to my role at NAB, I bring another perspective to these issues having spent nearly 20 years with Capitol Broadcasting Company, parent to WRAL-TV in Raleigh, North Carolina.

There I worked directly with state emergency officials to help develop demonstrations of mobile alerts and warnings. Additionally, I have experience serving on committees that advise the Federal Communications Commission (FCC) and Federal Emergency Management Agency (FEMA) on a wide variety of network security, reliability and public safety issues, and specifically on how to improve our Nation's Integrated Public Alert and Warning System (IPAWS).

#### **Broadcasters' Unique Role and Experience in Emergency Alerting**

As the most trusted source of news and emergency updates, Americans' first choice is to turn to local television and radio stations to get the information they need to keep safe during emergencies. Local stations are part of the communities they serve, and broadcasters do not hesitate to put themselves in harm's way to bring critical information to their neighbors. Whether it is preparing listeners and viewers for the coming storm, helping them access needed supplies and shelter during the disaster or helping towns and cities rebuild in the aftermath, local broadcasters take seriously their commitment to protect the public.

Recent fires and mudslides on the West Coast and hurricanes in Texas, Florida and Puerto Rico have once again shined a bright light on our Nation's emergency preparedness and response abilities. While this is obviously true for first responders and all levels of government, it is also true for broadcasters. FCC Chairman Ajit Pai reminded us just last week that in times of crisis first responders and first informers work hand in hand, noting that "[b]roadcasting and public safety have been lifelong companions." While this sort of cooperation received national attention during the recent hurricanes and wildfires, it was just as true two years ago when over 60 tornados ravaged parts of 11 states across the southeast and just a few months later when quick and devastating floods overtook large parts of West Virginia and Virginia in what the National Weather Service (NWS) referred to as a One Thousand Year Event. In each of these cases and in countless others, broadcasters were there, serving their listeners, viewers and communities.

Broadcasters invest heavily to ensure they remain on the air in times of disaster. Facilities often have redundant power sources, automatic fail-over processes, auxiliary transmission systems, generator back-up and substantial fuel reserves. Because of the strength of the broadcast infrastructure and the power of the airwaves, local radio and TV stations are often the only available communications medium during disasters, even when cell phone and wireless networks can be unreliable. FEMA officials have noted that in times of emergency there is no more reliable source of information than local broadcasters. To give just one example, last year after Hurricane Maria moved through Puerto Rico and left much of the island without power and access to even basic information, not only were local television and radio stations continuing to provide lifesaving alerts and information all throughout the ordeal, but afterward NAB partnered with numerous state broadcaster associations, FEMA and local officials in Puerto Rico to deliver 10,000 battery-powered radios to island residents who had no other lifeline.

This unique combination of trust and reliability is why, in addition to our ongoing, comprehensive news coverage of emergencies, broadcasters form the backbone of the Emergency Alert System. We have all seen or heard the familiar announcement "The following is a test of the Emergency Alert System. This is only a test." EAS connects over-the-air broadcast radio, television and cable systems, and is used during sudden, unpredictable or unforeseen events. EAS participation is technically voluntary, yet virtually all radio and television stations participate, and do so proudly, even purchasing EAS equipment at their own expense. Today, the EAS, along with Wireless Emergency Alerts (WEAs) and National Oceanic and Atmospheric Administration (NOAA) Weather Radio, is part of the IPAWS umbrella, enabling state and local emergency managers to integrate with the national alert and warning infrastructure.

#### **Lessons Learned from Nationwide EAS Test and Recent Events**

In September 2017, FEMA, in coordination with the FCC and the NWS, conducted a nationwide test of the reliability and effectiveness of the EAS. Generally, the results of the test were positive, as a majority of EAS participants received and retransmitted the message, and participation improved compared to a previous test in 2016.

However, as the residents of and visitors to Hawaii know all too well after this month's false alert of a nuclear attack, our Nation's public alert and warning system and the emergency managers that originate messages are not always perfect. In an instant, one emergency manager's accidental mouse click triggered a local and national panic, compounded by a lack of information and delay in disseminating cor-

rect information via official channels. Several items arising out of this unfortunate incident are worth discussing.

First, the most important takeaway is that the EAS system worked; radio and television broadcasters were on the case. The mistaken EAS alert was immediately relayed by broadcasters, who verified the source of the message but must rely on emergency managers for validation of the emergency. Broadcasters also stood by to disseminate the All Clear message. Unfortunately, it took emergency managers 38 minutes to issue the needed follow-up EAS message. In the meantime, broadcasters used other means to confirm and report that it was a false alarm as soon as possible. The EAS system is a critical part of the trust that people place in broadcasters during an emergency, but human error in the issuance of EAS alerts can impair that trust. Going forward, NAB hopes to work with all the relevant stakeholders to minimize, if not eliminate, any vulnerabilities in the EAS process that may hinder broadcasters from carrying out their duty as first informers.

Second, broadcasters support the continued implementation by FEMA of the IPAWS Modernization Act, legislation authored by Senators Ron Johnson (WI) and Claire McCaskill (MO) and passed by Congress in 2016. This legislation recognized that the continued success of EAS will depend on the expertise and ability of local authorities to fully and effectively deploy it. Broadcasters applaud FEMA's ongoing efforts to train state and local authorities on the proper use of the system, and support this legislative effort to incentivize state and local officials to participate in training. Especially after Hawaii, it is more important than ever that local emergency managers know exactly how and when to trigger an EAS alert.

Third, this Committee and the FCC should consider whether current WEAs provided by the wireless industry are sufficient to adequately alert and warn recipients in times of emergency. Twenty years after the pager was supplanted by the brick phone, then the flip phone and now the smartphone, a WEA delivers text only emergency information to recipients, often with fewer characters than a tweet. Often, these alerts simply direct recipients to "check local media." A multi-stakeholder FCC advisory committee that I served on recommended that WEA be improved by increasing the number of characters from 90 to 360 so the alerts would be more informative and useful. Further, this committee also recommended that WEA include embedded links and phone numbers so recipients could quickly gain access to additional information. These suggested enhancements were opposed by the wireless industry before the FCC, but were ultimately authorized in September of 2016 and are awaiting implementation. In contrast, I will detail below several ways in which radio and television broadcasters are innovating to better inform their communities when it matters most.

#### **Policy Choices Critical to Broadcasters' Current and Future Capabilities**

It is important that Congress be mindful of several policy choices that will enable broadcasters to continue and improve upon this important emergency role.

##### *A. Next Generation TV*

Broadcasters are pleased that the FCC recently approved a joint petition of the NAB, Consumer Technology Association, America's Public Television Stations and the Advanced Warning and Response Network Alliance, requesting permission for stations and television receiver manufacturers to voluntarily adopt the world's first Internet Protocol (IP)-based terrestrial television transmission standard, ATSC 3.0, also known as Next Gen TV. Not only will Next Gen TV allow broadcasters to deliver sharp ultra HD images, multichannel immersive sound, interactive features and customizable content, but more importantly it will enable an even more effective distribution of information to the public during disasters and in times of crisis.

With the advanced alerting capabilities of Next Gen TV, a television broadcaster will be able to simultaneously deliver geo-targeted, rich media alerts to an unlimited number of enabled fixed, mobile and handheld devices across their entire coverage area. For example, and at the consumer's discretion, rather than simply running an EAS alert or crawl over regularly scheduled broadcast programming for an entire market's viewing audience (and then only reaching those who are watching), a Next Gen TV signal could wake up enabled devices and reach the entire universe of devices within its television signal contour. Using the rich-media capabilities of Next Gen TV, broadcasters can provide targeted neighborhood-specific alerts that include text, graphics (such as Doppler radar animations or an evacuation route), pictures and even detailed video-on-demand descriptions. The public will have access to all of this actionable, life-saving information even if the power goes out or cellular wireless networks fail.

As broadcasters, we are simply planning to use our spectrum licenses more efficiently and to better serve our viewers. We are not asking for any additional spec-

trum, government funds or mandates. Unlike other communications providers, broadcasters are the only licensees that must ask the FCC for permission to innovate with regard to our transmission standard. However, by adopting Next Gen TV, broadcasters will have much greater flexibility to innovate going forward. As long as new regulatory hurdles are not placed in our way, more and more viewers across the country will benefit from these innovations and the advanced emergency alerting systems that Next Gen TV will enable.

#### *B. Spectrum Incentive Auction Repack*

While broadcasters are innovating for the future, there are also near-term obstacles that without action could prevent emergency alerts from reaching local broadcast viewers and listeners. I'm referring to relocating—or repacking—nearly 1,000 broadcast television stations in the final and most complicated phase of the broadcast spectrum incentive auction. Additionally, in the process of full-power television stations moving frequencies, this will also negatively impact more than seven hundred FM radio stations and countless low-power television and translator stations that are critical to bringing service to rural America. Quite simply, if a television or radio station is forced off the air for any period of time due to circumstances outside of their control, it will diminish the ability of the public to receive critical EAS information.

FCC Chairman Pai testified before this Committee in July that the funds Congress set aside to reimburse broadcasters for relocating are woefully inadequate. Not only does this funding shortfall violate Congress' promise to hold broadcasters harmless but, in some cases, the shortfall is actually preventing stations from making the advanced purchases required to complete their moves in a timely fashion. In fact, according to the most recent quarterly status reports filed with the FCC, 11 percent of stations changing channels are already behind, despite their best efforts to complete their moves. Accordingly, NAB salutes Senators Jerry Moran (KS) and Brian Schatz (HI) for their bipartisan legislation, the Viewer and Listener Protection Act (S. 1632), and urge its passage to ensure that your constituents do not lose access to local television and radio stations during these mandated frequency moves due to a lack of funds or unreasonable time constraints.

#### *C. FM Chip Activation*

The radio broadcast industry has continued to take a leading role in ensuring that a life-saving technology is available to millions of Americans through their smartphones. Over the past several years, broadcasters developed marketplace partnerships with wireless phone manufacturers and providers to turn on—or at least not deactivate—FM receivers that are already installed in devices. This endeavor has grown exponentially over the past few years and, with one notable exception—Apple's iPhone, many Americans are able to access FM radio through their smartphones during times of emergency, even when the cellular network may be down due to congestion or physical damage.

#### **Conclusion**

In conclusion, I would like to thank you again for having me here today to speak about the critical role that broadcasters play in the Emergency Alert System and ensuring the public's safety. This is a mission our industry takes very seriously and we have a track record of fulfilling. We look forward to working with Congress, state and local governments and other industry partners to strengthen the entire system going forward. I look forward to answering any questions you may have.

The CHAIRMAN. Thank you, Mr. Matheny.

I appreciate all of you talking about the important roles that each of the organizations you're here on behalf of play in this overall process.

I'd like to start with Ms. Fowlkes and ask you if you could describe or explain to us the role the FCC plays in the Emergency Alert System and how that interacts with the larger—what they refer to as the IPAWS Communication System. How does the FCC—that's sort of where this committee's jurisdiction and interest is. How do they relate in this whole sequence of events?

Ms. FOWLKES. The FCC is responsible for the distribution part of the EAS and WEA. In other words, we adopt and administer rules that apply to the communication service providers that par-

ticipate in those two systems. For example, with respect to WEA, we have rules that would apply to the participating wireless carriers in terms of how their infrastructure is to react when it receives the alert, and, certainly, issues like geo-targeting are the types of things that we would govern. With respect to the EAS, how their—what capabilities their EAS equipment must have in order to receive and transmit an EAS alert.

We do not have authority over the alert origination piece, which is the part of the system where government agencies decide whether to issue an alert, what the alert is going to—what information the alert is going to include, the target area. That's not within our purview. FEMA oversees the Integrated Public Alert and Warning System. So, basically, you can kind of think of it as three pieces, the alert origination piece; the IPAWS piece, which is FEMA; the distribution by the communication service provider—they are participating under rules that are adopted and administered by the FCC.

The CHAIRMAN. Do you see any need to change the rules based on this incident?

Ms. FOWLKES. That's something that I really can't answer. The FCC doesn't have a position on that. I think in terms of that, it wouldn't be so much changing a rule. It would be something that would have to change in terms of our authority. Certainly, if Congress decided it wanted to make changes, we would stand ready to provide technical assistance with any draft legislation, and, obviously, if Congress enacted some legislation, we'd obviously implement it.

The CHAIRMAN. Well, has the FCC, to that point, ever exerted jurisdiction over alerting authorities to require that there are best practices used and to make sure that there are adequate safeguards in place to prevent false alerts?

Ms. FOWLKES. No.

The CHAIRMAN. Do you believe the Commission has the authority or tools that it needs to ensure that an incident like the one that happened in Hawaii never happens again, currently?

Ms. FOWLKES. Given the fact that the problem was on the alert origination piece, the FCC does not have authority in that area.

The CHAIRMAN. Right. OK. So just to ask, I guess, the obvious question, at least the one intuitively that I thought of when I heard about all this, and that is after you describe this as a three-part process, and the FCC is on the distribution part of it, the origination alert, and then the FEMA clearinghouse function. It seems to me—why, then, did—this is a ballistic missile threat. I mean, this is a DoD—this is like a nuclear war type thing. Why was a state agency involved in that alert?

I understand—you know, we have a lot of experience in my part of the country with weather. The National Weather Service works closely with FEMA, and all those alerts go out if there's a potential tornado threat. But it seems to me, at least in this case—I'm still at a loss as to how—origination of the alert, and then sort of a clearinghouse—how that got so messed up. Does anybody want to take a stab at that?

Ms. FOWLKES. Well, from the FCC's perspective, we really can't give an opinion on that. We are not involved in any way in deciding

who issues what alert. That is a decision that's purely on the alert origination side. In terms of this specific incident, I would have to refer you to FEMA and DHS.

The CHAIRMAN. Mr. Bergmann, could you just briefly talk about the wireless industry's role in that Emergency Alert System? I know you talked about it generally in terms of the role that you all play but, particularly, in light of this recent discussion and whether it has been a success, in your view?

Mr. BERGMANN. Thank you, Chairman Thune. I think time and again we've seen over the last 5 years that Wireless Emergency Alerts are a lifesaver. They've helped return kids who have been abducted, they've helped folks avoid tornados that are rolling through their town, and now we're starting to see them used for Blue Alerts to help identify and locate suspects, and there are a couple of key reasons why.

Geo-targeting—Wireless Emergency Alerts are the only tool in our toolbox right now that helps find you where you are and get that message to you right then. Now, as we continue to improve Wireless Emergency Alerts, we've given the ability to access URLs and embedded links and content so that you can get that information and act on it, and that's a powerful combination.

The CHAIRMAN. OK.

Senator Schatz.

Senator SCHATZ. Thank you, Mr. Chairman.

Ms. Fowlkes, thank you for everything that you and the FCC have been doing. I have a number of questions. I'm going to give them to you all at once, and you can either take them for the record, to the extent that you're still undergoing the investigation in Hawaii, but whatever you can answer would be great.

The first question is, you know, who gets an alert and who doesn't? And in that category, you have the people who turn off the push notifications. So my first question—and, again, I'm going to try to run through them in the interest of time—is if on television, a broadcast TV or cable TV watcher doesn't have the opportunity in settings to turn off those alerts, we presume that everyone must know over the airwaves. Why do we allow people to turn off alerts of that magnitude? Maybe a Blue Alert or an Amber Alert is another matter. But in terms of a missile—an incoming ballistic missile—it seems to me that we should have a system that doesn't give anybody discretion about whether or not they get told that an alert is coming. That's number one.

Number two is that my understanding is that although this is a voluntary system with the providers, the push alerts, that is, we still have about 99 percent coverage. I just want to confirm that's true.

And, then, number three is we now have a bunch of people who are watching TV in different ways, and we still depend heavily, as we should, on our broadcast partners in TV, and let's not forget the importance of radio, especially in rural America. But we also have cord cutters who are on YouTube or Hulu or whatever it may be on their iPad, and no alert comes over that system. So I'm wondering whether the FCC has done any thinking about how to make sure that people who are watching television in a nontraditional way get those alerts?

Ms. FOWLKES. On the first question, I believe you're referring to the opt-out option. Under the WARN Act, people can opt out of all but an alert that is issued by the President. So the ability to—and I should point out with WEA, unlike some other types of subscription-based alerting system, it's an opt-out function versus an opt-in. But with the exception of anything that's coming from the President, the statute allows wireless carriers to offer the option to opt out.

Senator SCHATZ. Right. And one of the questions we have into the National Security Council is why is this not—just very clearly, either by executive order or executive memorandum or by practice, why is an incoming missile not absolutely the kind of thing that would be—that would ride on that President alert? Because although in the drafting of the WARN Act, I'm not sure that that, specifically, was contemplated. This seems to me to be the highest priority alert and, therefore, perfect for a Presidential alert.

Ms. FOWLKES. That's a question that the FCC, again, would not be able to answer.

Senator SCHATZ. Sure. Not your lane. I got it.

Ms. FOWLKES. In terms of—

Senator SCHATZ. Carriers.

Ms. FOWLKES.—the second question, which I believe was about whether it's voluntary—

Senator SCHATZ. No. The second question was carriers, and I believe we have about 99 percent coverage, even though it's a voluntary program. Then the last question is how do we reach cord cutters? How do we reach people who are watching TV in nontraditional ways, not cable, not broadcast?

Ms. FOWLKES. That's a very good question, and that's something that the FCC, you know, can—that's something that we can certainly look at within our authority.

Senator SCHATZ. That's what I was going to ask. Could you get back to us about whether you need additional authorities to try to move that along, or whether you have existing—and if you do have existing authority, I'd like to know what you're going to do to kind of solve that problem? And if you don't, then I think that it's incumbent on the Commerce Committee and the Congress to try to fix that.

And then just a quick clarification—did the Hawaii Emergency Management Agency need FEMA to sign off on a correction to the first push notification?

Ms. FOWLKES. No.

Senator SCHATZ. There were some—

Ms. FOWLKES. They did not need permission from either FEMA or the FCC.

Senator SCHATZ. OK. And then my final question for Ms. Fowlkes is, you know, one of the challenges with our broadcast partners—KSSK is the radio station that is responsible for getting out emergency information. They couldn't get on the phone with the Hawaii Emergency Management Agency. They couldn't get on the phone with PACOM. The Governor was having difficulty getting through to DoD. I was having difficulty getting through to the Governor.

What do we do about the phone line problem when everybody is panicking and trying to communicate with each other—text messages, you know, spotty—and we need to have phone conversations? It seems to me that the FCC, at least in their investigatory process, has to assess the extent to which we had problems, not just in terms of the systems for communicating with each other, in terms of who calls whom, but also that, literally, people who really needed some sort of red phone to be able to talk to each other were not in a position to do so at the technical level.

Ms. FOWLKES. That's something that we can take back and look at as part of the investigation.

Senator SCHATZ. Thank you.

The CHAIRMAN. Thank you, Senator Schatz.

Next up is Senator Klobuchar.

**STATEMENT OF HON. AMY KLOBUCHAR,  
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Thank you very much, Mr. Chairman.

I want to thank Senator Schatz for his leadership. I can't imagine what that must have been like in your state. Of course, many Minnesotans like to go to Hawaii—I wonder why—and I had—my State Director was actually there when this happened and told the story of how he was in a hotel condo with no basement and didn't know what to do. They're taking things, like anything they can find, for an emergency packet. And when you think about that story repeated for families with kids and how scared they were, clearly, changes have to be made.

So I wanted to focus on the legislation that we've been working on with Senator Nelson, and I think it's very important that we upgrade—and I'm Co-Chair of the Next Gen 911 Caucus. First of all, I introduced last Congress with Senator Fischer—and this is more on the rural focus—the Rural Spectrum Accessibility Act, and it was included in the MOBILE NOW Act that passed the Senate.

Mr. Bergmann, how can spectrum disaggregation and other incentives be used to increase wireless coverage in rural areas?

Mr. BERGMANN. So thank you, Senator Klobuchar. We really commend you and appreciate your work on that Rural Spectrum Accessibility Act. As anyone from rural America knows, there are real challenges in making sure that we have service out there in the hardest to serve areas. Geography is challenging. Topography is challenging. Sparse populations make it difficult.

So we need to do things to make it easier to serve out there, and by creating incentives to put spectrum to use in rural areas, we can give providers greater incentive and lower the barriers to building out networks. That's a perfect tie-in to our focus here today, making sure, you know, as you talked about, that we have the most recent 911 services, that we have Wireless Emergency Alerts. All of that is dependent on making sure that we can build out to those rural areas, and we believe that legislation will help advance that goal.

Senator KLOBUCHAR. Thank you.

Ms. Fowlkes, ensuring that the right people receive an emergency alert, as Senator Schatz has pointed out—the FCC will be voting soon on an order that would require wireless providers to

target alerts within one-tenth of a mile. How will the FCC verify that the wireless alerts being sent out satisfy these new requirements?

Ms. FOWLKES. At this point, because the proposal hasn't been voted on by the Commission, I can't get into more details about what the order may or may not say.

Senator KLOBUCHAR. Could you talk about—as Senator Nelson and I worked to pass this bill—how would interoperability between systems increase effectiveness in advanced alert systems?

Ms. FOWLKES. That's an issue I will have to take back.

Senator KLOBUCHAR. OK. The order that the FCC will soon consider will allow local public safety officials to better target emergency alerts. The FCC order will require participating providers to shift from a network-based approach to one that also uses the location capabilities within cell phones to target messages. Once operational, this will minimize the likelihood that someone outside of a disaster area receives an unnecessary alert.

Mr. Bergmann, how will wireless providers work with device manufacturers to ensure this new functionality?

Mr. BERGMANN. Thank you, Senator. I really looked hard at the—of the FCC's order that will be considered next week and something that public safety is identified as the single most important improvement in Wireless Emergency Alerts that we can have. If you sort of turn back the clock when Wireless Emergency Alerts were first launched, you could target to the county level. Today, now, we've improved that. You can target down to the cell sector, to the individual cell tower, and what this capability will let us do is not only use that targeting of the network, but also to use intelligence in the device, to try to figure out whether the device is within that target area that's identified by the alert authorities.

So we think this is going to be a really significant improvement, that it will help address that over-alerting and benefit public safety and consumers.

Senator KLOBUCHAR. OK. Very good.

Mr. Matheny, one last question here. Alerts over traditional broadcast networks have long been a reliable way, and, certainly, these broadcast all the time in Minnesota for floods. When we have floods, daily reports get out there for people. Broadcasters are often able to continue operating during and after severe weather, which we often have in the Midwest.

With new technology, broadcasters may soon be able to deliver additional information to viewers on fixed mobile and handheld devices. What level of targeting will this new capability provide, and what additional alerting measures can broadcasters make available?

Mr. MATHENY. So I believe—thank you, first of all. I believe you're speaking of the Next Gen TV Standard, ATSC 3.0, and the advanced alerting capabilities that are therein. First of all—

Senator KLOBUCHAR. That's a nice way of describing what I said in words. Thank you. Yes, that's exactly what I was talking about.

Mr. MATHENY. The Next Gen TV Standard, first of all, allows for waking up devices. So if a device is asleep, it can be woken up. That is a distinct feature that was designed in. Once the device is woken up, you have the ability to do targeting. The standard has

just been completed, and the actual implementation of that is still being developed. But it will be similar to the—what Mr. Bergmann just described, in using the location of the device to determine if it's in the affected area. We are still talking about a one-way broadcast delivery of the alert.

Additionally, the Next Gen Standard allows for sending multimedia content. So you could think of an evacuation map. You could think of—if it's a tornado, a tornado track map. You could think of an evacuation—like I said, an evacuation, or even a video file that would come down and tell you explicitly what is happening, and that would be a video on demand file. This would be in addition to the normal coverage that our stations provide.

Senator KLOBUCHAR. Very good. Thank you very much.

The CHAIRMAN. Thank you, Senator Klobuchar. And Senator Klobuchar is looking for the Vikings 3.0, too.

[Laughter.]

Senator KLOBUCHAR. OK. Really, did you—I mean, this has nothing to do with the Vikings. This is like about Hawaii that doesn't have an NFL team, I'd like to point out.

The CHAIRMAN. Oh?

Senator KLOBUCHAR. Or South Dakota, for that matter. But then you decide you can take pot shots at my team, but let us not forget that catch.

[Laughter.]

The CHAIRMAN. OK. We've got to go back to the good stuff.

Senator Udall is next, but Senator Sullivan has to preside on the floor. Could he ask his questions next? Would that be OK?

Senator UDALL. Yes.

**STATEMENT OF HON. DAN SULLIVAN,  
U.S. SENATOR FROM ALASKA**

Senator SULLIVAN. Thank you, Senator Udall. And I'll just come clean. We don't have an NFL team, either.

[Laughter.]

Senator SULLIVAN. And thank you, Senator Capito.

I just have a couple of questions, but I'm just going to ask them at the same time for Ms. Fowlkes. It relates to—in a very kind of—a big event that occurred in Alaska just on Tuesday morning. Very early in the morning, a 7.9 magnitude earthquake hit in the Gulf of Alaska. As a result of this earthquake, many of my constituents in coastal communities were alerted to the threat of a tsunami and told to relocate inland. Many did. It was pretty much in the middle of the night.

However, some of our carriers were not able to send the notification because of the lengthy and complicated process required by the FCC to set up emergency alerts on their systems. This is particularly the case with regard to some of our—many of the carriers in Alaska are small companies, so going through the lengthy process—complicated process that the FCC—puts a big burden on them. Are there things that you are looking at with regard to streamlining the process to take into account some of the smaller companies that can participate?

Also related, there have been reports that several coastal Alaska radio stations did not get their EAS signal after the earthquake at

all or got it 30 minutes after the wireless alerts went out on cell phones. Can you speak to that and what you're trying to do on those issues?

And I know I've asked a couple of questions. I thank my colleagues again for indulging me here. It's an important issue for my state and others.

Ms. FOWLKES. I'm not sure what they mean by a long process of the FCC. Under the FCC's rules, if a wireless carrier wants to participate in WEA, they send us a notification saying that they're electing to participate in part, which may mean some of their geographic service areas but not others, or in part could also mean they're not offering WEA on all of their cell phones. Or they can elect to participate in full, which basically means they're participating across all their devices and all their geographic areas.

Once they've done that, the only thing for them to do is what other carriers would be required to do, which is to have the WEA—to be able to offer the WEA capable phones and to be able to make sure that their network is set up to receive WEA alerts. But other than the election itself, there isn't some drawn out process with the FCC that they would have to go through.

Senator SULLIVAN. OK. Well, maybe what we can do is work with you and some of our smaller carriers who have had concerns. And then on the question of the radio stations?

Ms. FOWLKES. That's something we actually are looking into. The tsunami alert that occurred up in Alaska—that's something that we can certainly look into and include in our investigation.

Senator SULLIVAN. Good, because if we can learn from this—I mean, fortunately, there was no tsunami, but it was very scary for hundreds if not thousands of my constituents. It would be good to be able to learn from this so we can be ready next time. Thank you.

The CHAIRMAN. Thank you, Senator Sullivan.

Senator Udall.

**STATEMENT OF HON. TOM UDALL,  
U.S. SENATOR FROM NEW MEXICO**

Senator UDALL. Thank you, Chairman Thune, and thanks to you and Senator Schatz for focusing on these very important questions. My understanding—some of your questions probably could have been answered by FEMA, and FEMA is not at this hearing. I know that you requested them. But it seems to me we should try to get some answers some way. I'm happy to participate in a letter or however you want to do that. But I think we need the answers to your questions.

Based on the answers we've received from this panel—which they don't seem to have the information, especially Ms. Fowlkes—it's FEMA we should be directing things to, don't you think, on some of those questions you were unable to answer? You said you didn't have authority?

Ms. FOWLKES. To the extent that you're asking about anything other than our authority or our regulation of the communication service providers' participation, I would agree.

Senator UDALL. Yes. Ms. Fowlkes, it's my understanding that the states are required to file Emergency Alert System plans with the FCC?

Ms. FOWLKES. Yes.

Senator UDALL. There are a few tribal nations whose reservations cross at least one state line. In the case of New Mexico, we have the Navajo nation, which is in three different states. Are tribal nations under that same requirement of filing?

Ms. FOWLKES. No. The tribal nations do not have to file separate EAS plans. What typically happens is to the extent that there are parts of tribal nations in states, those states take into account the need of those tribal nations. That's certainly how the New Mexico state EAS plan is set up.

Senator UDALL. Good, good. Thank you.

It's important to every bureau of the FCC to engage directly with tribal nations. Have you had the opportunity to work with tribal nations on their unique public safety needs?

Ms. FOWLKES. Certainly. For example, the Public Safety and Homeland Security Bureau oversees an advisory committee, the Communications Security, Reliability, and Operability Council. We have had representatives of tribal nations serving on that committee, in addition to which we had a separate committee of 911 Centers focused on Next Generation 911. We had representatives of tribal nations on that committee as well.

Senator UDALL. And as all of you probably know, it's very important to get these alerts out if you have wireless coverage. But many of these tribal nations don't have it at all, and so you're dealing with an additional huge hurdle in terms of getting emergency alerts and those kinds of things into tribal nations territory.

Mr. MATHENY, I appreciate the work that our local broadcasters do every day, but particularly in times of threats to public safety, such as during wildfire season, which we have in the Southwest and we've seen at various places around the country. As you're aware, broadcasters in New Mexico rely heavily on translators to serve rural communities, and I'm concerned that the ongoing spectrum repack process could leave these rural consumers behind.

It's my understanding that the current allocation of \$1.75 billion is inadequate to meet the needs of the broadcasters relocating. Is there a better estimate of the amount of money that's needed, including the funds needed to ensure that translators do not go off-line in rural areas?

Mr. MATHENY. Thank you, Senator Udall. So you are certainly correct that \$1.75 billion was allocated—

Senator UDALL. And that's the number that I believe Chairman Pai testified to.

Mr. MATHENY. Yes, and so Chairman Pai has testified that there is not enough money.

Senator UDALL. Yes.

Mr. MATHENY. So he is on the record with that as well, and we certainly don't believe there's enough money, either. Based on the initial results of the cost estimates submitted by TV stations, the real number is going to end up being around \$3 billion. So there's a substantial disconnect in the funds available and what's really going to be needed.

So we are certainly keen to see the Viewer and Listener Protection Act that Senators Moran and Schatz have sponsored to take hold and get approved, because we think it's going to be necessary

to make sure that stations stay on the air and are able to continue to operate, including translators. And in the context of this hearing, that certainly means that emergency alerts are still going to be available to those populations.

Senator UDALL. Yes, and I'm also an original co-sponsor of that bill. I think we have to make this investment. I don't think there's any doubt about it. I've got a couple of additional questions, but I'll submit them for the record. Thank you to the panel very much.

The CHAIRMAN. Thank you, Senator Udall, and your point is a good one. We did attempt to get FEMA here. They need more lead time, evidently, to prepare for this. Maybe in light of what happened, they need it. I do think that there are questions that—obviously, FCC is this committee's jurisdiction, and FEMA is DHS—but that only they and others can answer, and I'm hoping that we'll be able by the time the field hearing in Hawaii occurs to get the other parties to this discussion involved and engaged and, hopefully, able to answer some of those questions. I mean, there are still, to me, unanswered questions. I know there are attempts already, legislatively, to cure some of the problems that we had this time around.

Senator Capito.

**STATEMENT OF HON. SHELLEY MOORE CAPITO,  
U.S. SENATOR FROM WEST VIRGINIA**

Senator CAPITO. Thank you, Mr. Chairman, and I thank the Ranking Member.

I know it has been a difficult several days and weeks since this occurred, and I'm kind of going to go on the FEMA thing. I just want to get this question on the record, Ms. Fowlkes. I'm pretty sure you don't know the answer to this question or you don't have it.

But I think it's the one question that many people, when they read the story, at least at a cursory level, sort of wondered, and that is: How is it that a single government employee could trigger an alert without any kind of meaningful mechanism to sort of override or—you know, do you want to delete, do you want to delete? Was there any? And do you have any light to shed on that basic question?

Ms. FOWLKES. That's actually one of the issues that we're exploring as part of our investigation, what Hawaii's process—what happens and what Hawaii's process was.

Senator CAPITO. I think we'll all be interested in hearing that.

Mr. Matheny, were the warnings broadcast over TV?

Mr. MATHENY. Yes, they were.

Senator CAPITO. In a scrawl kind of thing? Or how was that presented to the viewers?

Mr. MATHENY. Yes, they were. There were scrawls on TV, and then it was an audio played on radio.

Senator CAPITO. OK, because I actually was talking with somebody yesterday who was there in a hotel room, and they must have missed the first scrawl on the TV, but they did get the warning system through their phone, both of them. They were visitors.

But I wanted to tell Senator Schatz that the hotel they were staying in was right on top of it. They were—a warning system to the entire hotel with directions as to what they should do, encour-

aging everybody to come in and go—I mean, I’m sure it was frantic—but to go to the basement. So I would say since you have so many tourists and so many people staying in hotels, that’s good to know that you’re tourism industry is reacting quickly to something like this. That’s one of the best practices that came through.

I also want to thank Mr. Matheny, too, for the broadcasters when we had our thousand year flood in June 2 years ago. I am convinced we would have lost more lives than we did had we not had the rapid response, both through the radio and certainly social media, but also through our broadcasters. So thank you for that and also thank you for—the broadcasters for staying on the story. It wasn’t a one-day story for us, and it wasn’t treated as such by the broadcasters.

Mr. MATHENY. Sure, and thank you for recognizing that. I think that is one of the key elements of broadcasters, is that they are local and part of the community and committed to helping prepare for weather and recover.

Senator CAPITO. Right.

Mr. Bergmann, let me ask you a real simple question here. If you’re in a no-service area on your phone, do you get these alerts?

Mr. BERGMANN. You need to be within the coverage area in order to receive a wireless emergency alert, which really does put a premium on the conversation we were having earlier about making sure that we’re doing everything we can to make coverage available in rural areas.

Senator CAPITO. This is a major issue for us, not just on the wireless side but, obviously, on the broadband side, and we have, in our state, particular challenges because of the rural nature, but also the geographic nature of the state of West Virginia makes it difficult. But when I can drive eight miles outside of my capital city and lose coverage, there’s still a lot of work that needs to be done. I know you know this. I just wanted to reemphasize that.

Last, I’ll just tell a little story. On December 7, 1941, my uncle was stationed at the Schofield Barracks in Hawaii when Pearl Harbor was attacked, and my mother was 15 at the time. One story that she told us that was kind of interesting, especially in this day and time when you’re talking about instantaneous messages and instantaneous retraction of messages within 40 minutes, which sounds like a lifetime—but she told me that if it weren’t for the ham radio operators, her parents would have never known that their son was okay.

It took days for it to come across the country, and I’m sure some of those messages were not quite as positive as the ones my grandparents and my mother received that day. So, Mr. Lisenco, your organization’s long history is well appreciated.

Mr. LISENCO. Thank you very much, Senator. And, if I may, amateur radio was also involved in the effort to achieve normalcy in Hawaii after the false alarm. As a matter of fact, Hawaii—the Radio Amateur Civil Emergency Service in Hawaii activated a UHF and VHF repeater system, and they monitored the alerts and the cancellations. Ironically, 20 hours earlier, they had drilled with the Hawaii State Emergency Management this kind of scenario, and so 20 hours later, there it was right in our face.

We had operators present at the Emergency Operations Center and at the state warning point for Hawaii Emergency Management. The false alarm was on various information mechanisms within 13 minutes, and amateur radio operators started to pass that message along, whereas the full false alarm notice came 38 minutes from the initial alarm.

Amateur radio operators were trained in Hawaii to listen to specific types of siren wailings, and each one would determine what kind of emergency there was. There was no siren, and so that led to a tremendous amount of confusion. They also received reports from a Coast Guard vessel relaying the cancellation notice before the official cancellation notice came out. So amateur radio operators knew pretty much earlier than anybody else as to what was going on and did start sending that message along.

Senator CAPITO. The other issue, I'll just say briefly—if I could take just a few more seconds—that I think is real in relaying the stories of the folks that were in Hawaii visiting was their skepticism over this is a test and this is real, even though it was explained that it was real. I do think if we perfect a system, we won't have this testing fatigue, you know, where you're getting tested and you know nothing's really happening. I think that's our immediate response sometimes.

I think the better the system gets and more reliable, the less frequently it needs to be tested, or you can test it in different places and don't have to test it always at the same site—will really go to this sort of mentality of, “Well, this is a false alarm. It's not really happening. I'm going to wait it out and wait and see what happens.” So I encourage all your efforts in that.

Thank you.

The CHAIRMAN. Thank you, Senator Capito.  
Senator Markey.

**STATEMENT OF HON. EDWARD MARKEY,  
U.S. SENATOR FROM MASSACHUSETTS**

Senator MARKEY. Thank you, Mr. Chairman, very much. I'm just referring back to an earlier conversation on the Committee. I just want everyone to know that there is actually a professional football team from Massachusetts, and it will be playing in about 10 days in a game out in Minnesota. So I just wanted everyone to be on notice to be looking for that.

[Laughter.]

Senator MARKEY. Mr. Bergmann, you said that the rule will be implemented in 2019 to increase the character count for mobile emergency alerts from 90 to 360. Can we get it done more quickly than 2019? How can we telescope the timeframe to get this done? It's obviously a big problem.

Mr. BERGMANN. Thanks, Senator, and, certainly, we do think that additional capability, having those additional characters, will be helpful and will let us pass on more information to consumers, let public safety explain situations better to consumers. We are certainly an industry about over-delivering, so we've hit every deadline so far in terms of WARN Act implementation. We certainly want to try to do that again here as well.

Senator MARKEY. So you could set a goal of completing it in 2018?

Mr. BERGMANN. Well, you know, I wouldn't want to get ahead of the FCC's current deadline, which is May 2019, but I can tell you that we'll be doing everything that we can to hit that deadline and, if we can, beat it.

Senator MARKEY. I think we already saw that deadline as a little bit too far out. We definitely need, obviously, to deal with the problem. So let's just talk, for example, about what could happen at a meltdown at the Pilgrim Nuclear Power Plant in Massachusetts, which is at the bottom of the list of best managed nuclear power plants in the United States, and, of course, people on Cape Cod would have to actually ride past the plant to evacuate, so it gets a little bit more complicated.

So I guess my question to you would be when this event just occurred in Hawaii, the message was "Ballistic missile threat inbound to Hawaii. Seek immediate shelter. This is not a drill." So what would be the message that went off the emergency—what would be the information that was communicated to people if there was a nuclear power plant meltdown, and where would they be told to go? Would they be told to shelter in place, or would they be told to evacuate? Here, there was no additional information. Where do you go? What do you do? People are just wandering crazily around town.

So if there is a nuclear meltdown—and we still have 100 plants in America, and it's clear that an accident can happen. Fukushima was the most recent. But it is possible. Should there be more information, Ms. Fowlkes, that is part of the message which is sent out, so it not only warns people but gives them kind of a little bit of guidance as well with more than 90—perhaps with as many as 360 characters so that there's guidance that families receive?

Ms. FOWLKES. The main reason why the Commission expanded the character limit of the WEA alerts from 90 to 360 was because of the need to provide more information, in addition to which the Commission also adopted rules that would allow for the WEA alerts to include embedded references. Originally, the rules did not allow telephone numbers or a URL link into the WEA alert. The Commission has now, given the advancement in technology, decided to allow those to be included. There are certainly other issues that are before the Commission that we are considering in terms of other types of information or additional information that can be provided.

Senator MARKEY. I think that's very important, and I think it has to be tailored, because people would want to know, "Do I shelter in place, or do I just run crazily out into the street and head toward what could be the problem?" And I think that's really one of the big issues that has been identified, and we're going to have to clarify that.

Just going back to the Hawaii incident, I don't know how much thought has been put into this question of State control versus Federal control, because, obviously, the North Koreans could also make a miscalculation if they think that we are preparing for nuclear war, if they think that the United States might have a hair trigger response capacity, you know, that is going to be triggered by this

emergency evacuation plan that has been triggered. So has anyone thought through that reality, that the North Koreans could completely misinterpret what is going on and actually move them closer to their own hair trigger just to prepare because the United States might be actually on the verge of attacking? Has anyone thought through that issue as well?

Ms. FOWLKES. From the FCC's standpoint, as you know, we're focused on the communication distribution side. That's another issue where I would have to refer you to FEMA and DHS for decisions.

Senator MARKEY. And I think decisions like that should be made by the President and by the Pentagon and not by State officials. I think it's absolutely imperative that it be put in that larger context of understanding how the North Koreans might be responding, because it's already too close. They have trigger—between our two countries. Too many threats have already been issued. So a misreading of that by the North Koreans could have actually resulted in a much more catastrophic situation. So thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Markey.

Senator Cantwell is next.

**STATEMENT OF HON. MARIA CANTWELL,  
U.S. SENATOR FROM WASHINGTON**

Senator CANTWELL. Thank you, Mr. Chairman and Ranking Member. Thank you for holding this hearing.

When it comes to the Pacific Northwest, I guarantee you, with tsunamis and earthquakes and volcanoes, flooding, worrying about lahars, you name it, we pay a lot of attention to disaster issues. I'm reminded, having been on the Committee for some time, that our former colleagues, Senators Stevens and Inouye, spent a lot of time on the development of what is the Buoy System, which is our earliest detection on the waves so that we can have this information, and now NOAA is working very diligently on interpretation of that activity so that we can get the information to handheld devices. So it is—I think we need to be thankful that we've made the investment in technology.

I think the question becomes who in the Federal Government owns the protocols for making sure that the coordination happens at the state and local level. If so many of the partners in the development of that communication or the communication itself, for example, the Weather Service, who I know isn't with us this morning—how do we make sure that that information is there?

So, for us, out on the Long Beach peninsula, this issue is a very big issue. We have established warning sirens and warning information, and I think the scientists at NOAA would tell us this is what we should be developing. But now we have a very rural, isolated community trying to figure out how to deal with a tsunami. Many people may remember the story that the *New Yorker* wrote a few years back, *The Big One*. I never heard from so many of my friends around the United States when that article appeared, because they all woke up and said, "This is really what's going to happen?"

So we train constantly, constantly, on this as a coordinated effort between Homeland Security, our National Guard, our local re-

sponders. But who owns at the Federal level thinking through what this communication protocol should actually look like and how we establish safeguards within the protocol so that these kinds of mistakes or information gaps are avoided in the future? Because we want to continue with the information. That's for sure. So does anybody have a thought on that?

Ms. Fowlkes.

Ms. FOWLKES. In terms of the communication service provider side, certainly, the FCC works with the service providers. We have rules that apply in terms of how they're supposed to react, in terms of receiving and transmitting the alerts. On the alert origination side, on the FEMA side, I'd have to refer more to them. I will say that just in terms of general coordination, the FCC has at times—well, not just at times, but regularly coordinates with FEMA in terms of things such as testing or dealing with some of the issues that go to our rulemakings.

To give you an example, with respect to the EAS, there are a lot of states, particularly on the western side of the country, who do tsunami and earthquake tests, and they want to use the live code EAS, which, under our rules, you can't use unless it's an actual emergency. We have, working with broadcasters and other EAS participants, waived our rules to allow the broadcasters, the cable operators, to transmit that live code test as part of the broader tsunami exercise that FEMA may be doing with the state or local government.

Senator CANTWELL. This isn't—you know, I'm not trying to stump the panel. It's more that I think we have a gap here, and I know in our state, because the National Guard and the tech sector are so strong, they've established what they call "hygiene issues" for cybersecurity—here are the 10 things that you should follow for good cybersecurity hygiene.

Somewhere, it seems to me, we need this protocol list of here's what emergency response should look like, and here are the safeguards that should be in place, whether you're talking about a county or a state or the Federal system, because we're going to keep marching ahead. We need the information. We desperately want this kind of—when it's an earthquake, you only have—you might only have minutes to respond and because, as I said, this article about "The Big One" in the Northwest—we want to see this data and information. But we also want to make sure that, like the things that happened in Hawaii, we also have new safeguards for false alarms.

I remember Senator Inouye talking about a previous moment in Hawaii's history prior to all this technology where they had—I think it went on for hours, he said. They thought a tsunami wave was going to hit, and so this went on for hours and hours, and that's why we developed the Buoy System. So the Buoy System did work the other night in Kodiak, and it gave people—even though it went off, it gave people time to then understand from the science level that the wave was not going to be that great.

So we want the technology, but we need some protocols as to how it's used and how to make sure that there are some safeguards there for the public.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Cantwell.  
Senator Cortez Masto.

**STATEMENT OF HON. CATHERINE CORTEZ MASTO,  
U.S. SENATOR FROM NEVADA**

Senator CORTEZ MASTO. Thank you.

Thank you for being here today, and I do wish that FEMA had been here. I think they would have been an integral part of this discussion. I echo a lot of the concerns from my colleagues that I've heard today and appreciate your candid comments as well about the challenges we still have moving forward, but the good things that are happening with the alerts.

One of the things I do have concerns about sometimes, particularly in the state of Nevada where we have a very diverse and growing population, are language barriers. I know, Ms. Fowlkes and Mr. Bergmann, you talked a little bit about this and the actions that were taken in 2016 to enable Spanish language alerts.

Can you talk a little bit more about that and describe how that works to ensure understandable alerts are sent to everyone and not just Spanish language alone? In Nevada, particularly in southern Nevada, we have a large Filipino population, and Tagalog is an important language, obviously, and that's a barrier for those who do not speak Spanish. So can you talk a little bit about language barriers and how you address those and where the gaps are and what we should be doing to also keep that in mind when we're talking about reaching out to everyone in our communities when there is a crisis or a concern of a natural disaster?

Ms. FOWLKES. As you noted, the Commission back in 2016 adopted rules to facilitate Spanish language WEA alerts. We do currently have the broader issue that is pending before us that we're still considering regarding other languages and to what extent we should be looking at WEA alerts in other types of languages.

Senator CORTEZ MASTO. Not there yet, though.

Ms. FOWLKES. Not there. It's pending.

Senator CORTEZ MASTO. And, then, Mr. Bergmann, if you don't mind talking a little bit about how you—particularly with Spanish, how you overcome that barrier with the technology?

Mr. BERGMANN. Sure, Senator. I think we certainly agree with you and think that's an important improvement. It's one that we're working diligently to implement. And then I would just flag again the addition of URLs plays an important role, too, because we think often of WEA as a bell ringer. The idea is that you're letting folks know there's an issue and then giving them the opportunity to go and get additional information. So, together, those two tools, we think, will be very valuable for consumers, particularly for those who speak languages other than English as well.

Senator CORTEZ MASTO. Thank you. And besides language barriers—and I echo my colleagues again—there are geographic barriers, rural communities, particularly, in Nevada and across the country that are still struggling to have broadband access and access to be able to use some of the technology that's out there that's providing this information. I know this is an area where we've talked and will continue to support to bring resources and funding to our rural communities to connect them. But, to me, this is just

a crisis as well, that they are not connected right now, and it's a focus for many of us.

Let me ask you this. Cybersecurity—is there any concern about hackers hacking into an alert system in any manner whatsoever? Have we seen any of that, or is there something that you're thinking about or making sure you're addressing in the infrastructure?

Ms. FOWLKES. The FCC has addressed the issue of cybersecurity, particularly with respect to the EAS, through its advisory committee. You may or may not recall that back in 2013, a hacker gained access to EAS equipment at various broadcast stations across the country. We conducted an investigation, and we asked our advisory committee to come up with best practices that EAS participants could use to make their equipment more secure, in addition to which the FCC, through its advisory committee, has developed best practices for really all the communication sectors to address security risk management, specifically, how to implement the NIST framework.

Senator CORTEZ MASTO. The best practices are there, but there's no guarantee that they're going to be adopted.

Ms. FOWLKES. We have taken steps to strongly encourage communication service providers to implement those best practices. We also work with industry organizations, and many of the industry organizations, for example, NAB, has done a lot to encourage its members to implement those best practices.

Senator CORTEZ MASTO. Right, but we're still at the stage of encouragement and not necessarily mandated that the use is being implemented.

Ms. FOWLKES. Yes.

Senator CORTEZ MASTO. Thank you. I appreciate the conversation today.

The CHAIRMAN. Thank you, Senator Cortez Masto.

Senator Duckworth.

**STATEMENT OF HON. TAMMY DUCKWORTH,  
U.S. SENATOR FROM ILLINOIS**

Senator DUCKWORTH. Thank you. I want to thank the Chair and the Ranking Member for today's hearing. I also want to thank our witnesses for participating in this very important discussion.

As a proud graduate of the University of Hawaii at Manoa—go Rainbows—no one else? No one else in the room. There's never anybody from my—

Senator SCHATZ. Not even me.

Senator DUCKWORTH. Not even you. Not even you. What does that say?

[Laughter.]

Senator DUCKWORTH. But Hawaii's recent false alarm is a fascinating test case, I think, for Federal and state and local policy-makers. On the one hand, it worked exactly the way it was supposed to. It was a false alarm, but the execution of the alarm actually worked as it was designed. A message was sent by an alerting authority and effectively disseminated to the targeted population.

On the other hand, it was sent in error, terrifying the entire state for nearly an hour. I actually landed in South Korea on my way to the DMZ when it popped up on my phone saying that this

had happened. So the situation really exposed some gaps in the training processes and ergonomics of the software of the alerting authority.

Mr. Bergmann and Mr. Matheny, it seems to me that the questions raised and the gaps identified in the Hawaii case focus more on alerting authorities and FEMA jurisdiction than the FCC and the alerting disseminators. Would you agree with that?

Mr. MATHENY. Yes, I would. I agree with the way you outlined it, which is that the broadcast infrastructure worked. The transmission worked. The message did get out. Unfortunately, in this case, it was a mistaken message. So I think that, as we've been discussing today, it requires us all, in particular on the FEMA side, to revisit who can generate an alert and how that alert is generated. But as it relates to the dissemination and the transmission, I think, as you've stated, that piece of the process worked as designed.

Mr. BERGMANN. Senator Duckworth, I would agree as well, too. On the wireless side, the alert was delivered exactly as intended, and I think one of the key focuses of this hearing is making sure that we have public trust and confidence in the system, and I think we can certainly say we have that on the delivery side. I understand the Committee's appropriate focus on making sure that that trust extends across the entire system. But the system performed well on the wireless side.

Senator DUCKWORTH. Thank you. So I want to sort of contrast that with something that my colleague, Senator Sullivan, talked about, the recent tsunami warning in Alaska. I think that's more of an appropriate test case where an emergency alert was sent to a wide swath of residents, many who were in the danger zone, but then a lot of folks who were outside of the danger zone and probably did not need to be alerted. The Alaska example exposes a potential gap in the Wireless Emergency Alert system's effectiveness in large rural environments. I have this situation in Illinois where I have Chicago—we have a couple of major metropolitan areas, but then large rural communities.

So my understanding is that in Anchorage, residents received an alert at 12:36 a.m., even though they were not in the danger zone, geographically, and I can appreciate alerting authorities' interest in erring on the side of caution. But it seems more likely that forecast boundaries and census boundaries, combined with technology limitations, also played a role in those folks in Anchorage receiving the alert.

Ms. Fowlkes, Senator Sullivan touched on this. But has FCC done any after-action analysis of Alaska's recent tsunami warning to determine the WEA's effectiveness in this instance?

Ms. FOWLKES. We are in the process of looking into it, yes.

Senator DUCKWORTH. You are. Do you have any idea how long that review might take, or if we'll be able to see the results?

Ms. FOWLKES. At this point, I can't give a specific timeline. But, as always, my team moves very carefully and very expeditiously.

Senator DUCKWORTH. Wonderful.

Mr. Bergmann, what can you tell us about the effectiveness of geo-targeting technology, and where are the gaps? Which emergency situation is WEA least suited, and where should industry,

the FCC, and Congress focus our attention? And is there an issue with somebody who may have their GPS locator turned off on their phones?

Mr. BERGMANN. Thanks, Senator. I think you've put your finger on one of the most important improvements that we're poised to make, which is improving the geo-targeting of Wireless Emergency Alerts, and the example that you talked about—this is exactly why we think about alerts as trying to target it to the folks who are actually in danger and not over-alerting.

So there are two components to that. One we've implemented now, which is taking advantage of greater capabilities within the network to go below the county level so that alert originators can draw the polygon, the geographic area that they want to reach, and so they can do that today. The next step in that will be taking advantage not just of the network, but also of the capabilities in the device. So their turning on features like location is, obviously, critically important to that. You want to make sure that you can take advantage of that location information in order to appropriately geo-target it.

Now, I think a comforting piece of information there is if the geo-targeting is turned off, they'll still receive the message. So it's not as if the consumer would not receive the message in that circumstance.

Senator DUCKWORTH. Thank you, and I'm out of time.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Duckworth.

Senator Wicker.

**STATEMENT OF HON. ROGER F. WICKER,  
U.S. SENATOR FROM MISSISSIPPI**

Senator WICKER. Mr. Lisenco, thank you for being here and thank you for your written testimony. On page nine of your written testimony, you talk about the Hawaii amateur radio operators during the recent false alarm. How were these operators able to disseminate a cancellation notice about Hawaii's ballistic missile false alarm before others were able to do so? Can you explain how amateur radios were able to provide that notice before others?

Mr. LISENCO. Senator Wicker, first, let me start by thanking you for your continuing support of amateur radio and your bill, S. 1534.

Senator WICKER. Thank you, and I might point out that Senator Blumenthal is a co-sponsor of that, and I appreciate his bipartisan support for this.

Mr. LISENCO. Thank you. As I had mentioned earlier, ironically, amateur radio members in Hawaii had just been drilling 20 hours before the actual false alarm, so everything was fresh on their minds. Now, because they are able to work outside of the local infrastructure and they were not participants within the actual initial notification, they got word out through various VHF and UHF repeaters about the false alarm within 13 minutes after the initial alarm.

They were picking up information from various sources, including a Coast Guard vessel that was just outside of the area. And as a result, because they were able to disseminate that information freely within the 13 minutes, they were able to get that word out

right away. Whereas there was a lot of confusion in the area to them as well, because they were taught to listen for a certain type of siren warning that never came, so they were dependent upon information that they were gleaning from within the community itself.

Senator WICKER. Well, let me then switch to Katrina. Why, in situations like Hurricane Katrina, are the amateur radios so much more resilient and able to be there as a backup to the more well known forms?

Mr. LISENCO. Well, for a number of reasons. First of all, we're not dependent upon the infrastructure to operate. If the power goes down, we're able to use generators, solar power panels, batteries, what have you, and because we understand how radio works, we're able to adapt very quickly to any situation, whereas most first responders are using technology that they really can't adapt to a given situation because they don't have a basic understanding.

We're able to walk into a situation, take notice of the surroundings, what kind of operation would be effective at that point, and then move along those lines very quickly. The big thing is that when all else fails, we really are able to provide emergency communications as required.

Senator WICKER. So things are OK. But why is the new legislation so important? What would it give us that we don't have?

Mr. LISENCO. Well, you have to remember that amateur radio is unique in that we are disseminated geographically throughout the entire country. So, very often, what will happen is we'll have amateur radio operators both within and outside of a disaster area. That gives us a unique ability to disseminate information from within a disaster zone that others don't have. The fact that we're not dependent upon the infrastructure then gives us the ability to work outside of it.

So, for instance, during Sandy—I'm from—if you can't tell from my accent, I'm from Brooklyn. We had devastation throughout the coast of both New Jersey and New York going out to Long Island. The flooding was so severe that we had people who were stuck in their homes, obviously, waiting for help. We had amateur radio operators who were inside of the flood zone and were able to send messages to first responders outside of the flood zone as to where people needed help, and very often in an emergency of that nature, it's as important to know where you need help and where you don't need help so you don't waste the resources that you have, which are limited during a disaster. So you don't want to send a first responder to the wrong address when there's nobody there to save. We learned that it's that dissemination of resources that is a strong point for us.

Senator WICKER. Thank you.

The CHAIRMAN. Thank you, Senator Wicker.

Senator Schatz, anything else?

[Nonverbal response.]

The CHAIRMAN. Well, I think we've pretty well covered the subject today with the folks that are here, and, as I mentioned earlier, there are some folks who are not here who I think could shed considerable light on some of the other aspects of the way this process works. But it's clear to me, at least, and I think most of the mem-

bers of this committee, that we need to make some changes, at least with respect to the kind of alert that was issued in Hawaii. When it's a nuclear attack, I think the chain in that alert system needs to be modified to reflect the seriousness of the threat, not that any of them aren't serious, but, obviously, this is a very different sort of threat.

Thank you so much for the work that your various organizations do in alerting the public, and I encourage you to continue to work to develop and refine those processes and technologies so that we can become even better and, hopefully, more efficient in seeing that people have the notifications they need in the face of various disasters that come our way. So thank you.

We will keep the record open for members on the Committee who would like to submit questions for the record for a couple of weeks and would ask the witnesses, as soon as they can, to get those responses in, preferably in a couple of weeks' time so we can close out the record of the hearing. We, again, appreciate all of you being here today.

With that, this hearing is adjourned.

[Whereupon, at 11:42 a.m., the hearing was adjourned.]



# A P P E N D I X

BIG CITY EMERGENCY MANAGERS  
NATIONAL EMERGENCY MANAGEMENT ASSOCIATION  
INTERNATIONAL ASSOCIATION OF EMERGENCY MANAGERS  
*January 23, 2018*

Chairman AJIT PAI,  
Commissioner MIGNON CLYBURN,  
Commissioner MICHAEL O'RIELLY,  
Commissioner BRENDAN CARR,  
Commissioner JESSICA ROSENWORCEL,  
Washington, DC.

Mr. Chairman and Commissioners,

First, we wish to share our appreciation and thanks to Chairman Pai, Commission staff, and public safety stakeholders for their efforts to date, and thank you to Commissioners Clyburn, O'Rielly, Carr, Rosenworcel and your staff for your consideration of this item. We believe that the proposed changes to the Wireless Emergency Alert (WEA) service will save lives. With respect, we have included several changes to the proposed rules for your consideration.

As APCO stated in its January 12th ex parte to the Commission, "in addition to expressing support for requiring geo-targeting enhancements by 2019, we recommend the incorporation of rule language to add clarity to the obligations of participating WEA service providers. For example, the language of Final Rule Section 10.450 could specify that, "No later than November 30, 2019," participating CMS providers must match the target area. Section 10.450 could also reflect the language of the draft Order specifying that this deadline is to apply to "new mobile devices offered for sale after the rule's effective date and to existing devices capable of being upgraded."

APCO also stated, and we agree, that "[t]he rules could also clarify the narrow intent of what it means to be technically incapable of matching the specified target area." Based on the record, it is technically feasible to achieve the geo-targeting goal by November 30, 2019, through software upgrades to many existing devices and with the introduction of new devices. Thus, the rules should be clear that "technically incapable" should not apply where providers have failed to develop standards, implement network and device changes, or pursue other technological solutions. After November 2019, CMS providers may only fall back to the "best approximates" standard in a narrow set of circumstances. While we expect participating CMS providers to continue serving as good partners in this trusted and official public safety alerting system, the FCC's rules should minimize the potential for any confusion with respect to the carriers' obligations to achieve geo-targeting improvements.

Accordingly, we respectfully request the following changes to the proposed rules:

- (a) [REVISED SECTION 10.450 (a)] This section establishes minimum requirements for the geographic targeting of Alert Messages. A Participating CMS Provider will determine which of its network facilities, elements, and locations will be used to geographically target Alert Messages. A Participating CMS Provider must deliver any Alert Message that is specified by a geocode, circle, or polygon to an area that matches the specified geocode, circle, or polygon. A Participating CMS Provider is considered to have matched the target area when they deliver an Alert Message to 100 percent of the target area with no more than 0.1 of a mile overshoot. If some or all of a Participating CMS Provider's network infrastructure is technically incapable of matching the specified target area, then that Participating CMS Provider must deliver the Alert Message to an area that best approximates the specified target area on and only on those aspects of its network infrastructure that are incapable of matching the target area. [NEW LANGUAGE FOLLOWS] [A CMS Provider's

ability to claim that its network infrastructure is technically incapable of matching the specified target area is limited to instances described in the Order, including when the target area is outside of the Participating CMS Provider's network coverage area, when mobile devices have location services disabled, and when legacy networks cannot be updated to support this functionality. In all other instances, the CMS Provider must deliver an Alert Message to 100 percent of the target area with no more than 0.1 of a mile overshoot.]

- (b) Leave as existing in Section 10.450 (b)
- (c) [NEW SECTION 10.450 (c)] Participating CMS Providers are required to transmit Alert Message polygon coordinates to mobile devices without affecting the 360 character allotment for displayable Alert Message text.
- (d) [NEW SECTION 10.450 (d)] Participating CMS Providers shall comply with these Geo-targeting rules no later than November 30, 2019. These rules shall apply to new mobile devices offered for sale after the rule's effective date and to existing devices capable of being upgraded.

In response to the proposed rule changes, CTIA submitted an Ex-Parte on 1/17/18 discussing several of the same concerns around the definitions related to the new rules. While CTIA suggests that the Commission simplify the definition of "WEA-capable" devices to any mobile wireless device that can receive a WEA message and noted that the Commission could suggest that CMS providers and equipment vendors disclose that a device may not support all WEA features. This simplification is misleading to consumers and will allow providers and device manufacturers a loophole to not provide the much needed WEA enhancements to some wireless users. While we hope that our industry partners will continue to work with us on providing all of the life-saving WEA enhancements, we find CTIA's proposed definition for WEA-capable devices to be too simplified. We respectfully request that the Commission clearly define WEA-capable devices as those that are fully capable of receiving all WEA messages and associated content.

In summary, we believe the existing proposed Order with these changes to the Rules will result in a significantly improved Wireless Emergency Alert system.

Thank you again for your consideration of these changes.

Sincerely,

BARB GRAFF,  
*Chair,*

Big City Emergency Managers,  
*Director,*

City of Seattle Office of Emergency Management.

RON PRATER,  
*Executive Director,*

Big City Emergency Managers.  
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Association of Emergency Managers (IAEM).  
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COMPETITIVE CARRIERS ASSOCIATION  
*Washington, DC, January 25, 2018*

Hon. JOHN THUNE,  
 Chairman,  
 Committee on Commerce, Science, and  
 Transportation,  
 United States Senate,  
 Washington, DC.

Hon. BILL NELSON,  
 Ranking Member,  
 Committee on Commerce, Science, and  
 Transportation,  
 United States Senate,  
 Washington, DC.

Dear Chairman Thune and Ranking Member Nelson:

Competitive Carriers Association (“CCA”)<sup>1</sup> commends the Committee for its timely oversight of emergency alerting with today’s hearing on “This is Not a Drill: An Examination of Emergency Alert Systems.” Recent events and natural disasters have brought public focus on emergency alerting, and the Federal Communications Commission (“FCC”) will vote on an item updating the Wireless Emergency Alert (“WEA”) system next week. As policymakers and industry leaders continue to work to make alerts more effective and accurate, CCA appreciates the recognition of unique challenges facing competitive carriers and providers serving rural communities. Updates to the WEA system should promote the most effective and efficient means for providing WEA messages in consideration of technology that is both capable of executing the requirements and available to all providers and consumers.

CCA carrier members’ ongoing goal is to provide their customers with the latest information, especially during disasters and emergencies. Competitive carriers take their obligations to provide these services seriously, particularly as many competitive carriers connect the communities where they live. Proposed WEA updates, including refining the delivery location, will improve the quality of information that consumers receive, limit network impacts, and reduce the potential for over-alerting. CCA’s members continue to work to implement enhanced WEA standards. While industry’s work continues, however, Congress can take steps to ensure alerts are available to all consumers, especially in rural America, with a focus on ubiquitous availability of devices and deployment of the latest mobile networks that power them.

#### **Alerts Depend on Consumer Devices**

While underlying network technology and services are critical to providing emergency alerts, consumers ultimately rely on their devices to provide refined geo-targeted location and to receive the alert itself. As the FCC adopts new regulatory requirements, device manufacturers will need sufficient time to analyze changes and incorporate new standards into devices, especially when embedding new technology for next generation devices. Further, as wireless industry groups and Apple have publicly recognized, some devices will not be able to meet new requirements via a software upgrade and some legacy devices do not support geo-targeting for WEA messages. As Congress and the FCC consider new WEA requirements, they must also consider carriers’ access to the latest devices and the requisite technology upgrades necessary to incorporate enhanced alerting standards.

What’s more, smaller rural and regional carriers do not have access to the latest devices on the same timeline as the largest carriers, if at all. This not only diminishes competition in the wireless industry, it also may delay availability of the latest WEA technology, including device-based geo-location capabilities. CCA members are committed to providing consumers with the most accurate and up-to-date information in times of emergency, and will continue to upgrade their networks to handle the enhanced requirements; however, they often are hamstrung from doing so if the latest device or network technology is unavailable. Regulatory updates to the WEA system and timelines for implementation must reflect this reality.

We commend the FCC for its continued work to ensure that WEA messages will be delivered using “best approximates” location in circumstances where the target area is outside a carrier’s network coverage area, when location services are disabled on a device, or when legacy networks or devices cannot be updated to support the functionality. Continued oversight is necessary to ensure that carriers serving rural America are not forced to seek waivers of overly ambitious rules, or worse, opt-out of the voluntary WEA program.

<sup>1</sup> CCA is the Nation’s leading association for competitive wireless providers and stakeholders across the United States. CCA’s membership includes nearly 100 competitive wireless providers ranging from small, rural carriers serving fewer than 5,000 customers to regional and national providers serving millions of customers. CCA also represents associate members including vendors and suppliers that provide products and services throughout the mobile communications supply chain.

### **Enhanced Alerting Requires Ubiquitous Mobile Broadband Coverage**

Emergencies and disasters occur irrespective of geography, in both densely populated urban centers and the remote wilderness. Timely WEA messages can save lives in all of these areas, but only where consumers have a sufficient mobile broadband connection to deliver the alert. Without robust, seamless mobile coverage, citizens must rely on traditional and potentially less-effective methods of communication from public safety officials during a crisis. This Committee is all too familiar with the persistent digital divide that plagues rural America, and CCA supports continued work to close the gap and connect all Americans with robust mobile broadband service.

With continued leadership from this Committee, CCA is optimistic that Congress is moving towards implementing policies that support mobile broadband deployment and ubiquitous connectivity. For example, S. 19, the “Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless Act” or the “MOBILE NOW Act” proposes steps to support deployment, especially in rural America. CCA supports this bill, and encourages the House of Representatives to send MOBILE NOW to the President’s desk for enactment. Additional bipartisan legislative proposals, including S. 1988, the “Streamlining Permitting to Enable Efficient Deployment of Broadband Infrastructure Act” or the “SPEED Act” and S. 1363, the “Rural Broadband Deployment Streamlining Act,” will promote mobile broadband deployment and support advanced services. Congress should continue to champion these and other anticipated bills to reduce barriers to deployment and increase investment certainty.

Additionally, CCA appreciates the Committee’s work to ensure that Universal Service Fund programs, including Mobility Fund Phase II, provide support based on reliable data and deliver on Congress’s mandate to provide reasonably comparable services in urban and rural areas. Emergency alerts are yet another example of why this program is so important for connecting our Nation.

CCA thanks the Committee for continued oversight of these critical issues and for holding this important hearing. Please do not hesitate to contact CCA with any questions.

Sincerely,

STEVEN K. BERRY,  
*President and CEO,*  
 Competitive Carriers Association.

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#### RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN THUNE TO LISA M. FOWLKES

*Question.* What actions can the FCC take to work with other agencies like FEMA to create best practices for Emergency Alert Systems?

*Answer.* Upon the completion of the Public Safety and Homeland Security Bureau’s investigation into the false alert incident in Hawaii on January 13th, the Bureau will issue a final report on its findings. The final report will include recommended measures to safeguard against false alerts and to mitigate their harmful effects if they do occur. Once these recommended measures are developed, the Bureau will partner with FEMA to engage in stakeholder outreach and encourage implementation of these measures. Among other avenues, the FCC is considering convening a roundtable with stakeholders in the emergency alerting ecosystem to discuss the lessons that should be learned from this incident as well as developing a joint webinar with FEMA to further educate stakeholders.

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#### RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BRIAN SCHATZ TO LISA M. FOWLKES

*Question 1.* On January 30, 2018, a few days after you appeared before this Committee, the FCC’s Public Safety and Homeland Security Bureau provided a preliminary report on its investigation at the FCC’s Open Meeting. In order to ensure the most up to date record of the FCC’s findings is reflected in the hearing record, please provide a detailed summary of the FCC’s preliminary report including additional information the FCC discovered after the hearing. In addition, provide the expected date of completion of the FCC’s investigation and when it expects to complete the final report.

*Answer.* The Public Safety and Homeland Security Bureau’s investigation is ongoing, but I am pleased to provide you with the attached report, presented at the January 30, 2018, FCC Open Meeting, which summarizes our preliminary findings.

The Public Safety and Homeland Security Bureau is continuing the investigation and will issue a final report upon the completion of the investigation. The final report, which we expect to release later this spring, will also include recommended measures to safeguard against false alerts and to mitigate their harmful effects if they do occur.

*Question 2.* Please confirm that the FCC will, as part of its investigation, examine whether HI-EMA's or other officials' phone lines became congested and, if so, whether phone line congestion hindered the ability of government officials to communicate during the incident.

Answer. Yes.

*Question 3.* As part of the investigation, will the FCC examine whether and the extent to which officials engaged the Telecommunications Priority Service, Government Emergency Telecommunications Service, or Wireless Priority Service to communicate during the incident and, if used, whether the systems operated as expected?

Answer. Yes.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
LISA M. FOWLKES

*Question 1.* As your testimony indicates, the Commission places the highest priority on ensuring that emergency management authorities and first responders have up-to-date tools available to respond to disasters. What coordination structures are in place to adjudicate any challenges or work through issues that cross jurisdiction between your agency and FEMA and how often are you meeting or speaking with FEMA officials?

Answer. FEMA, the FCC, and the National Weather Service work together to maintain the Emergency Alert System (EAS) and Wireless Emergency Alerts.

The FCC's role includes establishing technical and operational standards for EAS Participants (radio and television broadcasters, cable systems, satellite radio and television providers, wireline video providers), and for those wireless providers that elect to participate in the Wireless Emergency Alert system. For example, the Commission has worked closely with FEMA to conduct nationwide tests of the Emergency Alert System to assess its reliability and effectiveness, with the most recent test occurring in September 2017. Additionally, Commission staff regularly interact and coordinate with partners at FEMA and are participating members of the congressionally mandated IPAWS Subcommittee to the FEMA National Advisory Committee.

*Question 2.* How are you at the FCC working with FEMA to communicate with one voice and purpose to the varied stakeholders you need to engage—from state and local emergency managers and public safety officials in towns across the country all the way up to large broadcasting or wireless companies?

Answer. After the Public Safety and Homeland Security Bureau releases its final report on the January 13 false alert, which will contain recommended best practices to safeguard against false alerts and mitigate the effects of false alerts if they do occur, we plan to partner with FEMA to engage in stakeholder outreach and encourage implementation of these best practices. Among other avenues, we are considering convening a roundtable with stakeholders in the emergency alerting ecosystem to discuss the lessons that should be learned from the false missile alert incident as well as developing a joint webinar with FEMA to further educate stakeholders. We also have worked closely with FEMA on a range of public events, such as Presidential and state event preparations, nationwide EAS tests, and disaster relief efforts.

*Question 3.* As I understand from reading the timeline of the Hawaii incident and follow up conversations, had Hawaii EMA not called for FEMA for advice, FEMA, absent news reports, would not have immediately been notified of the incident. Does the FCC have a monitoring capability or central alert repository that receives alerts in real time from around the country? What I'm getting at, and what we have asked FEMA as well, is whether the FCC has awareness of critical alerts as they are sent or whether you rely on external updates for situational awareness?

Answer. The Federal Communications Commission does not monitor the origination of emergency alerts. The origination and transmission of emergency alerts, either via broadcast emergency alerts (EAS) or wireless emergency alerts (WEA) is outside the purview of the FCC. As such, the FCC only has notification of an alert being sent through public reporting methods.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. BRIAN SCHATZ TO  
SCOTT BERGMANN

*Question.* Please provide relevant wireless industry data collected by CTIA or available to CTIA from other sources to describe Wireless Emergency Alert system availability and coverage including, for example, by geographic region (*e.g.*, state, MSA, rural vs. urban areas, etc.), percentage of devices in use by customers, and number of carriers offering vs. not offering WEA.

*Answer.* CTIA and its member companies are proud of the wireless industry's role in the Wireless Emergency Alerts system.

- All four national wireless providers and dozens of regional providers, serving more than 99 percent of all U.S. subscribers, are voluntarily participating in the Wireless Emergency Alert system, transmitting thousands of alerts each year and helping our public safety professionals save lives.<sup>1</sup>
- CTIA estimates that more than 500 million wireless handsets that can receive WEA messages were sold in the U.S. since 2013.<sup>2</sup> As AT&T has noted, “most smartphones and feature phones released in the last few years are WEA-capable.”<sup>3</sup>

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TOM UDALL TO  
SCOTT BERGMANN

*Question 1.* The Wireless Alert system is effective and important, but I remain concerned about the lack of infrastructure in rural and tribal areas, and the inability of these areas to receive wireless alerts in emergencies. I understand that cellular companies use geo-targeting for the Wireless Alert System. But I also understand that, in areas with a “low tower density,” companies may have to over-warn the communities—that is, they will have to send the notice out to a broader area—and this could lead to confusion. Can you address how geo-targeting works in areas with low tower density?

*Answer.* Wireless Emergency Alerts play a unique role in our national emergency alert system that enables authorized federal, state, and local authorities (“alert originators”) to distribute emergency information directly to consumers’ wireless devices. In accordance with FCC rules, participating wireless providers support the ability of alert originators to determine the content and target area of WEA messages.

Today, participating wireless providers support alert originators’ ability to target messages down to the cell-sector level. However, cell-site density is a key factor in the granularity of these WEA geo-targeting capabilities. To further enhance the geo-targeting capabilities of Wireless Emergency Alerts, the FCC recently adopted new rules that will utilize location capabilities in mobile devices to allow more precise targeting of alerts, even in areas with low tower density. In addition, CTIA welcomes efforts by Congress, the FCC, and other relevant federal, state, and local agencies to modernize the processes for deploying wireless infrastructure, particularly in rural and tribal areas.

*Question 2.* In your testimony, you state that under the FCC’s proposed enhanced geo-targeting plan, providers will rely on the technology in mobile devices. But many people disable this technology. Can you speak to how the alerts would work if the technology is disabled?

*Answer.* The geo-targeting capabilities of the Wireless Emergency Alerts system play a vital role in disseminating emergency messages directly to consumers affected by an emergency. Generally, even when the enhanced WEA geo-targeting capabilities the FCC recently adopted become available next year, consumers who have disabled location services on their mobile device will still receive a WEA message so long as the device is within the cell-broadcast area determined by alert originators.

<sup>1</sup> *Wireless Emergency Alerts*, Order on Reconsideration, 32 FCC Rcd 9621, 9625, n.28 (2017); see also, FCC, Master WEA Carrier Registry File, <https://www.fcc.gov/general/commercial-mobile-telephone-alerts-cmas> (last visited Feb. 18, 2018).

<sup>2</sup> See, *e.g.*, IDC Worldwide Quarterly Mobile Phone Tracker (1Q 2013–3Q 2016), [www.idc.com](http://www.idc.com) (last visited Feb. 20, 2018); Counterpoint, Apple Sells a Record 22 Million iPhones in USA During 4Q17 (rel. Jan. 31, 2018), (<https://www.counterpointresearch.com/apple-sells-record-22-million-iphones-usa-4q17/>); Statista, Number of smartphones sold to end users worldwide from 2007 to 2016 (in million units), (<https://www.statista.com/statistics/263437/global-smartphone-sales-to-end-users-since-2007/>) (last visited Feb. 20, 2018).

<sup>3</sup> AT&T, Wireless Emergency Alerts, <https://www.att.com/esupport/article.html#!/wireless/KM1009041> (last viewed Feb. 21, 2018).

Specifically, participating wireless providers are currently required by the FCC to deliver WEA messages to an alert area specified by an alert originator subject to where mobile wireless coverage is available.<sup>4</sup> These existing geo-targeting capabilities enable alert originators to target WEA down to the cell-sector level.

While the ability to geo-target Wireless Emergency Alerts down to the cell-sector level will remain a constant feature of the system, we share the expressed goal of public safety leaders to harness innovative location technologies to further improve the targeting of alerts. To achieve this goal, the FCC recently adopted an Order to enhance the geo-targeting capabilities of WEA through device-based technologies that harness the location capabilities of a mobile device.<sup>5</sup> The FCC's recent Order requires participating wireless providers to minimize the extent to which a WEA alert is presented to consumers outside of the alert area to no more than 0.10 mile for devices with such capability.

It is commonly understood that a device's location determination ability is subject to a number of factors, including whether the device's location capabilities are enabled by the consumer. For this reason, the FCC acknowledged that the enhanced WEA geo-targeting capabilities may be infeasible in certain circumstances, including when a consumer has chosen to disable location services on their mobile device.<sup>6</sup>

In circumstances where enhanced WEA geo-targeting capabilities are infeasible, the FCC requires participating wireless providers to utilize the existing WEA geo-targeting capabilities to best approximate the alert originators' target area, which enables alert originators to target down to the cell-sector level. Further, when consumers have chosen to disable location services, the FCC requires that mobile devices display the WEA message by default to ensure consumers who have disabled location services on their devices can still act on important WEA messages.<sup>7</sup>

*Question 3.* Have any of your members engaged with tribal nations to work on ways to help deploy wireless service or help build capacity on their lands?

Answer. CTIA's members have worked diligently over the last ten years to deploy 4G LTE to more than 99 percent of people living across the country, but they recognize that the work is not done to reach all communities, including those living on Tribal lands. Indeed, many CTIA members offer service on Tribal lands and recognize that many Tribal lands face unique and challenging obstacles. Like all consumers, people living on Tribal lands would greatly benefit from wireless broadband connectivity, not only to have access to a means of communicating with friends and family, but for critical public safety services and access to business and employment opportunities.

For that reason, we were encouraged by the FCC's recent renewal of the Native Nations Communications Task Force, which will explore the unique needs of consumers living on Tribal lands and the best means of ensuring they have access to broadband capabilities.<sup>8</sup> While wireless providers have strong incentives to expand their networks to make these services available to consumers, it is important to recognize that the most remote and sparsely populated areas remain a challenge for buildout. CTIA supports the FCC's efforts to coordinate with Tribal leaders and develop ways to reduce barriers to deployment on Tribal lands.

In order to reach the remaining unserved areas, including Tribal lands, stable funding initiatives are critical. The Universal Service Fund and Rural Utilities Service programs in particular are critical for Tribal deployments. In 2011, the FCC also proposed a specific Tribal component to Mobility Fund Phase II. CTIA supports a permanent and robust Mobility Fund and urges Congress to encourage the FCC to move forward with Mobility Fund Phase II implementation so that the benefits of wireless connectivity can be attained by consumers across the country. These incentives are the most appropriate approach in order to incentivize buildout in rural and hard to serve areas, including Tribal lands.

*Question 4.* According to your membership list on the website [www.ctia.org](http://www.ctia.org), Apple, Nokia, and Samsung are all current members of CTIA. I have heard from small car-

<sup>4</sup> See, 47 C.F.R. 10.450; Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System, PS Docket Nos. 15-91, 15-94, *Report and Order and Further Notice of Proposed Rulemaking*, 31 FCC Rcd 11112 (2016) (WEA R&O and WEA FNPRM).

<sup>5</sup> *Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, Second Report and Order and Second Order on Reconsideration, FCC 18-4, PS Docket Nos. 15-91, 15-94 (rel. Jan. 31, 2018) (*Second WEA R&O*), available at <https://www.fcc.gov/document/fcc-improves-wireless-emergency-alerts-0>.

<sup>6</sup> *Id.* at ¶ 9.

<sup>7</sup> *Id.* at ¶ 10.

<sup>8</sup> See *FCC Seeks Nominations for Tribal Government Representatives to Serve on Renewed FCC Native Nations Communications Task Force*, Public Notice, DA 18-127 (rel. Feb. 8, 2018), [https://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2018/db0208/DA-18-127A1.pdf](https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0208/DA-18-127A1.pdf).

riers that they are concerned that their customers will not have access to the devices with the latest technology to enable wireless alerts. Have you worked with any mobile device manufacturers to ensure that all citizens, regardless of their carrier, will have access to devices with the most up-to-date software and hardware?

Answer. The FCC's recent enhanced WEA geo-targeting Order adopted an aggressive implementation timeline that will present a challenge for all participating wireless providers and device manufacturers. As the Order notes, significant standards, deployment and testing work remains to support the enhanced WEA geo-targeting capability throughout the chain of the alert—from alert originators to FEMA's gateway to wireless networks to mobile devices.<sup>9</sup> However, the wireless industry—including participating national and regional wireless providers and device manufacturers—will work intently, as it always has, in an effort to meet the FCC's aggressive deadline.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
SCOTT BERGMANN

*Question 1.* Your testimonies both highlighted the fact that the Hawaii incident, while unfortunate, illustrated a fairly flawless execution of the backend alerting protocol supported by the wireless and broadcasting community. How, if at all, do the decisions made by states and localities when it comes to software or hardware impact the operations of the wireless and broadcasting communities?

Answer. WEA is part of our Nation's emergency alert system managed by FEMA through IPAWS. As part of this system, WEA messages and associated information, including the geographic target area, are received from alert originators through FEMA in a common format using a secure process. By centralizing and standardizing the delivery of WEA messages to participating wireless providers through FEMA's IPAWS, individual alert originator software or hardware has minimal impact on the delivery of Wireless Emergency Alerts over wireless networks. However, CTIA agrees with Congressional and Federal leaders who have highlighted the importance of alert originator training and proficiency, including appropriate software and hardware capabilities, which are essential to maintaining public confidence in WEA messages.

Notably, Congress recognized the need to train and equip alert originators on ways to more effectively use our Nation's emergency alert system when the IPAWS Modernization Act became law in 2015. And in 2016, the FCC encouraged emergency management agencies to engage in proficiency training exercises that could help minimize system failures and ensure that any failures are corrected during a period when no real emergency exists.<sup>10</sup> Further, FCC Commissioner Jessica Rosenworcel recently called for new best practices around the training and use of our Nation's emergency alert system.<sup>11</sup> CTIA strongly supports all of these efforts and encourages FEMA and other public safety leaders to offer training opportunities for alert originators that promise to bolster WEA's utility and credibility going forward.

*Question 2.* Have your members developed relationships with State and local emergency management/EAS operators and shared challenges or opportunities to work together in pursuit of your common goals?

Answer. At the Federal level, the WARN Act bi-furcated oversight and administration of the Wireless Emergency Alert system between the FCC and FEMA. This approach reflects the different roles and entities that make up our national emergency alert system. The FCC oversees and requires participating providers to support capabilities that ensure a nationally consistent WEA experience. While FEMA oversees and manages the relationships with authorized state and local alert originators, CTIA and our member companies participate in various Federal efforts to collaborate with state and local alert originators.

For example, CTIA and our member companies have participated in the FCC's Communications, Security, Interoperability and Reliability Council, which has evaluated various enhancements to WEA in collaboration with state and local alert originators. CTIA also participates in FEMA's National Advisory Committee, which Congress tasked in 2015 with developing best practices to ensure the continued effectiveness of IPAWS, including WEA. Through these efforts, stakeholders can ex-

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<sup>9</sup> *Second WEA R&O* ¶¶ 12–14.

<sup>10</sup> *WEA R&O* and *WEA FNPRM* ¶ 67.

<sup>11</sup> Remarks of FCC Commissioner Jessica Rosenworcel at Eye of the Storm: Broadcasters' Role in Emergencies, Jan. 18, 2018 available at <https://www.fcc.gov/document/commr-rosenworcel-remarks-broadcasters-role-emergencies-event>.

change ideas and seek consensus on steps that can be taken to enhance the utility of and maintain public confidence in WEA.

*Question 3.* What are some of the avenues or coordination structures your organizations participate in with FEMA? Do you have insight into working groups or advisory councils that help facilitate conversations around best practices, challenges, etc.?

Answer. While FEMA oversees and manages the relationships with authorized state and local alert originators, CTIA and our member companies participate in various Federal efforts to collaborate with state and local alert originators. For example, CTIA and our member companies have participated in the FCC's Communications, Security, Interoperability and Reliability Council, which has evaluated various enhancements to WEA in collaboration with state and local alert originators. CTIA also participates in FEMA's National Advisory Committee, which Congress tasked in 2015 with developing best practices to ensure the continued effectiveness of IPAWS, including WEA. Through these efforts, stakeholders can exchange ideas and seek consensus on steps that can be taken to enhance the utility of and maintain public confidence in WEA.

*Question 4.* As we know from recent events, the resilience of our institutions, and particularly those that provide critical services, is essential for the swift response and recovery from natural and man-made disasters. Obviously as we talk about infrastructure and resilience in the face of changing threats, understanding best practices and investments industries are currently making is important. Are you required to meet specific resilience or redundancy standards to ensure you can continue to serve your critical role in the alert and warning cycle if disaster strikes?

Answer. Wireless network resiliency is one of CTIA and our member companies' highest priorities because wireless supports critical emergency services during disasters, including WEA and 9-1-1. As noted in my testimony, WEAs have been used extensively to warn the public of severe weather emergencies. This past fall, more than 300 Wireless Emergency Alerts warned people around Houston, Texas about Hurricane Harvey and its rising floodwaters, more than 200 Wireless Emergency Alerts warned Floridians about the strong winds of Hurricane Irma, and Wireless Emergency Alerts played a critical role in warning many Californians about the devastating wildfires.<sup>12</sup> In 2013, 29 children were saved from a tornado ripping through a soccer building in Windsor, Connecticut when the camp manager received a Wireless Emergency Alert seconds before the tornado touched down.<sup>13</sup> Even as the system was only months old in 2012, public safety officials were using Wireless Emergency Alerts to warn the people in the path of Superstorm Sandy.<sup>14</sup>

The availability of WEA during emergencies and disasters is due to the resilience of wireless networks. In addition to individual network resiliency practices of our member companies, CTIA's voluntary Wireless Network Resiliency Cooperative Framework and associated best practices are helping to make wireless networks more resilient to a variety of threats. Notably, 95 percent of wireless cell sites were operational throughout Hurricane Harvey in 2017. CTIA's member companies will continue working hard to maintain wireless networks to support WEA and other emergency communications during disaster situations.

<sup>12</sup> See generally CTIA, *Hurricane Harvey: Resiliency & Relief*, <https://www.ctia.org/hurricane-harvey/> (last visited Jan. 16, 2018); Aaron C. Davis & Sandhya Somashekhar, *The only California county that sent a warning to residents' cellphones has no reported fatalities*, Wash. Post, Oct. 13 2017, [https://www.washingtonpost.com/investigations/the-only-california-county-that-sent-a-warning-to-residents-cellphones-has-no-reported-fatalities/2017/10/13/b28b5af4-b01f-11e7-a908-a3470754bbb9\\_story.html?utm\\_term=.cd24bb9ecf9c](https://www.washingtonpost.com/investigations/the-only-california-county-that-sent-a-warning-to-residents-cellphones-has-no-reported-fatalities/2017/10/13/b28b5af4-b01f-11e7-a908-a3470754bbb9_story.html?utm_term=.cd24bb9ecf9c); Richard Perez-Pena, *Fire Alert Sent to Millions of Cellphones Was California's Largest Warning Yet*, N.Y. Times (Dec. 7, 2017), <https://www.nytimes.com/2017/12/07/us/cellphone-alerts-california-fires.html>.

<sup>13</sup> Rick Wimberly, *Powerful Wireless Emergency Alerts Success Stories at Congressional Hearing*, EMERGENCY MANAGEMENT (Oct. 24, 2013), <http://www.govtech.com/em/emergency-blogs/alerts/Powerful-Wireless-Emergency-Alerts-Success-Stories-at-Congressional-Hearing.html>; see also, David Owens & Chloe Miller, *National Weather Service Confirms Two Tornadoes Monday*, HARTFORD COURANT (July 2, 2013), [http://articles.courant.com/2013-07-02/news/hc-tornado-warning-0702-20130701\\_1\\_windsor-locks-dome-national-weather-service-confirms](http://articles.courant.com/2013-07-02/news/hc-tornado-warning-0702-20130701_1_windsor-locks-dome-national-weather-service-confirms)

<sup>14</sup> *Id.*

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO  
SAM MATHENY

*Question 1.* Your testimonies both highlighted the fact that the Hawaii incident, while unfortunate, illustrated a fairly flawless execution of the backend alerting protocol supported by the wireless and broadcasting community. How, if at all, do the decisions made by states and localities when it comes to software or hardware impact the operations of the wireless and broadcasting communities?

Answer. As a general matter, the decisions made by states and localities with regard to software and hardware have little impact on the operations of the broadcasting community. Broadcasters are generally made aware of EAS alerts via one of two systems: The Common Alerting Protocol (CAP) system, which is an international standard employed by the Integrated Public Alert and Warning System (IPAWS), and the Specific Area Message Encoding (SAME) protocol, which is the legacy notification system originally developed by NOAA, later adopted by the FCC, and which is still used in many areas. Regardless of how the message is sent to broadcasters, it will be transmitted to viewers and listeners so long as it is authenticated. Alternatively, in some states, EAS communications are administered by a third party distributor contracted by the state or locality. In these cases, it is possible that broadcasters may have to deploy an additional system or piece of equipment to receive and relay EAS messages.

*Question 2.* Have your members developed relationships with State and local emergency management/EAS operators and shared challenges or opportunities to work together in pursuit of your common goals?

Answer. Yes, broadcasters have developed close relationships with local emergency managers to ensure reliable communications during emergencies. As a practical matter, the emergency managers are “news sources,” and broadcasters, in turn, take this information and disseminate it during emergencies. Regarding EAS specifically, broadcasters are closely involved in State Emergency Coordinating Committees (SECCs), which are the state organizations that construct the state EAS plans. Broadcasters are often the lead members on the SECCs, and work closely with emergency managers on drafting the plans.

*Question 3.* What are some of the avenues or coordination structures your organizations participate in with FEMA? Do you have insight into working groups or advisory councils that help facilitate conversations around best practices, challenges, etc.?

Answer. I am a member of FEMA’s Integrated Public Alert and Warning System (IPAWS) Advisory Committee, which evaluates current emergency notification protocols, standards, and procedures, and ultimately develops recommendations for an improved EAS system. In addition, the National Association of State Broadcast Associations (NASBA) and the National Association of Broadcasters (NAB) coordinate with FEMA, both formally and informally, during an annual EAS summit, which takes place every February in Washington, DC. NAB staff also work with FEMA staff on FCC advisory councils, including the Communications Security, Reliability, and Interoperability Council (CSRIC). For example, I personally participated in both CSRIC IV and V, and Kelly Williams, a senior director in the technology department at NAB, is currently participating in CSRIC VI. The CSRIC has created best practices and guidelines for disaster preparation and recovery, and considered ways to improve the EAS during multiple iterations of the CSRIC. FEMA also makes several presentations each year at the NAB Show, the broadcast industry’s largest annual conference, which will be taking place again in April of this year. Finally, NAB coordinates directly with FEMA on an ad hoc basis when disasters arise, such as the recent hurricane in Puerto Rico. This public-private partnership can help to bolster the disaster response of both FEMA and local broadcasters.

*Question 4.* As we know from recent events, the resilience of our institutions, and particularly those that provide critical services, is essential for the swift response and recovery from natural and man-made disasters. Obviously as we talk about infrastructure and resilience in the face of changing threats, understanding best practices and investments industries are currently making is important. Are you required to meet specific resilience or redundancy standards to ensure you can continue to serve your critical role in the alert and warning cycle if disaster strikes?

Answer. As I noted in my testimony, resiliency and redundancy are essential considerations for any broadcaster and uniquely position us as first informers during times of crisis when other communications infrastructure fails. Broadcasters invest heavily to ensure they remain on the air in times of disaster, and broadcast facilities often have redundant power sources, automatic fail-over processes, auxiliary transmission systems, generator back-up, and substantial fuel reserves. FEMA officials

have noted that in times of emergency there is no more reliable source of information than local broadcasters. Stations can be fined by the FCC if their EAS equipment is not functional, but unlike with telephone services, there are no outage reports required for broadcasters if they are forced off the air. In addition, some broadcasters voluntarily participate in a cooperative program with FEMA to serve as Primary Entry Point (PEP) stations, and act as the source of messages initiated by the Presidential Emergency Alert System. Stations that participate in the PEP program have their own set of resiliency requirements as set forth by FEMA. Due to intense competition in the industry, however, broadcasters have incredibly strong incentives to remain on the air, regardless of any specific external requirements. Put simply, if a broadcaster goes off the air, listeners and viewers will just change the channel.

