Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of Improving Wireless
Emergency Alerts and
Community-Initiated Alerting

PS Docket No. 15-91

AC&C LLC REPLY COMMENTS

INTRODUCTION AND SUMMARY

The launch of the WEA system in 2012 was the beginning of a new era for mass notification in this country. It marked a significant change in the technology used to deliver emergency alerts to the public and leveraged the capability of the wireless industry, through cell-broadcast technology, to alert people through their wireless handsets. However, as discussed throughout a wide range of public safety comments, the current system is limited in its efficacy for a number of reasons, most notably that alert-originators cannot confine their messaging to the area that they would like to alert. Not only does this result in citizens being over-alerted when the WEA system is used, it also results in the system being significantly underutilized as the record indicates that alert originators are hesitant to use the system because they cannot contain the message to their constituents.[1] If the WEA system is to become the center of an alert-ready nation, as it was intended, it must continue to evolve to meet the needs of both public safety and citizens. Fortunately, as the record indicates, there is a low-cost, easily-implemented solution at hand (literally) that can solve a significant range of the issues raised in the comments, while providing wireless carries with a revenue opportunity that will help to ensure that the service evolves as more than just an unfunded mandate on wireless providers. As discussed below, and throughout comments in the record, applying the current benefits of cell-broadcast delivery of alerts, and integrating the incredible intelligence of the mobile device, the WEA service will deliver on its amazing promise to keep America's citizens alert and aware in times of trouble.

Eighty-five percent of the comments from Public Safety express a need for more granular geo-targeting.

[1] : Boulder Regional Emergency Telephone Service Authority: "WEA is also of limited utility to local public safety agencies because messages cannot be targeted to affected areas."

IMPROVED GEO-TARGETING

Public Safety's comments are clearly expressing the need for a roadmap to improve the capabilities of the WEA system, specifically the need for the WEA system to granular geo-target and geo-fence notifications with specific references and suggestions to leverage intelligent devices.[2] A review of the record suggests that eighty-five percent of the public safety commenter's are calling for greater granularity in the delivery of alerts. This issue has been raised from coast to coast,[3] from large community to small,[4] and from Public Safety Associations to a military base.[5]

As a result of the limitations expressed in the record, most notably the inability to target and fence messages, the system has been underutilized. In the over four years since its inception, only forty-eight entities have sent alerts over the WEA system. In total, 622 out of over 6,500 have registered to deliver alerts.[6] And perhaps most telling, those 622 qualified alert originators pale in comparison to the 4,400 entities who have invested in opt-in mass notification systems in an effort to meet their alert notification needs, but at the same time limit distribution of the alert to the originator's constituents.[7] Nixel, another opt-in mass notification system, reports on their web site that their system is "relied on by over 8000 agencies, fire and police departments, schools, hospitals."[8]

A perfect example of this underutilization can be seen in the comments of the one of our nation's largest cities, Houston. According to the cities filing in this record, Harris County, where the majority of residents reside, "has received more federal disaster declarations than any other county in the United States, and continues to be threatened by a unique and complex combination of manmade, natural and technological hazards."[9] And yet, the City of Houston has not initiated a single WEA message to its citizens.

INCORPORATING A DEVICE-BASED CAPABILITY

As the Commission considers an update to the WEA program, AC&C LLC believes there are a number of low-cost and effective changes identified in the record that can be made

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[2] Indiana Dept of HS, California Gov Office of Emergency Services, Pinellas County FL Emergency Management, U.S. Geological Survey, APCO International, Nevada Office of Emergency Management, NOAA/National Weather Service, City of Houston Mayor Office of Public Safety and Homeland Security, New York City Emergency Management Dept., Brevard County, FL Emergency Management , Kansas Division of Emergency Management, Jefferson Parish Emergency Management, Fort Riley Emergency Management.

[3] Douglas County WA to Brevard County FL.

[4] New York City Emergency Management to Vail Police Dept and Vail Public Safety.

[5] APCO to Fort Riley Emergency Management.

[6] IPAWS Filing NPRM dated: 1/6/2016.

[7] Hyper Reach NPRM filing dated 1/13/2016. "We estimate that almost 1,900 counties and more than 2,500 municipalities have access to such a MENS (commercial mass emergency notification service) system. Collectively, we believe these systems cover more than 80% of the US population."

[8] Nixle: "The Nixle engagement platform is relied on by over 8000 agencies, fire and police departments, schools, hospitals…" From the Nixle web site: http://www.nixle.com

[9] City of Houston comments at introductory letter.

to the current WEA structure to give those to whom the message is relevant the information they need to make an informed decision on protecting their lives and property. These proposed changes are a very low cost solution that will not be a burden to the carriers currently providing the platforms for WEA delivery, nor to potential new carrier participants, but will provide additional capabilities and enhancements to alert originators, and will significantly enhance the likelihood that citizens that receive alert messages are those that were intended to receive the message. As the record indicates, by combining the distribution of cell broadcast (and whatever future broadcast network enhancements the carriers adopt) with the capabilities of the mobile devices, we can create the geo-fenced mass notification system that public safety is calling for throughout the record.[10] At the same time, we can create a system that will evolve with new mediums and technological advancements, including the enhancements that are under investigation as part of the evolution of the 911 system.

Device Based Alerting: Device based alerting leverages the key components of Cell-Broadcast technology [unlimited communication capacity within the broadcast area, no databases and one way broadcast protecting privacy] to push information into the general alert area and the device's location awareness to decide **Who** the alert is relevant for and **How** the alert is displayed on the device. By passing the alert area coordinates generated by the public safety alert originator to the device along with the alert message, the device can compare its physical location to the alert area coordinates and play the message only when it is within the alert area. Once the device realizes the alert is relevant to its location it then decides how the person wants the message displayed. The device personalizes a mass notification by:

- confirming why the person is receiving the alert by showing the devices position within the polygon on a well defined active map;
- looking and displaying the message in the preferred language of the device user if it is available;
- following the instructions set in the device to convert the text to speech, vibrate and flash;
- allowing the user to access additional detailed instructions for what to do during a tornado, flash flood, hurricane, etc. already stored on the device; and,
- as a "receive only" broadcast, device settings and user defined information can be leveraged to further personalize a message without extracting any information from device, thus protecting the privacy of the end user.

Since the alert area coordinates are contained in the data file with the message, the ability to geo-target is maintained using any delivery medium and evolves with the carriers

[10] "The FCC should require carriers to use integrated the Global Positioning System (GPS) capability in most new phones to allow for a greater pin-pointing of geo-targeted warnings. The nature of cell broadcast allows for a great amount of over-warning, however if warnings could be tailored so that a device is able to choose to display a warning, or not do so, based on the combination of the warning polygon and the devices GPS coordinates, it may allow for more targeted warning. In situations such as hazardous chemical releases, where protective actions are differentiated based on proximity and direction of the hazard, this could ensure that the right message reaches the right person, at the right time." City of Houston Comments at page 3.

chosen technology, including rapid deployed networks in the aftermath of natural and man-made disasters. The Common Alert Protocol (CAP) standard is designed to accommodate the broadcast of additional information, including geo-coordinates, to the device. AC&C's device-based enhancement is designed to integrate with current technologies being used by Public Safety and the wireless industry.[11]

These capabilities suggest that a device-based enhancement to the current WEA service not only will address a significant number of the concerns raised in the comments, including about the lack of geo-targeting capability, but that it also may have additional benefits. In particular, a device-based enhancement:

- Will create the opportunity for public-private partnerships that will generate revenue for WEA participants and will lead to a continual evolution of the WEA service and participation by all wireless providers;[12]
- Will allow for much more significant geographic-targeting capability, resulting in alerting those people to whom the alert is relevant;[13]
- Will address the desire of alert originators to provide additional information by allowing for a significant amount of information to be imbedded in the device, thereby often removing the need for alert originators to imbed links into the alert and, as a result, limiting the impact on the wireless networks;[14]
- Will adapt to incorporate consumers' personal preferences into the alert – language of choice, font size, etc. – and because device-based works with cell broadcast and is a one way message, it protects the users privacy;
- And, may significantly improve performance in the aftermath of natural or man-made disasters as wireless carriers evolve their networks, focus fuel resources on certain towers, or deploy COWs/COLTs. Device-based capability will allow for geo-targeting even as cell site configuration evolves and the possibility for over-alerting may increase;

As discussed, the issue of a device-based approach was addressed multiple times throughout the record. Attached to these Reply Comments are research studies from

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[11] It is important to note that PGAlert is designed as "receive only", protecting the privacy of the end user.

[12] CELLULAR EMERGENCY ALERT SERVICE ASSOCIATION of Civil Societies: While the association accepts the terms of the WARN Act, that to imposition 'user' costs on alert and warning would limit participation, providing Government Information advisories should not be held to this this restriction. It is our comment that consideration be given to the expansion of WENS as a revenue-driven mobile feature.

[13] APCO: "APCO understands that the ability to geo-target wireless messages can be affected by network topology, geography, and radiofrequency behavior. But to be as clear as possible, geo-targeting saves lives. Accordingly, APCO encourages the wireless industry to apply available wireless network and device technologies to target messages as precisely as possible.

[14] AC&C Comments filed 1/13/16 page 8. Another suggestion is storing pre-formatted common messages on the device that can be retrieved with limited character codes. An example of this is working with the START (Study of Terrorism and Responses to Terrorism) group to put together the best wording for what to do during a tornado, flash flood, etc. to convey the clearest message. These files are then stored on the device, which can be updated and additional files added to the devices with normal software updates.

Carnegie Melon, Johns Hopkins University Applied Physics Lab', and the National Consortium for the Study of Terrorism and the Response to Terrorism (START) that address the feasibility of a device-based enhancement to WEA. Specifically, while not developed as part of this record, they address several of the issues raised in the record, in part through an ATIS Feasibility Study conducted by the wireless industry. That ATIS study discusses the need for additional research and standards required to integrate a device-based solution into the WEA system. The ATIS study also discusses the need for additional research and standards for using compression techniques to deliver polygon coordinates using cell broadcast, the reality that for mobile device geo-targeting to function, the mobile device must first determine its current location, which is not always possible, and the need for additional research and standards to determine the best use of displaying maps as part of an alert message. The ATIS study concludes "In summary, WEA is a voluntary service and there is no funding for enhancements."

Each of these issues are addressed in the attached research papers. DHS S&T has funded significant research that demonstrates feasible and practical solutions that overcome many of the technological obstacles discussed in the ATIS Study. In particular:

- Carnegie Melon's research has successfully demonstrated compression techniques that enable efficient transmission of polygons representing geographical targets using cell broadcast.
- Johns Hopkins University Applied Physics Lab's research shows that "a device-based solution can improve the geo-targeting accuracy of WEA significantly without consuming excessive mobile device power or radio resources." Also, device can be programmed to display alert as a default when device is unable to determine its current location.
- The National Consortium for the Study of Terrorism and the Response to Terrorism (START) research has concluded in their first study that high-resolution maps had a statistically significant and positive effect on public response outcomes including interpretation and personalization, and, hence, could have a positive effect on protective action taking. In their second study they found that static maps should not be used in WEA messages without further research examining the best way to craft such maps.

AC&C believes that the research contained in the attached studies confirms that a device-based solution not only is feasible, but also sensible. While work would need to be completed with the wireless carriers and handset manufacturers, the record suggests that this approach should strongly be considered.

CONCLUSION

Based on the NPRM Comments, 85% of public safety comments support granular geo-targeting. Additionally, several commenters mention that they would not use WEA until they can control the message and many recognized the benefit of using the location awareness of the device. The totality of these comments suggests a very strong demand for a geo-fencing solution. A device based solution will address the concerns of Public

Safety, significantly enhance the WEA service so that it delivers on its immense promise, and yet be low cost to wireless carriers while opening the door for a revenue generating capability. By working together over the next six months we can make the necessary changes to standards and have an enhanced public alert system commencing at the end of 2017 to provide public safety and citizens with a modern mass notification system that meets their needs.