

April 8, 2016

Via FCC Electronic Comment Filing

System Ms. Marlene Dortch
Secretary
Federal Communications
Commission 445 12th Street, SW
Washington, DC 20554
Re: Wireless Emergency Alerts (WEA) – Proceeding 15-91

Dear Ms. Dortch:

On March 30, 2016, I met via a conference bridge with the FCC team from the Public Safety and Homeland Security Bureau. The FCC team consisted of the following: Gregory Cooke (Associate Division Chief), James Wiley (Attorney Advisor), Steven Carpenter (Cybersecurity Engineer), Yoon Chang (Electrical Engineer), Behzad Ghaffari (Electrical Engineer), Rasoul Safavian (Electrical Engineer), Carolyn Shillingburg (Legal Intern).

We discussed several aspects of the FCC's Notice of Proposed Rulemaking on Wireless Emergency Alerts (WEA) Proceeding 15-91. The following notes are intended to memorialize our comments from that discussion.

Our discussion started with a question regarding whether DHS S&T conducted any research associated with a cost benefit analysis in terms of lives saved as a result of the issuance of a WEA message. Since that particular subject was beyond the scope of our research requirements, we moved on to the following areas.

Message Length

With regard to message length, our research found that text messages sent through the Wireless Emergency Alerts (WEA) system should be lengthened to include more information about the hazard, recommended protective actions to take and time until impact. Our researchers looked at expanding a WEA message to 280 characters and found that people better understood the threat at hand, what to do and how to do it. However, prior research has shown even longer messages (1,380 characters) to be most beneficial. Because today's smart phones can only display up to 280 characters on a single screen, it is not recommended that a message exceed a single page/screen of text.

Our research also found that another critical role in message effectiveness is the order of the content: source (who is issuing the alert), hazard (what is happening), location (where it's happening), time (when protective action should be taken), and guidance (what protective action should be taken).

Through our researcher led focus groups, participants who received a 280-character mock WEA with content in the order of source, hazard, location, time and guidance, had significantly higher levels of message understanding and belief that it pertained to them than those who viewed a message with content ordered as in the an earlier format (hazard, location, time, guidance, source).

Another critical piece of the content is the source of the message. Knowing who sent the message plays a critical role in establishing credibility. Well-known federal sources such as the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS) were most effective.

The study also investigated additional elements that could be included in a WEA. For a 280-character mock WEA, adding apps and hyperlinks to messages appears promising, whereas adding maps, was not. Both elements merit additional research.

Our researchers did not investigate any issues regarding backward compatibility issues with switching from 90 to 280 characters or more messages.

Links, Maps, and Apps

Our research found that including links that display additional general information and using apps that provide more personalized information may be useful strategies for expanding the number of characters available for writing WEA messages and can potentially lead to improved public message outcomes and warning response. For example, the research found that level of understanding was significantly higher for individuals who viewed the optimized 280-character WEA message that also included an app containing additional *personalized* information, and for those viewing a message that included an app containing additional *personalized* information plus a map, compared to those who viewed the 280-character optimized WEA message. The level of understanding also was significantly higher for individuals who viewed the optimized 280-character WEA message that also included a link to additional *general* information. Therefore, future research should examine how to best tailor mobile alert messages based on receiver location and other factors to achieve optimal outcomes and also the best way to include future potential links in WEA messages.

Our research found that none of the map elements tested had a statistically significant effect on message outcomes, and focus group participants varied widely in their reactions to the tested maps. Maps can be useful in message personalization, but the role they play varies based on message length.

Specifically, our results indicated that the effect of maps on message outcomes varies based on message length. In the absence of maps, longer messages have a greater level of understanding. This suggests that longer 1,380-character messages are most effective at motivating public protective actions in response to mobile alerts. Adding maps to shorter 90 and 140-character messages seemed to help increase message understanding, but adding maps to longer messages decreased message understanding. Adding maps to short 90-character messages, on the other hand, may increase response delay, but may help reduce delayed action-taking for longer messages. One possible explanation for the pattern of findings for at least some of the outcomes may be the increased amount of cognitive effort required to process longer text messages in addition to processing the visual information contained in maps.

Consequently, maps should not be used in WEA messages without further research examining the best way to craft such maps, as well as how they may impact message personalization and other outcomes. Specifically, additional research is needed to determine how to best communicate hazard and receiver location in maps associated with WEA

messages. Future research also should examine the extent to which humans are able to process text and visual information in an emergency context.

Our research findings concluded that while not a magic bullet, 280-character messages clearly are more effective at communicating imminent threats to at-risk public than are the current 90-character WEA messages. In addition, the order of the content contained in an alert – whether it is 90 or 280 characters – remains a critical consideration as does the message source. Adding apps and hyperlinks to WEA messages appears promising, but merits additional research. Adding maps to 280-character messages, as was tested, was not promising, but merits additional research. In sum, searching for the “perfect” WEA may be akin to Goldilocks’ search for the perfect porridge. Instead, the best course of action may be to optimize WEAs as best as possible, realizing that some members of the public will always seek additional information and clarification from multiple sources.

Sincerely,

/s/ Denis A. Gusty
Program Manager
Homeland Security and First Responders
Group
Science & Technology
U.S. Department of Homeland Security