

Save Lives, Withstand Catastrophe, and Stimulate the Marketplace

Executive Summary

U.S. Federal agencies are responsible for governing emergency communications systems capable of effectively and expeditiously notifying the public. There are several approaches to communicate with the public, but they are limited to cellular networks and cable systems. These limitations are susceptible to damaged cell towers and power outages which can leave people without a means of attaining information in the wake of and during a disaster event. Opening other channels of communication, which can withstand natural disasters, is a solution. Activation of FM chips and Radio Broadcast Data System (RBDS) based systems would allow communication through FM Radio with the use of existing radio stations. A first step to bringing about this solution would be for mobile device manufacturers to activate the FM chips in mobile phones. Demonstrating that FM chip activation can increase revenue by allowing them to have a differential advantage, may convince industry leaders to adopt this technology. Competitive advantage, coupled with the public safety/social good incentive, could enable market forces, as opposed to regulatory powers, to bring FM Radio chip activation and RBDS-Based Emergency Alerting to fruition.

Context of Problem

Having the FM chip activated has the potential to save lives during emergencies

In 2017 U.S. cellular networks went offline for days in disaster-stricken areas during hurricane Irma and Harvey. 3.5 million people living in Puerto Rico and at least 148,565 residents in Texas lacked (1) a means of communication with emergency personnel and (2) a way to get updates on emergency relief efforts.^{1,2} Loss of communication can lead to loss of life and unnecessary expenditures.

Americans living with disabilities are at greater risk of injury and harm during an emergency because the means of attaining information may not be conveyed in a way by which they can discern. Based on 2017 U.S. Census Data and Pew Research Center mobile phone ownership rates, we estimated that FM chip activation could allow at least 15 percent of Americans with disabilities to acquire information regarding emergency situations.

During 2016 there were 1,276 injuries and 458 deaths associated with natural disasters in the U.S.^{3,4} A drastic reduction in the number of deaths and injuries could occur if proper communication coupled with accurate forecasting were implemented. We estimated \$33 million of related medical expenses over the past ten years could have been avoided.⁵

Policy Alternatives

Currently, FM chip activation in mobile phones is not a regulatory requirement. Phone manufacturers include or exclude FM chips in an arbitrary fashion throughout the industry. Chip activation, from the public's perspective, may seem like the clear choice, particularly in emergency situations, but the mobile phone industry has pushed back since there is no perceived financial benefit of activating the chip. FM chip activation and the resultant FM Radio feature provides a differential advantage. An

industry leader could market FM Radio as a safety feature and their device as a safer option during an emergency. Consequently, from the viewpoint of public safety, their competitors may be at a disadvantage, which could incentivize them to begin activating the FM chips in their devices, so as not to be perceived as the less optimal device. There are two ways by which the industry can begin activating the FM chip. Both options have the potential to advance FM chip utilization.

- The first option would be a Federal regulation mandating implementation and activation in all or a percentage of mobile devices.
- The second option would be to encourage voluntary activation of FM chips for use during mass emergencies by demonstrating that consumers would opt for the safer choice.

Recommended Regulatory Action

In 2013 the Wireless RERC addressed the advantages of FM Radio via mobile after observing several years of severe tornados and disrupted cellular and power service during which this technology could have provided an emergency information lifeline. Chairman of the Federal Communications Commission, Ajit Pai, released a statement on September 28th, 2017 calling for the mobile device companies to make a shift and activate FM chips in phones. Limited FM chip activation in mobile phones reduces the methods by which state and local emergency managers can communicate to the public during emergencies. The Integrated Public Alert and Warning System(IPAWS) was created to reach the public during times of emergency using as many “communications pathways as practicable.”⁶ FM Radio is a possible and pragmatic pathway that is not currently being utilized. Mobile device manufacturers would activate FM chips if they embraced the competitive advantage and social good incentives. If an industry leader in the mobile market, demonstrated the differential advantage they would have over their competitors by adopting and activating the FM chip, they could potentially sway the market to adopt the technology. This market solution, however, may require a regulatory push. Given the recent disaster events, and projections of stronger and more frequent catastrophic weather events, the FCC could formally reintroduce the proposition of using the FM chip for public safety in a Public Notice. However, given the urgency of improving the ability to reach the public when cell service and power is limited, a Notice of Proposed Rulemaking may stimulate a stronger response from stakeholders.

Read the full white paper:

FM Radio and RBDS-Based Emergency Alerting at <http://www.wirelessrerc.gatech.edu/fm-radio-and-rbds-based-emergency-alerting-volume-2017-02-february-2018>

¹ Rogers, A. (2017, October 10). *In Puerto Rico, No Power Means No Telecommunications*. Retrieved from www.wired.com

²Knutson, R. (2017). Cell Networks Suffer Outages in Harvey’s Wake. The Wall Street Journal.

³ NOAA, National Weather Service. (2016). *Weather Fatalities 2016*. National Weather Service.

⁴ NWS. (2017). *Summary of Natural Hazard Statistics for 2016 in the United States*. National Weather Service

⁵ The estimate is based on NWS statistics concerning injuries and fatalities as a result of weather events and extant research on the average costs of emergency room visits.

⁶ FEMA. (2010). Strategic plan for the integrated public alert and warning system (IPAWS) program. Retrieved from https://www.fema.gov/pdf/emergency/ipaws/ipaws_strategic_plan.pdf