

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

In the Matter of)	
)	
Revitalization of the AM Radio Service)	MB Docket No. 13-249
)	
Second Further Notice of Proposed)	
Rulemaking)	

COMMENTS OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY

This submission constitutes the comments of the Federal Emergency Management Agency (FEMA), of the United States Department of Homeland Security, on the Revitalization of the AM Radio Service, Second Further Notice of Proposed Rulemaking (SFNPRM) issued by the Federal Communications Commission (FCC or Commission).

The changes being considered by the FCC in the (SFNPRM) to the interference protections of Class A AM stations, particularly to the protections for the Class A AM stations' nighttime and critical hours operations, would decimate the system developed, and funded, by FEMA, under the mandate of Congress, for a robust communications-distribution network so that citizens of the United States will receive, under all conditions, a Presidential message in time of national emergency. The United States government has invested, and will continue to invest, millions of dollars in this communications-distribution network, which is reliant on skywave signal coverage by Class A AM stations.

There exists only one means by which FEMA can fulfill its Congressionally-mandated responsibility to ensure that FEMA can deliver a message from the President to the American people under all circumstances during overnight hours, that is through the cooperative use of the privately-owned Class A AM broadcast stations in the Primary Entry Point (PEP) program. The Class A AM nighttime skywave signals currently reach every point in the country. Millions of AM receivers are already in the hands of the public and nearly every automobile in the country has a

highly survivable mobile battery powered AM radio. FEMA's responsibility is to ensure that FEMA can deliver an emergency message directly to PEP station transmitter sites and further to work with broadcasters to ensure that PEP stations have back-up power and survivable transmission systems. To that end FEMA has spent millions of dollars bolstering the emergency operations of PEP stations by providing long-term backup power, protected redundant transmission, High Altitude Electromagnetic Pulse (HEMP) protection and program origination facilities to PEP stations, with a focus on Class A AM stations. All other means of mass electronic communication require from hundreds to thousands of nodes or network relay points, a significant portion of which would require backup power and HEMP protection for that means of communication to survive during austere conditions. The PEP station mission being implemented by FEMA ensures the availability and operation of fortified PEP stations on a very bad day trans- and post- a national security or catastrophic event, including a solar flare¹ or a man-made EMP event.

The history of the PEP program can be traced back to a proposal contained in the "*Final Report of the FCC Emergency Broadcast System Evaluation Task Force*, August 1987." That document described a FEMA and FCC developed proposal to use broadcast stations to serve as the last resort method of Emergency Broadcast System (EBS) transmission. It listed 30 continental US stations, based on location and coverage area, which would "provide reasonable national coverage without the assistance of any state networks." At the time EBS was much different from today's Emergency Alert System (EAS), as under EBS, the primary method of delivery for a national message consisted of a web of terrestrial AT&T "long lines" services that supported delivery to the major national broadcast networks. The PEP program was proposed as a last resort delivery solution for a national message should AT&T's telecommunications infrastructure be rendered inoperative. However, the broadcast industry began making major changes in the way the national broadcast networks delivered programming to their affiliates, bypassing AT&T and delivering programming directly to affiliates via satellite. Federal use of these terrestrial delivery systems to support EBS

¹ The solar storm of 1859 (also known as the *Carrington Event*) was a powerful geomagnetic storm during solar cycle 10 (1855–1867). During the Carrington Event, a solar coronal mass ejection (CME) hit Earth's magnetosphere and induced one of the largest geomagnetic storms on record. While solar scientists cannot predict the precise date of the next CME, experts agree that ultimately, and more likely sooner rather than later, Earth will experience another severe CME.

became known as the Emergency Action Notification (EAN) Network. In response to these technological changes, on September 15, 1995, the President signed a memorandum for the Director of FEMA on the subject of: Emergency Alert System (EAS) Statement of Requirements approving *Presidential Communications with the General Public During Periods of National Emergency*. This is commonly referred to as the “1995 Presidential Statement of Requirements.” In this statement of requirements it is clearly stated that “The Primary Entry Point (PEP) system is the cornerstone for the national-level EAS.” In doing so the statement formally ended the federal obligation to maintain the AT&T based EAN Network.

Consequently, thirty broadcast stations in the continental United States were selected and approached to join the PEP program with an additional seven stations outside the continental U.S. Participation in the PEP program provided for the installation of shelters, backup generators, 30-day fuel supply, lightning and surge protection (early EMP protection), and communications equipment at the PEP station transmitter sites. Through the years, FEMA continued to maintain and improve the back-up facilities at these legacy sites. More recently, FEMA added additional PEP facilities to the program, bringing the total number of PEP facilities to seventy-seven. This extended the daytime population reach of the PEP facilities above 90% of the US population. Nighttime coverage provided primarily by the twenty-five Class A AM stations in the PEP program ensures service to well over 95% of the U.S. population.

All of the most recently added PEP broadcast station facilities have fully HEMP-protected back-up facilities. FEMA is in the process of installing second generation HEMP-protected back-up facilities at the legacy PEP stations, complete with chemical and biological agent protection for shelter occupants, in keeping with All-Hazards PEP performance requirements. To date, eleven of the twenty-five Class A AM stations in the PEP program have received either first or second generation HEMP-protected back-up facilities. In addition to the currently ongoing installation work at Class A PEP station WLS, Chicago, FEMA expects to complete installation of second generation HEMP-protected back-up facilities at two more Class A AM PEP stations this year. As federal funds become available, work will continue until all PEP stations have HEMP-protected back-up facilities. The average cost to install a HEMP-protected backup facility at a PEP station currently is approximately one and one-half million dollars (\$1,500,000) per site.

By the Integrated Public Alert and Warning System Modernization Act of 2015,² Congress directed FEMA to continue its on-going effort to modernize the PEP system to ensure that the President can under “all conditions,” “alert and warn the civilian population in areas endangered by natural disasters, acts of terrorism, and other man-made disasters or threats to public safety.”

The Commission asks in the SFNPRM specifically for comments on what effect the proposals to change interference protections for Class A AM stations would have on the ability of other radio stations to receive EAS alerts from Class A AM PEP stations. To fully evaluate the impact of the SFNPRM Class A AM proposals, one must be sensitive to the development, design, and static nature of State EAS Plans. State EAS Plans, which detail EAS monitoring assignments, are primarily designed to ensure the reliable propagation of EAS messages within each state, while also ensuring that each EAS Participant can receive a national-level EAS message from two PEP sources on a 24-hour basis. EAS participant facilities are typically located in commercial areas with high levels of locally generated electrical noise. Monitoring assignments are selected with successful reception in mind, therefore most monitoring assignments are local. In many cases, a State EAS Plan will call for a PEP source to be relayed through multiple hops to distant EAS Participants. EAS Test Reporting System (ETRS) responses for the October 3, 2018 National IPAWS test indicate that only 1,665 EAS Participants directly monitor Class A AM PEP stations. A State EAS Plan does not describe a self-healing network. EAS devices and off-air receivers that support those EAS devices do not dynamically search for available off-air signals, to do so would violate the table of monitoring assignments contained in each State EAS Plan.

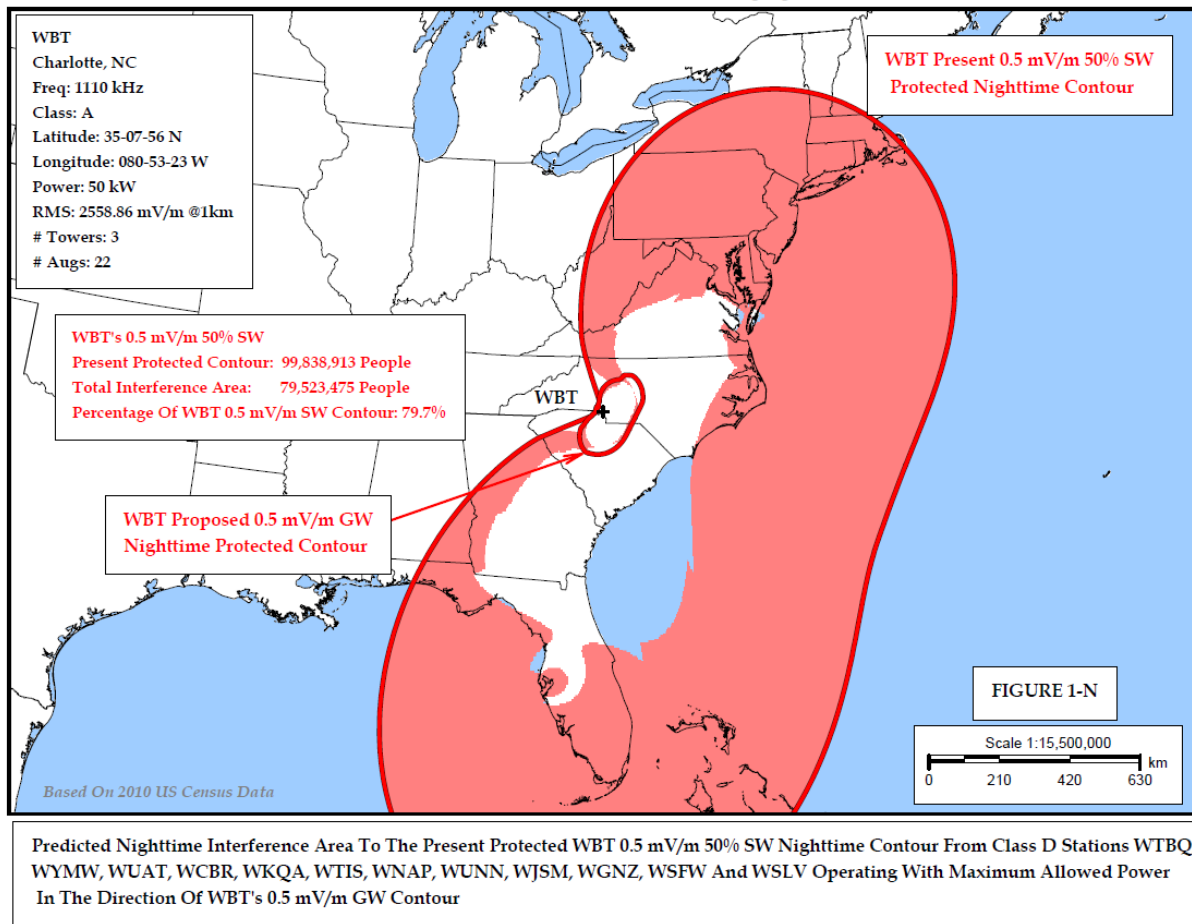
FEMA is concerned that the Commission’s SFNPRM Class A AM interference-protection proposals, including alternatives, will have a negative effect on the PEP system’s ability to provide direct groundwave and/or skywave service from surviving PEP stations to the entire country during times of grave national security concerns or following a catastrophic event which interrupts power and terrestrial communications on a very large scale. Should that national security or catastrophic

² Public Law No: 114-143.

event result in a breakdown of a State EAS Plan's monitoring chain, EAS Participants may become isolated from their sources of a national EAS message.

For example, consider Class A AM PEP Station WBT, Charlotte, North Carolina. This station provides regularly available skywave service to the Washington, DC area, which is well within WBT's currently-protected nighttime 0.5 mV/m 50% skywave contour.³ The population within this currently-protected contour is 99.8 million, including service to Miami and the Tampa Bay areas in Florida to the south, and the greater New York City and Philadelphia areas to the north. Under the provisions of the SFNPRM Alternative 1 for restricted nighttime protection for Class A AM stations, there are a dozen Class D AM stations which could possibly increase their nighttime service, causing significant interference within the currently-protected nighttime 0.5 mV/m 50% skywave contour decreasing the served population by 79.5 million.

³ See below, WBT Nighttime Interference Study, prepared by the AM Radio Preservation Alliance.



To consider what effect this might have on delivery of a national EAS message, FEMA reviewed the EAS off-air monitor assignments of those twelve Class D AM stations. In the interest of maintaining individual station confidentiality, the following analysis is based on six of the twelve stations. None of these stations maintain a direct connection to FEMA, unlike all PEP stations. None of the six analyzed Class D stations directly monitor a PEP facility. Two of the six are two off-air relay steps away from a PEP source. Three of them are three or more off-air relay steps away from a PEP source. Every one of these Class D AM stations that might remain on the air during a national crisis creates a pocket of interference to the established WBT skywave signal. In the event of a wide-spread major disaster causing damage to or collapse of the power grid, it is likely that none of these Class D AM stations will be capable of broadcasting a national EAS message regardless of their ability to remain on the air, thus creating islands of interference where the population is not served by a national message transmitted by WBT.

Some may question both the availability of functioning AM receivers in the hands of the public and the general survivability of AM transmitter plants following an EMP event. Contrary to what has been depicted in movies, many AM radios in the hands of the public should survive an EMP event, particularly those AM radios that are battery operated and not connected to AC power at the time of the event and AM radios in automobiles are very survivable. AM transmitter site EMP vulnerability testing was conducted by the Defense Advanced Research Projects Agency at PEP station WFED. The testing revealed that lightning and surge protection techniques normally associated with high-power AM stations will likely prevent EMP damage to the radio frequency side of AM transmission systems. This testing indicates that an AM transmitter site with back-up power may well continue to produce radio frequency signals following an EMP event, even if there is no program audio available, potentially interfering with a PEP station's emergency communications.

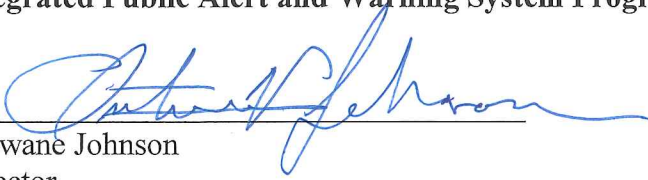
The FCC asks commenters to address potential benefits during emergencies of having more local service on the AM band available to listeners. Based on history, FEMA has seen very few situations where the rule changes proposed in the SFNPRM would increase the number of AM voices in an area. It is a long-established tenet that, in the event of a local emergency, an existing AM band station may apply for and receive special temporary authority to extend its service hours or operational configuration in order to provide critical life and/or property saving information. Upon receipt of such a request, in rendering a decision, the Commission has typically acted promptly, taking into consideration the individual situation, the potential for temporary harmful interference, the availability of other equivalent services to the area, and the recommendations of emergency management. In an emergency situation, more voices are not necessarily better if those additional voices cannot or do not deliver valid, actionable information. There are numerous examples of Class A AM stations in, and out of the PEP program, which have used their nighttime skywave service to deliver actionable information as specific as where disaster survivors can access food, water, and shelter to distant communities. In a major national security crisis or national disaster, even if only some of the Class A AM PEP stations survive, only they, with the back-ups and fortifications implemented by FEMA, can be relied upon to provide the wide-area

coverage via interference free skywave that will be vital to the emergency communications network.

Respectfully submitted,

Federal Emergency Management Agency

Integrated Public Alert and Warning System Program Management Office

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