Radio**SAFE** Wide Area Emergency Radio Broadcast Systems

A Community's Safety Net

A Radio**SAFE** Wide Area Emergency Radio Broadcast System is a community's safety net – a key resiliency asset that can be called up during a major incident to direct citizens in evacuation, preservation of life and property and/or disaster recovery. The service is licensable by any government entity in the United States and is permitted to transmit any emergency information that local authorities deem necessary to mitigate harm. Radio**SAFE** is offered in three formats, detailed below.

The new HPR.0990 High Performance Antenna is the heart of the System.

"Is your community RadioSAFE? That is, are you prepared to utilize available broadcast channels to directly inform and instruct the public over a wide area during incidents in which other communication or power sources are rendered inoperable?"

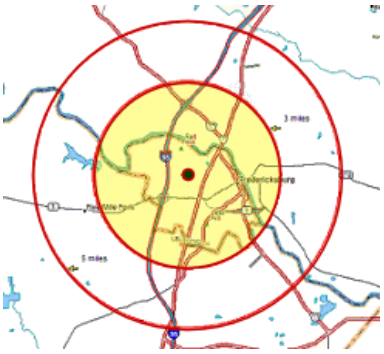
Maximum Range: Radio**SAFE** RSF.500:10X is a special radio station that typically operates at 10 watts for enhanced 7-10 mile range – until required to ramp up in an emergency. With the substitution of its high power transmitter, the system is capable of signal coverage that blankets an entire county or major city. A signal radius of 20 miles or more is possible. An emergency Special Temporary Authority (STA) must be granted by the Federal Communications Commission to permit initiation of the Radio**SAFE** service at enhanced power – which may be hundreds of watts.

Enhanced Range: Radio**SAFE** RSF.10X operates at 10 watts and with expanded field intensity limits (via waiver) to produce a much larger coverage pattern – 7-10-mile radius – than normally permitted by FCC rules.

Compact Range: The Radio**SAFE** RSF.10L System is more compact yet, with a signal range of 3-5 miles that makes coverage ideal for more modest-sized communities. It operates at up to 10 watts and within the conventional signal limitations of the Travelers Information (TIS) service. Like the other Radio**SAFE** systems, it utilizes the high-efficiency RSF.0990 Antenna so that an upgrade to larger coverage is a potential in the future.

Information Station Specialists provides the application documentation for emergency STAs, waivers and other licensing services required. Frequencies that are adequate for Radio**SAFE** operation are not universally available. Check with us regarding the availability in your area.

Radio**SAFE** Broadcast Systems operate on AM channels because of their nearly universal availability and because AM signals travel a much greater distance than FM signals at a given wattage. AM radio signals have long wavelengths that are less likely to be blocked by terrain and tall buildings. And more importantly, AM antennas can be installed at relatively low profiles (50'), making them relatively inexpensive to install and dramatically less vulnerable in high wind or geophysical events that can render tower-based communications inoperable.



RadioSAFE Application Examples

*** Evacuation.**
*** Incident Response / Recovery.**
*** Infrastructure Failure.**
*** Loss of Power / Communications due to Natural or Human-Initiated Disaster.**

Communication Strategy

In a disaster in which grid power is severed and mobile devices are not functional, a Radio**SAFE** Broadcast System might be the only means of reliably getting critical information to members of the public, who are likely to have functioning battery-powered radio receivers in their vehicles.

Radio**SAFE** Broadcast Systems have the capability of staging hundreds of preplanned safety messages that can be selected locally or remotely at a moment's notice and updated minute by minute. Programming can be performed at the station or remotely via telco or UHF/VHF transceiver or by LAN/WAN if optioned. Redundant levels of message control are provided in the Radio**SAFE** design.

Emergency officials can employ conventional methods of promotion, such as websites, media articles, commercial posters and local signage, on a day-to-day basis to provide visibility for the service so local populations have residual awareness of the special emergency frequency in their specific area. If possible, we recommend that a Radio**SAFE** station operate at 10-watt power 24/7 and that the public be encouraged to identify it in advance to "set a button" on vehicle radios so they can quickly find the channel when needed.

During emergencies, officials typically alert citizens to the availability of the Radio**SAFE** service via electronic notification / social media, Portable Changeable Message Signs (PCMS) or flashing beacon / LED signage installed along highly traveled roadways. The higher the public's awareness of the emergency frequency's presence, the more likely word-of-mouth will become a powerful ally when its content is critical.

Planning Considerations

At the heart of the new HPR.0990 Antenna is a heavy-duty, high-efficiency antenna coil.

The Radio**SAFE** program is all about large coverage; therefore, the planning process starts with a determination that an open frequency is available at the required location so the Radio**SAFE** system can operate at its full potential. Then FCC licensing / engineering, equipment procurement and installation can occur.

A Radio**SAFE** Broadcast System is installed strategically at a central location in the jurisdiction where a building (ideally an Emergency Operations Center) with automatic generator power is available. The electronics are installed inside the building with the antenna system located in an adjacent yard. Installation can be performed by local contractors with locally-supplied, cable and rack cabinet. Or, we offer options in which everything is provided as a turnkey project. Email Bill@theRADIOsource.com to get the process started or to obtain a quote.

RadioSAFE Range Requirements

RSF.500.10X	RSF.10X	RSF.10L
• 7-10-mile radius range, 24/7. **• Capability for coverage up to 20 miles in radius under FCC emergency authority.**	**• 7-10-mile-radius range, 24/7.**	**• 3-5-mile-radius range, 24/7.** **• Capability for future upgrade to RSF.10X (requires waiver).**
This broadcast-class facility is licensed to an agency as a Travelers' Information Station under FCC Rules Part 90.242. With FCC emergency authorization, a higher powered AM transmitter may be substituted for the 10-watt transmitter, which can produce a signal coverage area that rivals that of a commercial broadcast station. The wide-area coverage potential is made possible by an innovative antenna system – the HPR.0990 – which is capable of operating at hundreds of watts in an emergency but can also function at 0-10 watts in compliance with FCC rules (Part 90.242) on a daily basis. A HPR.0990 Antenna can make the transition to high-power operation with no physical modification or re-tuning required. This allows Radio**SAFE** RSF.500:10X systems to be tested and exercised at lower power as Travelers' Information Stations, so they are ready for high power operation when needed. The antenna system is installed away from obstructions in an open area that affords vertical room for the 50' antenna and horizontal room for the antenna's grounding system – comprised of a 25' or 50' radius groundplane. If horizontal room is not available, a "Unirod" groundrod is an option. The delivered RSF.500.10 package includes the engineering document required to obtain emergency authority from the FCC to initiate high power operation on short notice. It also includes a waiver application for expanded signal intensity limits when operating at 10 watts. *(*) 20-mile radius signal coverage is nominal and presented here for example purposes only. Actual signal range will vary based on antenna mounting position, local ground conductivity, terrain, interference sources and the specific broadcast frequency utilized.*	This variation of the Radio**SAFE** service operates full time at 10 watts – with a FCC waiver to allow expanded field intensity – and is intended for operators in communities that don't require 20 miles of coverage but do require a signal greater range than normally allowed by FCC rules. Radio**SAFE** RSF.10X shares the high efficiency HPR.0990 Antenna as its centerpiece, so that maximum signal coverage can be produced. The signal radius of 7-10 miles is suitable for many counties and medium-sized cities. Stations can be synchronized in groups to increase the coverage footprint. Radio**SAFE** RSF.10X systems are provided with a waiver application that requests signal limits that exceed the standard signal level of 2.0 mV/m at .93 mile.	Radio**SAFE** RSF.10L also operates at up to 10 watts but with a signal limitation of 2 mV/m at 0.93 miles. It is intended for compact communities that do not need wide-area coverage. The signal radius of 3-5 miles radius is suitable for most small to medium-sized cities as well as large educational campuses and government facilities. It is possible to upgrade a Radio**SAFE** RSF.10L Station to RSF.10X class with the application for a signal waiver if desired at a later date and if spectrum and geography permit. Like Radio**SAFE** RSF.10X, RadioSAFE RSF.10L stations can be synchronized in groups to increase the signal coverage footprint.

Options

RadioSAFE system options include various audio management methods and redundancies, antenna grounding and supports, associated signage and installation services. The broadcast program can be linked to IPAWS and/or your Emergency Notification System and can also stream to your website to be monitored on PCs and portable devices. The broadcast antenna is generally installed in a fixed format, though portable antenna systems are possible on a custom basis. Inquire.

Upgrades

Many current Information Radio operators may be able to upgrade an existing station to RadioSAFE status. It may also be possible for certain communities to begin with a more modest RadioSAFE system and upgrade the coverage at a later date. It all depends on your geography and the local frequencies available. Inquire.

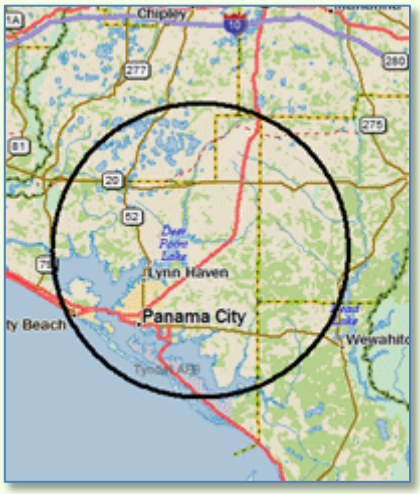
Provided

We provide all RadioSAFE Systems with 24/7 operational support for the life of the product.

First Steps

It is important to obtain an initial frequency search before undertaking a RadioSAFE project, since adequate frequencies are not universally available.

Email Bill Baker for help determining if a frequency is available and the best configuration for your particular application and to get a quote.



Example RadioSAFE (RSF.500:10X) signal coverage of up to 20-mile radius (shown above) is possible with an emergency authorization from the FCC. Variables that affect coverage are the authorized power level, terrain, ground conductivity and frequency. Predicted coverage is part of the RadioSAFE engineering documentation package

Notes

A waiver is required for a licensee to exceed the 2.0 mV/m signal level at 0.93 mile on a daily basis. And the use of more than 10 watts requires a waiver and an emergency Special Temporary Authority (STA) from the FCC. The engineering and filing of these documents is a service available from Information Station Specialists.

PO Box 51, Zeeland, MI USA 49464-0051 • Phone 616.772.2300, Fax 2966

Visit theRADIOsource.com