CAPITOL ELECTRONICS INC
Turning Technology into Solutions

Information Station Specialists

Our high performance AM radio antenna is the heart of the system.

Radio**SAFE**

Wide Area Emergency Radio Broadcast Systems

A Community's Safety Net

Radio**SAFE** Systems are a key resiliency asset that can be called up during major incidents to direct citizens in evacuations, 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** Wide Are Emergency Radio Broadcast Systems are offered in two formats:

1. **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.
2. **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.

We provide application documentation for emergency Special Temporary Assignment licenses, waivers and other FCC licensing services required. Frequencies adequate for Radio**SAFE** operation are not universally available. Check with us regarding 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.

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 broadcast messages that can be selected locally or remotely and updated at any time via network. An optional hybrid package adds USB / flash drive redundancy and live / feed multi-channel operation capability as well.

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

Our 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. Contact us to get the process started or to obtain a quote.

Standard Package

All Radio**SAFE** systems include . . .

- Broadcast transmitter(s).
- Network-based broadcast message control interface with local controls and SD card backup in the event of network loss.
- Recording software, headphones and mic.
- High performance AM radio antenna system with transformer, arrestor/bus, insulators, mounts and feedline and preassembled semi-rigid groundplane.
- Broadcast quality audio processor for best audio quality.
- UPS, AC surge arrestor, power strip, wiring harness.
- Diagnostic metering and test equipment.
- Hardware, cables, power supplies and illustrated manuals.
- System engineering and planning.
- Remote tech support for the life of the product.

Options

Radio**SAFE** 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 Radio**SAFE** status. It may also be possible for certain communities to begin with a more modest Radio**SAFE** system and upgrade the coverage at a later date. It all depends on your geography and the local frequencies available. Inquire.

Technical Support

We provide all Radio**SAFE** 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 Radio**SAFE** project, since adequate frequencies are not universally available. Inquire.

RadioSAFE Range Requirements

RSF:10X

- ***7-10-mile-radius range, 24/7.***

*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. 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.*

See technical specs at theRADIOsource.com..

RSF:500.10X

- ***7-10-mile radius range, 24/7.***
- ***20-mile radius range with FCC 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.

See technical specs at theRADIOsource.com.

(*) 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.

Note: *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.*

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