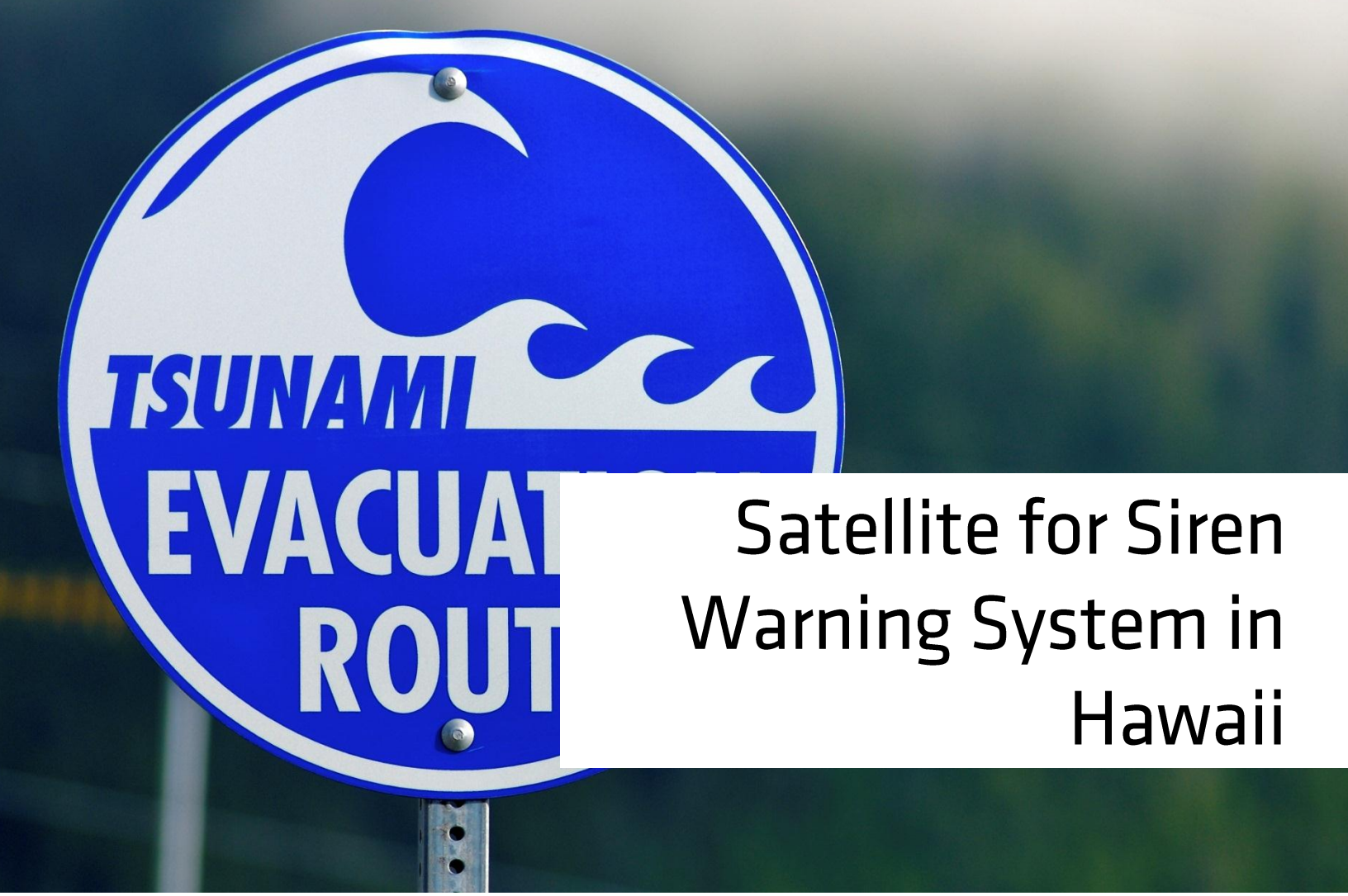

Satellite for Siren Warning System in Hawaii

About Hawaii State Civil Defense

Hawaii State Civil Defense leads the State in prevention, protection and rapid assistance during disasters with a full range of resources and effective partnerships. Their responsibility includes hurricanes, earthquakes, floods, landslides, tornados, tsunamis and volcanic eruptions.

As part of its mandate, State Civil Defense maintains the state-wide outdoor siren warning system. It is designed to alert the public to any emergency that may pose a threat to life and property. In addition to natural and technological hazards, the siren warning system could be used for terrorist incidents or acts of war.

The Situation

Hawaii's siren system ran on a "decades-old high-frequency radio system", according to George Burnett, Hawaii Civil Defense Telecommunications Branch Chief. "Our sirens pretty well exceeded their life cycle. It was taking extraordinary efforts from our maintenance staff to keep them running properly. You can't just have a technician with a meter at each siren checking electrical currents to see if it's going to work."

The VHF/800MHz radio frequency sirens installed across all of the islands could not be monitored from a central location. Unless there was a reason to visit a specific siren, technicians had almost no way of knowing when a siren was malfunctioning or had stopped working completely. The preventive maintenance check was scheduled to be performed only twice a year. Because there were no remote monitoring capabilities defining when to follow up on reported issues, such as a failed siren, the crew needed to visit the site, conduct tests, return to the office to source replacement parts and then return to the site to make repairs.

Between the age of the siren system and the amount of time and budget necessary to maintain it, Hawaii needed to upgrade the state-wide outdoor siren warning system that would alert the public properly.

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The Challenge

Any new state-wide replacement warning siren control system had to meet a long list of requirements:

- A state-of-the-art solution that would abide by the Federal Communications Commission's mandate that states move away from high bandwidth communications to one that uses lower bandwidth
- A unified and standardized control system that would work across all of the State's counties
- The ability to remotely monitor and test area-specific sirens regardless of the island they were located on
- Technology that withstood Hawaii's geographical topology and allowed sirens to be installed where previously not possible
- Communication redundancy to ensure all sirens were activated to ensure proper warnings

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The Solution

Hawaii worked with SkyWave and its Solution Provider, Federal Signal, a provider of safety and security solutions, to develop the new state-wide siren system. The system relies on M2M (machine-to-machine) satellite hardware from SkyWave and cell towers to transmit data from remote sites to the central office and provide total control and execution of the warning system.

The new sirens use solar panels and batteries rather than relying on the electrical grid.

> "We no longer have to rely on the public to report a failed siren."

The Result

By the time the project is completed, a total of 490 sites will be using Federal Signal sirens and SkyWave M2M terminals to warn residents of possible emergencies. The benefits of the alarm system include:

Redundancy: "The sat/cell solution gives us better ability to expand in areas where we don't have radio coverage," explains Tom Simon, Systems Engineer at Hawaii Civil Defense. "Everywhere we have a siren currently installed, we're able to verify that cellular and satellite service is available. This is the most foolproof way to make sure that the sirens will sound during an emergency."

Efficiencies: "Our standard system allows us to monitor and test sirens from our office in Oahu. We no longer have to rely on the public to report a failed siren," says Simon.

As well, the time spent having to physically verify the issue, head back to the office to find parts and then return to fix the problem, is eliminated. The new system includes the ability to query and change the status of specific sirens; confirm that sirens operate as expected during tests and emergencies; monitor the solar charger, battery voltage; and alert authorities if someone intrudes into the system.

Budget-Wise: "Buying new, lower-bandwidth 800 MHz trunk radios costs about $570,000 more than leasing space on commercial satellite and cellular networks" Burnett said. "The service cost of operating sirens via satellite and cellular is $11 per month. Amortized over a 10-year period, combined with the lower cost of related equipment, there was a cost advantage."

About SkyWave

SkyWave Mobile Communications is a global provider of wireless satellite and satellite-cellular data communications for the Machine- to- Machine (M2M) market. SkyWave's M2M portfolio of communication terminals and network services enable applications that provide businesses with the capability to track, monitor, and remotely manage their fixed and mobile equipment. SkyWave delivers real-time information when you need it -- to and from anywhere in the world.

Since 1997, SkyWave has designed, manufactured and shipped more than 600,000 satellite terminals to customers in the transportation, maritime, oil and gas, utilities and government sectors. For more information, please visit skywave.com.

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