

# CASE STUDY

## Achieving an Interoperable Multi-Agency System for Mutual Aid Emergencies in Solano County



**simoco**  
wireless solutions



# BACKGROUND

**The investigations into the events of 9/11 and specifically how the emergency services dealt with the tragedy caused a ripple effect that saw authorities across the US, and the world, examine the communications infrastructure of their emergency agencies.**

The issues highlighted in the wake of 9/11 weren't unique to police and fire departments in New York: aging radio technology and equipment, a lack of interoperable communications between emergency responders and unreliable coverage in high risk areas were themes that many recognized.

Solano County, in California was one of many regions that put their own emergency communications and disaster response planning under review. The Solano Emergency Communications Activity (SECA) group was formed

in 2004 and comprised members from the region's emergency services agencies as well as other key stakeholders.

SECA's objectives were to determine the County's needs and formulate a plan to put in place an interoperable radio system that would operate across the entire county in the event of mutual aid emergencies and disasters. With grant funding behind them, the team went out with an RFP and began the process of designing and selecting a system.

## THE PROBLEM

Interoperable systems by their nature aren't neat and tidy, and Solano County agencies all had individual systems operating on different frequencies with an array of equipment from multiple suppliers. The new system would have to support three frequency bands: VHF, UHF T-band and 800MHz. The system required a simulcast design to get uninterrupted coverage across wide areas, and a patching solution to link the various disparate radio systems, ultimately enabling agencies to work seamlessly on incidents that spanned different jurisdictions.

After a couple of false starts with the initial proprietary interoperability components, the first system that the team chose had a number of challenges and never went online. The SECA team then focused their attentions on the capabilities of

one of the system components, the Simoco Solar 2 Traffic Manager. The County learned that the Simoco equipment that they had initially invested in for just managing the TX side of the simulcast system could actually be used as the complete radio system and interoperability solution. Besides the robust transmit simulcast component, the system also provided system audio transport over IP, receiver voting, and a dispatch console priority input, all operating over a standard IP backbone. Ross Cardno, the Communications Supervisor for Solano County began to design a system that used the capabilities of the Simoco Solar 2 Traffic Manager (TM) and Network Interface (NI) units with their existing repeaters to build an interoperable wide area simulcast, multi-channel network..



## SOLUTION

Choosing to re-design and build the interoperable simulcast system with Simoco's simulcast technology as the foundation, and use the existing repeaters, the County was able to create a cost effective nine site (and expanding) system with 19 communications channels, supporting various County agencies including local sheriffs, city and district fire departments and public works.

“We needed to solve our interoperability problem without having to spend tens of millions of dollars on new infrastructure and subscriber units. Using Simoco's simulcast solution, we were able to utilize our existing radio repeaters to build an inexpensive and effective interoperability solution. We were really able to maximize the slim grant funds available to us.”

Each agency may be instructed to switch to a specific channel for the event. As an example, the police would switch to “Blue Tac 1”, fire units to “Red 3”, and sheriff units to “County 2”; the dispatcher would then carefully setup the correct patch.

The Solano County solution includes a fixed set of channels. Using the SECA acronym as the name for their channels, SECA channels 1, 2, and 3 were created with three mixed frequencies in each channel to enable interoperability between the different agencies using those specific bands. The names for the channels are then common to all agencies. During a mutual aid event such as a high speed chase that spans multiple cities, the various units can be dispatched to “SECA 1”. All units from the various agencies, whether they are on an 800MHz trunked system or VHF or UHF conventional system, can select the same channel name on their radio and instantly start talking to all participants in the chase.



“Our original goal was to build a system of channels on different frequency bands that we could patch together. What we found was that we could build a single channel on the Traffic Manager that included any.

With available interoperability funding, Ross’s team added a 700MHz P25 Phase 1 simulcast network to support regional mutual aid incidents. Because the County chose to continue using the Simoco simulcast technology for its new P25 digital network, it now became interoperable with the Simoco-based VHF, UHF, and 800MHz analog networks, as both simulcast systems share the same distributed IP architecture and system timing components.

“The absolute beauty of this simulcast system is that it operates completely over IP networks. With that flexibility, I am able to setup a mobile simulcast site instantly by activating my mobile hotspot from my smartphone. This was really helpful during the Wragg fire that made national headlines. We set-up our mobile communications vehicle near the fire to enhance the coverage of our existing countywide police and fire channels in the rugged terrain. The improved coverage was pivotal in the evacuation of residents and their livestock from the area.”

The capability to link and add sites relatively easily and at a low cost has meant that the County can continue to expand and enhance its radio communications to meet the needs of their emergency services.

## SUMMARY

**Solution:** Critical & Real-Time Communications Solutions

**Industry:** Public Security

**Sector:** Police & Fire Departments

The system continues to be a success, supporting the County’s emergency agencies in their day-to-day operations and when major incidents occur that require countywide support.

**“Wild fires aren’t the only thing that can bring together multiple agencies in our county. We also have a large air force base as one of our mutual aid partners operating their own exclusive UHF trunked radio system. Without our SECA mutual aid channels, we would really be in a jam to coordinate emergency services during a mass casualty incident.”**

The system continues to expand as police and fire agencies request more sites. Because of its low cost nature – each new site only requires a Simoco Solar 2 Network Interface and RF equipment that links up with the rest of the system – expansion isn’t hampered by cost.

**“We’re like every other county across the country - we have to cope with cuts to our budgets, but still provide the public with a high standard of emergency response and services. You can use legacy equipment and bring it all together over IP without having to replace your entire communications infrastructure. This system fits the bill.”**



## Contact Us

Field House  
Uttoxeter Old Road  
Derby  
DE1 1NH  
Tel UK: 08717 411 050  
Tel International: +44 (0) 1332 375 500  
info@simocowirelessolutions.com

UK HQ

1270 Ferntree Gully Rd  
Scoresby, VIC 3179  
Tel: +61 (0) 3 9730 3999  
Fax: +61 (0) 3 9730 3964  
inquiry.aus@simocowirelessolutions.com

AUS HQ

AMERICAS

Tel: +1 619 405 8926  
americas@simocowirelessolutions.com

**simoco**  
wireless solutions