



## NAPA COUNTY CALIFORNIA, USA

Napa County serves over 122 thousand residents across an urban California landscape, encompassing over 789 square miles.

While the City of Napa handles all 9-1-1 calls and Police Dispatch, Napa County provides the communications infrastructure for the entire region with the Sheriff's office as its primary customer. The topography of Napa County presents unique challenges, as the area is defined by two major valleys and rolling hills.

In addition to serving the Sheriff's office, Napa County provides the radio infrastructure for a number of surrounding Police Departments as well as other agencies, including Public Works, roads, courts, Parks and Recreation, Probation, Corrections and much more.

### SITUATION

In 2014, Communications Technicians Casey Wightman and Adam Call joined the Napa County Communications Department and were tasked to evaluate, revamp and maintain the region's radio system.

When they came on board, the existing VHF simulcast system servicing the county was stretched thin across only two sites. The system was running on antiquated equipment, often subject to outages. Perhaps the greatest challenge they faced was that only one transmitter sounded well, blasting at half a kilowatt with limited coverage. In fact, the original system provided decent coverage for the City of Napa, but nowhere else.

With the stakeholders in mind, Casey and Adam set out to establish a new multi-site simulcast system that had greater coverage without exceeding power output regulations. They also required a solution that was compliant with the California Law Enforcement Telecommunications System (CLETS), a Police Department network that mandates Public Safety agencies in California to encrypt their radio transmissions.

In addition to building a new system, they needed to build relationships and rapport with stakeholders, providing them with data-driven metrics and expert system evaluations to better inform their decisions.



CALIFORNIA  
USA

LOCATION



PUBLIC SAFETY

EXPERTISE

### OVERVIEW

- ▶ Multi-site simulcast system
- ▶ 800 Subscriber units
- ▶ 6 Transmitting sites
- ▶ 15 Receiving sites
- ▶ 2 Channel frequency



## RESPONSE

To efficiently achieve their goals, Adam homed in on a high-level technical approach while Casey focused on the stakeholders and project management. Adam quickly realized they needed better visibility of the existing system's performance. He was able to map out the current state of the network by channeling its connectivity to specific endpoints through various available mediums. This effort was paramount to their success, as the solution saved hundreds of troubleshooting and travel hours, allowing them to test and document the system's performance from one location. The information-gathering process also helped immediately increase response time by 3-4 hours since they were now operating with greater system visibility.

Meanwhile, Casey made efforts to better understand the needs and wants of the stakeholders and end-users. By building a relationship with stakeholders and the Sheriff's office, Casey gained a better understanding of their requirements and expectations. Furthermore, the existing communications department of Napa County required an entire operational overhaul to better align with the goals Casey and Adam were aiming to achieve.

The Napa County communications team then sought out the expertise of engineers from CSI Telecommunications based out of San Francisco. This collaboration proved to be invaluable as they obtained a better understanding of how to engineer high-level and low-level sites across a county defined by topography with varying land forms. Casey and Adam also received essential support from their dealer, Vision Communications. Senior Account Manager Cathy Conley of Vision Communications proved to be a vital partner, providing workshop solutions and ongoing support throughout the entire process.

Enhancing radio coverage for multiple law enforcement agencies required upgrading and expanding existing radio systems while ensuring they were reliable. The original simulcast system solely supported T-1 transport but not Ethernet. To solve this problem, the team deployed routers capable of bundling multiple T-1 transports to create a unified Ethernet transport. This solution allowed the team to remotely monitor environmental conditions while also controlling, programming and diagnosing systems with remote equipment. In addition, it enabled them to change settings on the Tait base stations to achieve the best possible coverage.

While the technicians were led by Adam, Casey sought land rentals and leases to expand coverage with multiple sites. Ultimately, the team was able to establish six transmitting sites and 15 receiving sites with limited overlapping and maximum coverage.

## IN THEIR OWN WORDS

*"Rebuilding a foundation of trust and stakeholder relationships among Napa agencies was just as important as expanding the radio network. Tait played a big part in satisfying the needs of our public safety partners."*

**Casey Wightman,**  
Communications Manager





## SOLUTION

Casey and Adam initially chose the TB8100 base stations for their transmission sites but ultimately have upgraded to TB9400 as their solution moving forward. They were drawn to Tait's base stations due to their overwhelming reputation for reliability, as well as their remote capabilities to perform diagnostics and more. In many cases, the team was able to fix issues before end-users were affected. In addition, TB9400 base stations helped Casey and Adam align with CLETS mandated encryption requirements while also setting them up for P25 upgrades which are currently underway.

The TB8100 analog conventional system that led up to the deployment of TB9400 went through numerous configurations of the base stations to achieve the best results. A centralized Private Line (PL) solution proved to best suit their needs as opposed to a site PL solution. In addition, they applied a compressor limiter on the dispatch and field audio to balance performance and combat inconsistencies.

Although the VHF simulcast systems currently only supports Law Enforcement, Napa County has also expanded their scope to include Tait TP9400 portable radios for single site repeater systems such as Corrections. During transitions of EOL subscriber equipment events, Napa County conducted head-to-head trials with other manufacturers, which determined that the receive sensitivity of Tait radios performed better than their existing portables for unique situations.

## OUTCOMES

In the end, the stakeholders and subscribers were pleased with the results. With their newly established simulcast system, they were able to achieve greater coverage and system reliability across Napa County.

However, in 2017, the system was truly put to the test. With a wildfire spreading across the county, three of the newly established simulcast sites were required to go live without the usual testing protocols due to one of the original sites being lost to the fire. The stakes were high, but the system performed brilliantly under pressure.

Since cell sites were also down, first responders relied on radio coverage to evacuate communities. As mutual aid poured in from the National Guard and surrounding support, the subscribers went far beyond the planned 800. For over a week, the duty cycle was 98% on both simulcast channels. They performed without a glitch.

Over time, Napa County gained a reputation among stakeholders for its ability to provide first-class communications solutions. Tait was able to take it even further with unparalleled base station reliability and remote features.

## SOLUTION OVERVIEW

- ▶ Tait TB8100 base stations with advanced task manager licenses
- ▶ Tait TP9400 portables
- ▶ JPS SNV-12 with SVM-2 & SVM-3 modules
- ▶ GatesAir Synchrocast 3
- ▶ Convex 2240A
- ▶ Simulcast solutions NBL voice optimizer
- ▶ 6 transmit sites
- ▶ 15 Receiver sites
- ▶ 2 independent channels

## IN THEIR OWN WORDS

*"The ability to perform remote diagnostics and make necessary changes on the Tait family of base stations continue to prove to be a valuable tool in creating a reliable and effective radio system here in Napa...."*

**Adam Call,**  
Senior Communication  
Systems Specialist