OPTICOM™
GLOBAL TRAFFIC TECHNOLOGIES

# CASE STUDY:
## San Rafael, CA: The Gateway to the Bay

## Overview

Nicknamed the "Gateway to the Bay," San Rafael, California, sits in the North Bay region of the San Francisco Bay area. The population is nearly 60,000, but on a single day, more than 90,000 drivers traverse the 101 Freeway through San Rafael. While the daily commute to San Fransisco is not usually a risk, high traffic volume and an increased risk of wildfire cause incidents along the roadway. The San Rafael Police Department and other first responders must utilize the newest and best technology to mitigate these risks for road users and to improve community safety.

What happens on the 101 when a roadblock, disabled vehicle, or emergency occurs? Frustrated travelers attempt to bypass the incident using thoroughfares through San Rafael, causing backups. When traffic congestion occurs, clearing a path for emergency responders becomes difficult, if not impossible. But that did not deter Sergeant Justin Graham, San Rafael Police Department Traffic Sergeant, from searching for a remedy for their traffic congestion.

## The Challenge

The increase in San Rafael's roadway users causes significant traffic congestion throughout the city, which delays first responders on their way to emergency incidents. Confused and irritated drivers need to learn the safest way to react, resulting in disorganized traffic patterns that cause congestion. Any congestion during an emergency incident increases the time for responders to arrive at a scene, potentially costing lives. The public safety providers of San Rafael needed a way to respond more quickly and safely to emergency incidents.

San Rafael identified several challenges causing the increase of congestion on their roadways:

1.) The Bay area is an urban metropolis that has experienced sprawl since the pandemic's start. More people commuting from outside the city and increasing tourist activity result in dense traffic on the 101 freeway.

2.) If an incident occurs on the 101 Freeway, travelers will reroute through the City of San Rafael to avoid traffic causing more congestion throughout the city.

3.) A 26% increase in fire incidents over the last year caused residents to flood San Rafael's roadways during evacuations, increasing congestion during critical emergency times.

## The Approach

Year after year, Sgt. Graham seeks to improve emergency response times and roadway safety. The critical component is the connection between the infrastructure and the vehicle. The Opticom Cloud Platform is a centralized communication platform that combines the data from existing Miovision infrastructure technology and Whelen vehicle cloud platforms, adding the benefits of Emergency Vehicle Preemption (EVP).

Opticom EVP is proven to reduce intersection crash rates in emergency vehicles by up to 70%, with a 25% improvement in response times. When an emergency vehicle responds to an incident, the connected device sends the vehicle's travel speed and direction to the cloud. That information is relayed to the traffic signals along the route, turning the lights green before a car approaches, parting the traffic in front of the emergency vehicle for a safer path.

With the Whelen VSG already in place, Sgt. Graham prepared a case to add the Opticom Cloud Platform for preemption. The cloud-based integration with Whelen would improve operations while keeping the data for the agency. Those agencies could then make more informed decisions about their roadways and vehicles.

Sgt. Graham had a vision for how San Rafael's Public Works and Public Safety departments could collaborate to improve safety in the community. Using the innovative technologies already deployed in their police vehicles and intersections, they could introduce Opticom's Emergency Vehicle Preemption quickly and with no additional hardware.

Over the last several years, San Rafael's Police and Fire Departments updated their fleets with Vehicle Safety Gateway (VSG) devices by Whelen Engineering. The VSG communicates information such as vehicle location, response mode, and speed from the Whelen Cloud Platform to other cloud-based applications.

Additionally, the city's Public Works Department invested in infrastructure improvements, adopting Miovision processing devices at intersections along several corridors throughout San Rafael. Miovision's cloud-connected solution provides traffic flow monitoring to mitigate traffic, relaying Signal Phase and Timing (SPaT) data to inform decision-making.

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Signalized Intersections
**53**

Emergency Vehicles
**56**

Daily Roadway Users
**90k**

## The Result

City leaders and elected officials found several benefits when reviewing the proposal facilitated by Sgt. Graham:

1. EVP provides faster and safer routes to emergency incidents. The project for San Rafael included 56 police and fire vehicles and 53 signalized intersections throughout different corridors spanning the city. With data tracking in place by Whelen Engineering, Opticom EVP has provided faster response times in the area.

2. In a first-of-its-kind, cloud-based deployment, San Rafael leveraged the existing Whelen and Miovision equipment to eliminate the need to purchase new hardware, saving the city money and allowing for faster deployment. San Rafael paved the way for cities with similar architectures to reduce the time needed for deployment.

3. The "as-a-service" payment model allowed the city to spread its budget over ten years instead of an upfront cost. Each town and agency are unique, and GTT is flexible in its approach to pricing.

4. The extensibility of the Opticom Cloud Platform allowed multiple public agencies to share the solution through mutual aid. The flexible solution makes future expansion across city lines and service areas possible. Larger municipalities can also use these cloud-based solutions across multiple industries like transit, public works, private fleets, etc.

The benefits were clear, and recent infrastructure initiatives led to one million dollars in federal funding grants to be awarded for the project. By implementing emergency vehicle preemption (EVP) and cloud-based traffic solutions, San Rafael has improved emergency response times and decreased intersection crash rates.