

## Emergency response becomes top priority for Burnaby police and fire departments



**Municipality:** Royal Canadian Mounted Police (RCMP), Burnaby Fire Department, Burnaby Engineering and Burnaby Transportation Committee.

**Challenge:** A densely populated city plagued by traffic congestion required traffic signal priority control to help its Royal Canadian Mounted Police (RCMP) and fire department reach emergency scenes more quickly and safely.

**Solution:** Opticom™ GPS signal priority control technology was installed at more than 230 traffic-controlled intersections in the city. The global positioning system (GPS) preemption system includes Central Management Software (CMS) for remote, real-time monitoring and maintenance.

**Performance:** New preemption system — offering more accurate signal preemption and remote monitoring — won a prestigious intelligent transportation system award and improved emergency response in Burnaby.

### Responding to a growing traffic problem

Burnaby is a bustling city in British Columbia and home to more than 200,000 people. With several roads linking Burnaby to neighboring larger cities — Surrey and Vancouver — almost two million people have quick, easy access to the city. As a result, traffic congestion is an everyday occurrence, particularly during weekday commutes.

The glut of traffic compromised emergency response times for the city's RCMP and fire departments. City officials began searching for an integrated traffic signal management system that would enable police and fire personnel to preempt traffic signals from their vehicles and reach emergency scenes more efficiently.

A wide range of technologies was evaluated, including audible and line-of-sight traffic signal preemption systems. It was soon determined, however, that the close proximities of the many busy intersections in commercial areas posed significant problems. A vehicle approaching an intersection could easily trigger signal preemption at multiple intersections in adjacent corridors using audible and line-of-sight technologies. In addition, both systems had limited lead time for activation. With less lead time, there's less time to clear the intersections from other traffic. As a result, the emergency vehicles would have to slow down or stop, which significantly decreased response times.

The unique challenges of Burnaby made it clear that a more comprehensive, reliable traffic signal priority control technology was necessary.

### In a great position to enhance efficiency

City officials chose to implement an Opticom™ GPS traffic signal priority system. It allows RCMP and fire department vehicles to activate specific traffic signals from greater distances for better performance.

"GPS was definitely the best technology for our densely populated city," said Mark DalSanto, Burnaby Supervisor of Traffic Engineering. "The versatility and reliability of the Opticom™ system allows us to expedite emergency response. Plus, it makes intersections safer for both citizens and emergency responders."

With the GPS System, each vehicle is equipped with transponder equipment that sends secure radio signals to a phase selector at specified intersections. As a result, RCMP and fire personnel can activate a priority green signal to alleviate congestion, and drive quickly and smoothly through the intersection upon their arrival. Because GPS doesn't require line-of-sight activation, police and fire vehicles can trigger signals at approaching intersections, and even around corners, easily and consistently.

Impressed with the system's capabilities, Burnaby equipped every traffic signal in the city — more than 230 total — with the GPS-based system.

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- Mark DalSanto, Supervisor,  
Traffic Engineering



*Building critical  
traffic connections<sup>sm</sup>*

### EMERGING APPLICATIONS



Building critical traffic connections<sup>sm</sup>

*“The next step is to extend it to a regional approach that can significantly improve emergency response for the entire Vancouver metro area.”*

- Mark DalSanto

“We’re always looking for ways in which we can further increase the efficiency of our City’s transportation network,” said Councillor Nick Volkow, chair of Burnaby’s Transportation Committee. “Because our preemption system operates at every one of Burnaby’s traffic signals, the functionality of our entire road network is enhanced for emergency vehicle personnel. This is a system that will save lives.”

#### Dynamic performance is readily available

One faulty traffic signal can wreak havoc at virtually every other intersection in the area.

Burnaby incorporated Opticom™ CMS to remotely monitor every intersection. With the innovative software, a traffic engineer has immediate access to system settings, activity reports, vehicle tracking and other information that monitors traffic signal preemption at the intersection — all from the workstation. In fact, an email can be generated and sent directly to Traffic Engineering to indicate when a service call is required. This allows engineers to troubleshoot problematic equipment at intersections before signal preemption is required.

CMS also incorporates accountability into the system. Every police car and fire truck is coded, so signal preemption can be attributed to a specific vehicle. This information is used by Traffic Engineering to help determine if signal preemption problems are prompted by user errors or equipment malfunctions. The RCMP and fire departments can use the information to measure and calculate response times.

#### A greener future awaits

Burnaby’s successful Opticom™ deployment has garnered a lot of attention and accolades. The city was recently awarded a Project Award from Intelligent Transportation Systems (ITS) Canada for its impressive emergency vehicle traffic signal preemption system. RCMP and fire vehicles have improved emergency response times with the new Opticom™ GPS equipment.

Whether it’s during rush hour or off-peak hours, vehicles are triggering green signals at opportune times to ensure they reach emergencies faster. Emergency vehicles are running at safer speeds, stopping at intersections less frequently and facing much less interference en route to the scene. Initial estimates indicate that response times have been improved by about two minutes with the new system.

Burnaby city officials are ecstatic with the citywide intelligent transportation system deployment. In fact, it’s fast becoming a showcase for other communities and municipalities to emulate.

“The Burnaby Royal Canadian Mounted Police (RCMP) became the first policing entity in Canada to use this type of advanced technology,” said DalSanto.

DalSanto noted that the next phase is to add the region’s ambulances to the system so they can preempt traffic signals, too. Since emergency medical services are located between Burnaby and Vancouver, it is not directly under Burnaby governance as a result. Ambulances can be easily integrated into the system in the future.

Burnaby officials plan to work with neighboring communities to integrate other fleets of emergency response vehicles to the Opticom GPS™ system. In addition, the system’s adoption would provide significant advantages for the transit authority.

“This has been the most evolutionary step in the development of an integrated traffic management system in the region,” said DalSanto. “We’re the only city in Canada with 100 percent implementation. The next step is to extend it to a regional approach that can significantly improve emergency response for the entire Vancouver metro area.”