About EMTRAC

The EMTRAC system offers cities a single solution for emergency, bus transit, light rail, and fleet management applications. The EMTRAC system utilizes reliable GPS technology and secure frequency-hopping spread spectrum radio to enable municipal vehicles to perform the following functions:

- Request priority through signalized intersections
- Report vehicle location information
- Report transit schedule data
- Report data to passenger information systems
- Report vehicle diagnostics
- Report safety violation data

As EMTRAC-equipped vehicles pass through pre-defined detection zones, they transmit data to Priority Detectors in nearby traffic-control cabinets. The data is then sent either to the traffic controller or through the traffic network to report to a central location. The EMTRAC system is completely automatic and requires no driver interaction.

Benefits of EMTRAC

- Precise control of intersection detection zones using EMTRAC system software
- GPS-based system requires no in-ground loops or costly switches
- FHSS radio signal has superior range and utilizes AES encryption for security
- Signal requests can be custom tailored to allow different responses for each vehicle
- Improves schedule adherence by requesting signal priority when specified conditions are met
- EMTRAC software generates detailed status and activity reports
- Automatic detection and reporting of safety violations

EMTRAC Detection Zones

The GPS-based detection zones act as “virtual” loop detectors and are easily configured with the EMTRAC software. Zones can be customized for individual vehicles, classes of vehicles, or an entire fleet.

As equipped vehicles pass through these rectangular zones under set conditions (such as proper speed, direction, passenger load, or other conditions), the Vehicle Computer Unit transmits specified data to intersection Priority Detectors.
Traffic & Transit Applications

First Response (Emergency Vehicles)
Emergency vehicles equipped with the EMTRAC system are able to request signal priority quickly and easily with customized zones. Additional first-response benefits include:

- Custom zones for individual vehicles (for example, a ladder truck may need to request signal priority earlier than other vehicles)
- Detection zones that allow priority requests up to 3,600 feet before the intersection
- Overlapping zones to request signal priority for multiple intersections—more effectively clearing gridlock
- Detailed reports and logs that show signal activity and system configuration

Mass Transit (Buses)
The EMTRAC system helps buses maintain route-schedule adherence by enabling them to request signal priority when specified conditions are met. These conditions may include:

- **Time of Day**: Set time intervals so buses request signal priority only during rush hour.
- **Schedule-Adherence**: Request signal priority only if behind schedule by a set time amount.
- **Doors Open**: Transmit the signal request upon opening the passenger doors rather than upon entering the detection zone.

EMTRAC-equipped buses can also be equipped with the Fleet Management system, which further expands their service capabilities.

Light Rail
Common zones used for light rail include:

- **Advance**: Located before the platform to notify the passenger information system of upcoming stops for display on message boards
- **Check-In & Check-Out**: Located at the platform and after the platform respectively to notify the transit network that the train is “in station” or has “left the station”
- **Priority Request**: Precedes upcoming intersections to request signal priority
- **Stop-Bar Overrun**: Alerts the transit network of trains overrunning the stop bar
- **Presence Detection**: Located after the intersection to notify the transit network that the train has cleared the intersection

Fleet Management
Vehicles in the Fleet Management Program are able to send and receive information through the central network. Fleet Management System benefits include:

- **Complete AVL system reports** fleet-vehicle locations in real time
- **Assists in coordinating** route changes and alerts drivers of changes
- **Reports location data, schedule data, vehicle diagnostics, passenger counts, and fare counts to central locations in real time**
- **Connects to passenger information systems** to display up-to-date schedule information
- **Generates detailed reports and logs** of system activity and configuration data