



COLLISION CONTROL COMMUNICATIONS, INC.

How the **ELIMINATOR® GPS Vehicle System Works**

Overview for Agencies & Drivers

1. Smart equipment in the vehicle

Each authorized vehicle carries an **ELIMINATOR**® GPS Vehicle System that:

- Uses GPS to determine vehicle location, speed, and direction of travel.
- Includes an Inertial Measurement Unit (IMU) that keeps tracking if GPS is weak or unreliable.
- Continuously knows where the vehicle is and how it is moving.

2. What the vehicle sends out

Several times per second, the vehicle securely broadcasts a data packet that includes:

- Vehicle location, speed, and heading.
- Priority request status (for example, emergency mode).
- Vehicle class (engine, ladder, ambulance, police, etc.) and vehicle ID.
- Status of key systems such as turn signals, light bar, and parking brake.

These messages are sent to:

- Nearby intersections – vehicle-to-infrastructure (V2I).
- Other **ELIMINATOR**® equipped vehicles – vehicle-to-vehicle (V2V).

The radio operates in the 900 MHz frequency-hopping spread spectrum (FHSS) band, is Zigbee®-compliant, supports mesh networking, and has a range of up to approximately 3 miles. Data is updated and rebroadcast multiple times per second for real-time awareness.

3. What happens at the intersection

Each equipped intersection has the **ELIMINATOR**® hardware that listens for vehicle messages and decides when to request preemption from the traffic signal controller.

Intersection behavior can be configured based on:

- Vehicle Estimated Time of Arrival (ETA).
- Vehicle distance from the intersection.

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- Whether the vehicle has entered a defined “geowindow” (virtual zone) for its approach.
- Additional factors such as turn signal status, speed, and other data.

These settings can be applied per intersection or globally across the system, depending on agency preference.

4. How collision avoidance works between vehicles

Other **ELIMINATOR**® -equipped vehicles also receive this data and can see:

- Location, speed, and heading of approaching units.
- Priority request status.
- Vehicle class, ID, and system status (for example, turn signal and light bar).

If the system calculates that two or more vehicles may arrive at the same point within a narrow collision “window” (for example, within 5 seconds), it will:

- Trigger a collision-avoidance alert on the in-vehicle display (HDMI monitor, LED bank, or laptop).
- Highlight the other vehicle or vehicles of concern.
- Display a countdown timer showing time to potential collision.

The collision-avoidance window is configurable per vehicle, and an audible alert can be enabled so drivers don’t have to watch the screen continuously