



# EMTRAC

## Transit Headway Maintenance

### The Snag: Bus Bunching

Bus bunching—a trailing bus catching up to a lead bus—is a continual challenge for transit agencies. It's a leading complaint of regular passengers and a headache for those operating and managing transit services.

There are many potential causes for bus bunching, most of which are unrelated to direct vehicle operation: road construction, accidents, weather, double-parked vehicles, special-event demand, wheelchair-lift use, and so forth.

Regardless of cause, the lead bus typically slows to pick up passengers that would otherwise board the trailing bus. This leads to overcrowding and further slowing of the lead bus. Conversely, the trailing bus encounters fewer passengers and, in short order, both buses are in full view of each other—to the dismay of passengers and glee of the local press.



### A Workable Solution: EMTRAC AVL

EMTRAC's automatic vehicle location (AVL) and system effectively helps mitigate bus bunching. If two vehicles on the same route get within a specified time distance, both bus drivers and the supervisor can be alerted. Automated (or supervisor-actuated) commands can be issued for the lead bus to operate in *express* or *skip-stop* mode until an acceptable gap is reestablished.

Used independently or in conjunction with EMTRAC transit signal priority (TSP), these features protect transfers and support schedule adherence in the event of non-recurring obstacles to normal transit operations.

## EMTRAC Benefits

**Flexibility:** Different headway amounts (and acceptable variances) may be assigned along different parts of the corridor and for different routes.

**Expandability:** The components used to maintain headway are the same as those used for TSP, EVP, and ETA—enabling seamless expansion of system capability.

**Accuracy:** The EMTRAC vehicle component utilizes precision satellite and inertial positioning to ensure exact vehicle location and activity reporting—even in unfavorable urban environments.

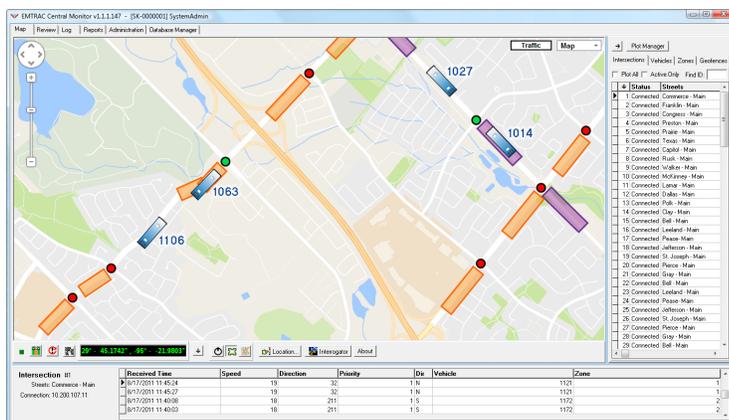
**Timeliness:** Vehicle positions are updated on the map every four seconds, enabling dispatchers to proactively respond to potential issues.

**Reliability:** Location and activity data is sent through secure FHSS radio, and the wayside detectors forward this data through Ethernet connections.



## EMTRAC Features

- Transit vehicles are able to request signal priority when defined headway limits are exceeded, making it easier to adhere to published schedules.
- Negative trends (such as reduced headway amounts) are recognized by the EMTRAC software, and automatic notifications may be set up to alert dispatchers when predefined trend rates or thresholds are reached.



EMTRAC Central Monitor Software - Map Tab

- Allows vehicles and dispatchers to perform multiple actions (such as enabling TSP or enacting skip-stop modes) to reestablish defined headway times.
- Integrates with other EMTRAC features, such as signal-violation reporting, to improve safety.
- Monitoring personnel can view headway amounts for all vehicles with the click of a button, enabling them to identify issues.