



# SIGNAL OPERATION AND MANAGEMENT



**WHO**

CITY/COUNTY/  
STATE

**HURDLES**

MANPOWER

**More Information:** [tti.tamu.edu/policy/how-to-fix-congestion](http://tti.tamu.edu/policy/how-to-fix-congestion)

## Description

Signal operation and management are among the most common, convenient, and cost-effective ways to reduce congestion. Signal operation and management can:

- Improve street efficiency.
- Temporarily improve a street during expansion.
- Assist with roadwork or special event transportation.

Two main signal improvement types increase travel speed, reduce stop-and-go traffic, and increase intersection capacity:

- Upgrading signal equipment—newer equipment can be quickly adjusted to reduce congestion.
- Improving signal timing and coordination—giving main traffic flows enough green time when they need it to reduce backups.

Newer signals learn from historical and real-time patterns. They automatically re-time and coordinate themselves to the most efficient plan. Coordinated signals have reduced delay by up to

40 percent and increased traffic volume by up to 60 percent.

## Target Market

- Local and major streets.
- Major activity centers and downtown areas.
- Roadwork and special events.

## How Will This Help?

- **Reduces congestion** by increasing intersection capacity and smoothing traffic flow.
- **Has relatively low cost and high benefit** return for the investment.
- **Improves safety** of the intersection, reducing congestion due to crashes.

## Implementation Issues

Maintaining and upgrading signal timing can be labor intensive and time consuming. Many cities do not allocate the resources or manpower to assess traffic signal timing plans. Signal re-timing is recommended every three to five years, depending on growth. Resources needed for signal re-timing typically include 20 to 30 staff hours

## SUCCESS STORIES

### San Antonio, Texas

The City of San Antonio has conducted a **signal system upgrade** since 2008, including **signal retiming for most major roadway corridors**.

#### Benefits include:



An average corridor **travel time reduction** of **54 seconds**



**Total annual delay savings** (793 intersections)

**8.6 million motorist hours in traffic**



**An annual delay savings of over \$159 million**

and between \$3,500 and \$4,000 per intersection. When major streets cross agency boundaries, having joint policies for maintaining signal coordination is useful to improve service to travelers.

