



# Install a Traffic Signal

Traffic signal installation controls vehicle movements to reduce crashes by minimizing conflict points and improving traffic coordination.

## Implementation Strategy

### How and Where to Apply

- Traffic signals should be installed at intersections with high traffic volumes, crash frequency, or where gaps in traffic need to be created for safe crossing.
- Proper installation involves meeting MUTCD signal warrants, optimizing signal timing, and ensuring visibility with correctly placed signal heads and support infrastructure.
- The MUTCD states that traffic signals must meet one or more signal warrants based on traffic volume, crashes, or pedestrian needs, and be properly placed with clear visibility and coordinated timing.

### Use in a Safe System Approach

Aligns with the Safe System Approach by reducing conflict points, managing vehicle speeds, and clearly assigning right-of-way, thereby minimizing crashes for all road users.

### Key Stakeholders

State DOTs, MPOs, engineering consultants, law enforcement agencies, community associations, advocacy groups.

### Proactive Implementation

Proactive implementation involves using traffic engineering studies to identify intersections approaching MUTCD signal warrants, such as increasing volumes or crash frequency, and installing signals to mitigate emerging safety and operational issues.

## Countermeasure Overview

**Objective:** Reduce frequency and severity of intersection conflicts through traffic control and operational improvements.

**Strategy:** Employ multiphase signal operation.

## Targeted Solution



### CONTRIBUTING FACTORS

- Inadequate gaps for safe crossing or turning movements



### TARGET CRASH TYPE

- Angle
- Rear-end
- Turning



### ROAD FACILITY TYPE

- N/A



### AREA TYPE

- All

## Safety Linkage



### NCHRP 500 Series

Signalized Intersection



### SAFE SYSTEM APPROACH

Safe Roads



### AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

### SAFE SYSTEM ROADWAY DESIGN

TIER 1  
TIER 2  
TIER 3  
TIER 4

Tier 3

## Selected Related Countermeasures

- CM1 Dedicated left turn lane
- CM2 Channeled right turn lane
- CM3 Roundabout conversion

**Cost:** \$\$\$ (Moderate to High)

**Service Life:** 10 years

**Benefit-Cost Ratio:** 6.9:1 to 53.8:1

Traffic Signal. Source: VHB.

77%

Reduce angle crashes of all severities. (CMF ID: 326)

38%

Increase rear-end crashes of K (fatal), A (serious injury), B (minor injury), C (possible injury) severities. (CMF ID: 321)

### Resources

- [MUTCD 11<sup>th</sup> Edition Part 4](#)
- [Traffic Signal Warrants](#)

