

## Document Summary

# IMPROVING TRAFFIC SIGNAL OPERATIONS: A PRIMER

Federal Highway Administration

1995

## Summary of the Work

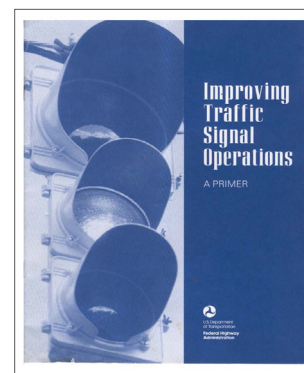
Traffic congestion is a major problem in cities of all sizes. People are taking more trips, and there are more vehicles on the road. The street system is often overtaxed, causing traffic to bog down. Some relatively simple, low-cost adjustments to a traffic signal system can, however, significantly improve traffic flow. The report describes how adjusting a city's traffic signals can reduce congestion and lead to big payoffs in time savings, environmental benefits, and safety. The report emphasizes that despite their important role in traffic management, traffic signals, once installed, are often given short shrift. Maintenance activities are delayed or canceled in reaction to shrinking budgets and staff size. More than half of the signals in North America are in need of repair, replacement, or upgrading. Traffic signal improvements rank as one of the most cost-effective energy conservation strategies in urban areas. An idling engine not only wastes fuel, but also emits pollutants into the air. Optimizing the timing of already interconnected traffic signals is the most cost-effective project, with an annual cost of \$300 to \$400 per signal. Alternately, interconnecting and optimizing non-interconnected signals costs anywhere from \$760 to \$2700 per signal per year, which equates to a very reasonable cost of 4-15 cents per gallon of fuel saved.

In contrast to many other roadway improvements, traffic signal improvements generally involve only minimal traffic disruption, relatively low cost, and little down-side risk. The public generally reacts very favorably to traffic signal retiming projects, making them win-win situations for both the public agency and the public it serves. Unwarranted signals, however, often generate an increase in vehicle stops, traffic delays, fuel consumption, traffic accidents, and motorist disrespect for traffic signals. An effective maintenance management program, consisting of both preventive and remedial maintenance of traffic signal hardware and software, is essential to the successful performance of any traffic control system, whether computerized or not. A poorly maintained signal system can compromise travel efficiency and safety. Traffic signal timing must be a routine, ongoing activity involving regular review of timing plans in light of actual traffic volumes and patterns.

Lastly, local highway agencies should work closely with their state department of transportation and their metropolitan planning organization to ensure that their traffic signal improvement projects and other needs are fully considered for funding as part of the transportation improvement program.

## Related Work

The MUTCD should be used as an expansion of the information provided in this report.



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