

# Adaptive Signals



Adaptive signal control technology (ASCT) helps to manage throughput, improve average travel time, and reduce delay and fuel consumption by optimizing signal timing. ASCT is particularly effective on arterials with variable traffic demand.

## HOW IT WORKS

The goal of adaptive signal control is to optimize signal timing under various traffic conditions. It achieves this by gathering real-time traffic data, assessing performance through specialized algorithms, and making signal adjustments based on the analysis results ([FHWA](#)).

## BENEFITS

Adaptive signal control systems reduce traffic delay, increase average speeds, improve travel times, and decrease travel time variability. Unlike traditional timed systems, ASCT can react to traffic accidents, special events, road construction, and other occurrences ([FHWA](#)).



- ▶ In Arizona, a pilot implementation of ASCT in four locations in the Phoenix area found up to 51 percent weekday and 43 percent weekend travel time savings ([2021-B01549](#)).
- ▶ In South Carolina, a crash prediction model showed crash frequency decreased on 9 of 11 corridors equipped with ASCT ([2022-B01620](#)).
- ▶ In Florida, the implementation of ASCT led to an over 9 percent overall reduction in travel time across eight corridors, as shown in a before-and-after study evaluating its impact on traffic operations and safety in eight cities ([2021-B01579](#)).

Source: iStock

## Essential Intelligent Transportation Systems (ITS)

Visit the ITS Benefits Database: [www.itskrs.its.dot.gov/benefits](http://www.itskrs.its.dot.gov/benefits)