ACS Lite

A Low Cost Adaptive Signal Timing Solution for Closed Loop Traffic Signal Systems

U.S. Department of Transportation
Federal Highway Administration

Objective:

Adaptive control systems, in spite of the compelling benefits they provide, have not been widely deployed as a result of their high capital cost. The goal of the ACS-Lite project was to provide widely deployable low cost adaptive control software that exceeds the performance of typical time-of-day operation. The FHWA formed a public private partnership with Siemens, The University of Arizona, Purdue University and ITT Industries to develop the ACS-Lite software. The software has been integrated and field tested to operate with select traffic signal controllers manufactured by Econolite, Eagle, Peek and McCain.

How ACS-Lite works:

ACS-Lite monitors signal operation and traffic conditions to formulate signal timing parameters appropriate for current traffic conditions. ACS-Lite will work with most existing closed loop systems after minor upgrades to controller firmware, communications and detector configuration if necessary.

Benefits:

- Low cost
- Reduces delay, stops and fuel consumption
- Reduces or eliminates the need for traffic signal retiming
- Does not require calibration
- Works with existing closed loop systems
- Uses NTCIP
- Eases traffic congestion on arterials
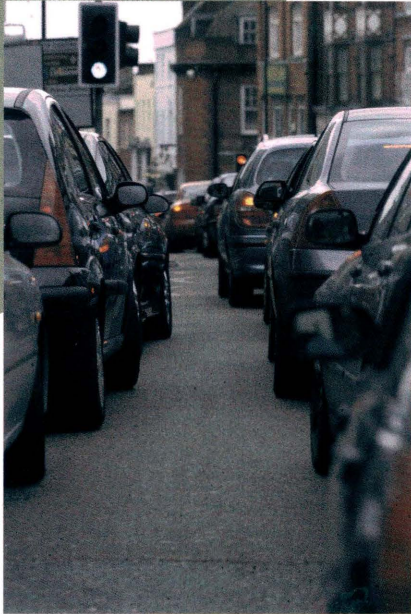- Archives traffic data

Results of Field Tests:

ACS-Lite has been integrated with selected controllers manufactured by Econolite, Eagle, Peek/Quixote and McCain. A field trial was commissioned to validate the operation of each manufacturer's controller with ACS-Lite. The average improvements observed on typical weekdays include:

- 22 % delay reduction
- 25% drop in the number of stops
- Over 4,000 gallons of fuel savings per intersection annually

Problem:

Over 30 % of urban travel takes place on roadways controlled by traffic signals. Outdated traffic signal timing is responsible for over 300 million vehicle hours of delay on major roadways alone. The 2005 National Traffic Signal Report Card found that the majority of agencies operating traffic signals do not have the resources necessary to keep traffic signal systems optimally timed. The result is a growing congestion dilemma that chokes productivity and our quality of life.

More Information:

Visit our website at:
www.ops.fhwa.dot.gov/acs_lite/index.htm.

If you would like to schedule an ACS-Lite presentation or would like additional information please send an email to: acs-lite@dot.gov.

How to obtain ACS-Lite:

If you are interested in deploying an ACS-Lite system, it is available through the following vendors: Eagle, Econolite, McCain and Peek. An agency operating a Peek system, for example, should contact the Peek vendor, while one using Eagle should contact the Eagle vendor.

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