



## CITY OF BEVERLY HILLS STAFF REPORT

**Meeting Date:** January 8, 2008  
**To:** Honorable Mayor & City Council  
**From:** Aaron Kunz, Deputy Director of Transportation  
**Subject:** Smart Traffic Signal Update  
**Attachment:** "Smart Signal System" Technology

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### INTRODUCTION

This report provides an update on plans to implement 'Smart' traffic signals.

### DISCUSSION

On December 20, 2007 staff provided an update to the City Council's ad hoc Technology Committee. Through successful applications for grant funding, the City has received over \$5 million in grant funding to upgrade traffic signals and provide a central signal control network. Through this funding, the City has upgraded 85 of 99 traffic signals to close to state of the art technology. The City has a grant to upgrade the remaining 14 signals that are located along North Santa Monica Boulevard.

The attached chart provides a description of the types of 'Smart' signal technology. With present technology, signal timing is based on traffic volume detected by inductive loops. Based on traffic volumes, signal plans are implemented to provide lengthened or shortened green time to optimize traffic flow. The primary 'Smart' technology currently used in the City is the 'Traffic Signal Priority' system implemented in 2007, which provides buses the capability to extend existing green time when approaching an intersection.

Starting in January 2008, staff will begin developing a series of pre-defined "pattern-matching" signal timing plans of expected traffic flow patterns for the next implementation phase. Staff is preparing "pattern-matching" signal timing plans in anticipation of the installation of 9 CCTV cameras on Olympic, Wilshire and Sunset Boulevards. With these cameras, staff will be able to detect accidents and other obstacles blocking traffic. Using the pre-defined "pattern-matching" signal timing plans, signal timing plans can be changed to respond to changing traffic conditions.

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design and install cameras. The traffic engineering CCTV project will begin mid-2008 pending Caltrans authorization, and should be completed by the end of the year.

The other potential 'Smart' signal technology is to coincide with Santa Monica Boulevard improvements. The City has obtained a grant of \$1.8 million for signal synchronization related to the Santa Monica Boulevard improvements. During the project design phase, staff recommends that an evaluation of an "Adaptive Control" traffic signal system be included. With this type of system, changes to signal timing are automatically implemented in response to current traffic demand, as opposed to manual implementation required by CCTV cameras. This type of system requires extensive detectors be installed at every intersection, and as a result, can be very expensive. "Adaptive Control" systems have been tested throughout Los Angeles with mixed success. Since the City has a grant to implement a new traffic signal system on Santa Monica Boulevard, staff evaluation of this type of system is warranted.

**RECOMMENDATION**

This report is for informational purposes.



for David Gustavson

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Approved By

**“SMART SIGNAL SYSTEM” TECHNOLOGY**

TYPE	DESCRIPTION	ADVANTAGES / DISADVANTAGES	PRESENT USE IN CITY OF BEVERLY HILLS
Fixed-Time Control System	Signal timing is selected according to a fixed schedule	(A) Easy to operate; (D) Not responsive to dynamic demand	Yes, at fully congested intersections, i.e., North Santa Monica Blvd. at Wilshire Blvd.
Traffic Responsive Control System	Appropriate signal timing plans are implemented in response to prevailing traffic conditions monitored by detection system	(A) Signal plans are prepared off-line; (D) Detector failure could create negative results	Yes, at most intersections along Wilshire, Olympic, La Cienega and Sunset Boulevards
<b>Pattern Matching Signal Timing Plans</b>	Pre-defined plans are prepared by signal software for expected traffic flow patterns. As many as 28 timing plans per intersection available in “KITS”	(A) Requires fewer detection loops; count data is vital; (D) Initial trial and error approach to refine plans	No, but technology is available in KITS*; requires set up of count stations and CCTV to verify plan operation. Pattern Matching is recommended for the City of Beverly Hills
Real Time Optimization of Traffic plans	Optimization of signal timing is based on <i>on-line</i> detection information	(A) Limited data available of on-line incident response; (D) Limited application and not readily used in North America	No, requires detection loops at every intersection, counting station setup, and CCTV to verify data
Adaptive Control Traffic Signal System (similar to LADOT’s ATCS system)	Frequent, but small, changes to the active timing plan parameters are automatically implemented in response to current traffic demand	(A) Less data needed, automatic reaction to incidents; (D) Very expensive system requires advanced detectors at each intersection in all directions; limited positive results from LADOT.	No, requires extensive detection loop system; possible project for Santa Monica Boulevard signal synchronization for FY 09-10 CIP schedule.

\* “KITS” is the City of Beverly Hills’ existing signal system implemented in 2005-2006.