

C/CAG AGENDA REPORT

Date: June 25, 2018

To: Congestion Management and Environmental Quality (CMEQ) Committee

From: John Hoang

Subject: Review and recommend approval of funding for the “Optimizing Urban Traffic” in Menlo Park Pilot Project in the amount of \$236,700.

(For further information or questions contact John Hoang at 363-4105)

RECOMMENDATION

That the CMEQ Committee review and recommend approval of funding for the “Optimizing Urban Traffic” in Menlo Park Pilot Project in the amount of \$236,700.

FISCAL IMPACT

\$236,700 (Total project cost is \$417,900)

SOURCE OF FUNDS

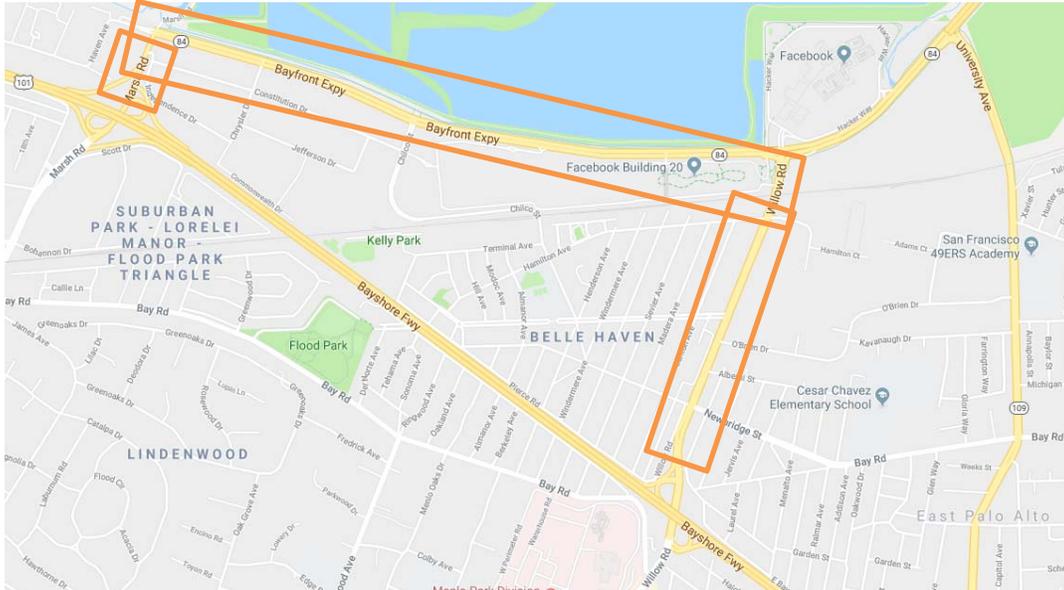
AB 1546 (\$4 Vehicle Registration Fee) – Regional Congestion Management

BACKGROUND

Sustainable Silicon Valley (SSV), a non-profit organization that collaborates with companies, cities, counties, and research and educational institutions to address sustainability issues, along with Urban Institute, a software consulting company specialized providing data driven “smart city” services, seeks to partner with C/CAG on the proposed “Optimizing Urban Traffic” “OUT” in Menlo Park project.

In January 2018, C/CAG was approached by SSV about implementing the proposed project in San Mateo County. Subsequent discussions between SSV, Urban Institute along with Caltrans staff and the City of Menlo Park staff determined that there was interest from the agencies about deploying a pilot project within the City of Menlo Park along heavily congested corridors, specifically along the roadways with Smart Corridor equipment.

The project, OUT in Menlo Park, will deploy an innovative “Recommended Speed Assistance” application available for drivers traveling along the project vicinity of Marsh Road and Willow Road northeast of US 101 including Bayfront Expressway between Marsh Road and University Avenue in Menlo Park (see vicinity map below) providing real-time recommendations on the optimal speed to approach each traffic signal to minimize the total amount of stops at intersections. The project area includes nine (9) traffic signals.



Moderating vehicle speed will result in smoother traffic flow, safer driving speeds, and less idling time at intersections while waiting for the light to turn green, ultimately leading to increased safety for pedestrians, bicyclists, and drivers, in addition to resulting in a decreased carbon emissions and air pollution. The project will utilize some of the Smart Corridor equipment and infrastructure, specifically the new traffic signal control system, KITS (Kimley-Horn Integrated Transportation System) and fiber communication.

The project involves three phases (Work Packages) as described in more detail in the attached Pilot Project OUT in Menlo Park Scope Work, and will involve the collaboration and partnerships between Caltrans, City of Menlo Park, C/CAG, SSV, Urban Integrated, and Kimley-Horn. In addition, staff also reached out to Facebook and is currently working to bring them onto the project.

The total project cost is estimated to be \$417,900 with most of the funds provided by \$236,700 from C/CAG, in-kind match of \$176,200 from Urban Integrated and in-kind match of \$5,000 from SSV. Minimal staff resources from Caltrans and City of Menlo Park are also anticipated throughout the project.

ATTACHMENTS

- Draft Pilot Project Scope of Work

Pilot project

"OPTIMIZING URBAN TRAFFIC" IN MENLO PARK

This document is the first draft of a project description. Its main purpose is to clarify the overall project scope and provide an estimation of costs.



Introduction

Background

The C/CAG sponsored San Mateo County Smart Corridor (Smart Corridor) project is a joint effort by C/CAG and the California Department of Transportation (Caltrans) to address traffic congestion on local streets and major state routes in San Mateo County. The operation, management, and maintenance of the street, highway and freeway network are within the jurisdictional responsibilities of several cities as well as the County, Caltrans, and transportation agencies.

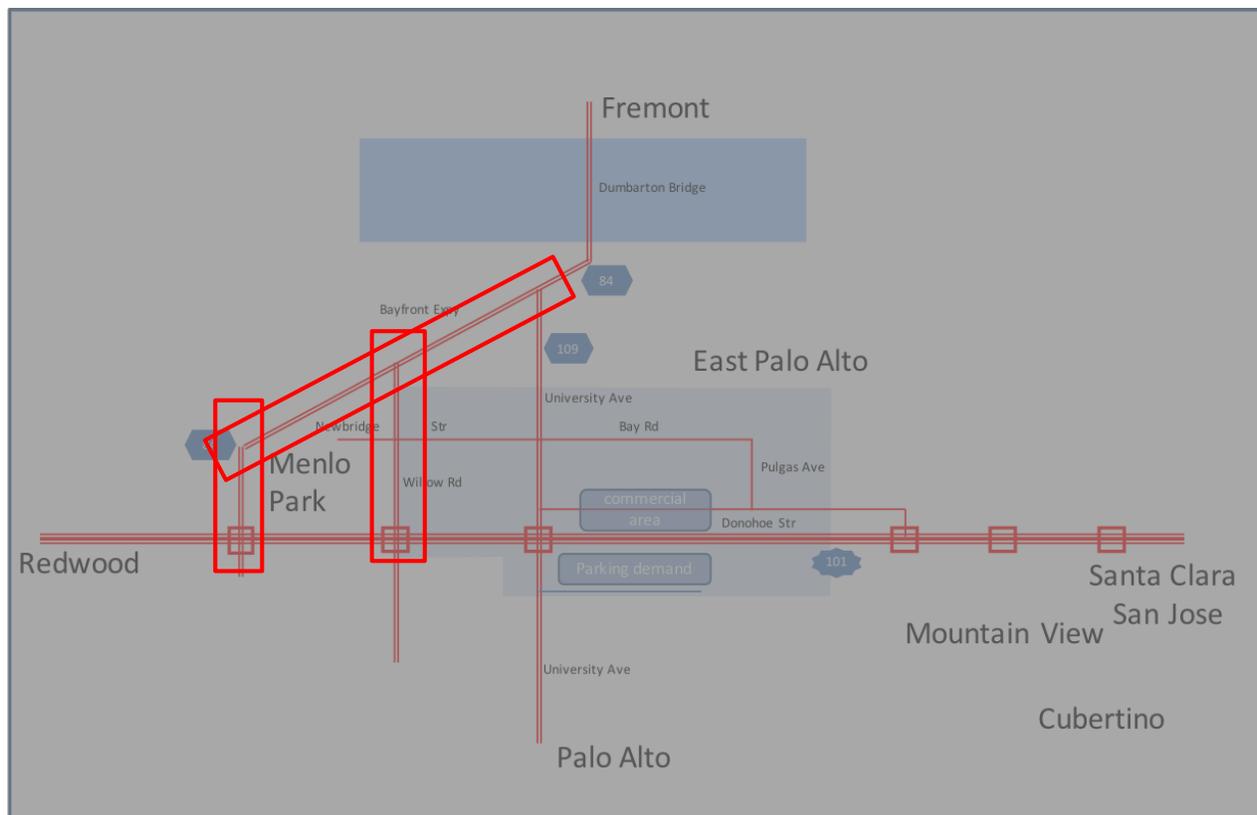
The Smart Corridor implements Intelligent Transportation System (ITS) equipment such as an interconnected traffic signal system, close circuit television (CCTV) cameras, trailblazer/arterial dynamic message signs, and vehicle detection system deployed on predefined designated local streets and state routes provide local cities and Caltrans day-to-day traffic management capabilities in addressing recurrent traffic congestion as well as provide Caltrans capabilities for managing the system during non-recurring traffic congestion cause by diverted traffic due to major incidents on the freeway.

The Smart Corridor deployed the new traffic signal control system known as KITS (Kimley-Horn Integrated Transportation System). Deployment of the KITS includes hardware and software as well as uploading of the Smart Corridor incident response plans into the signal controllers. KITS is a proprietary signal system developed by Kimley-Horn.

Building on the Smart Corridor and expanding on the Arterial Management and Traveler Information aspects is desirable.

Proposal overview

The proposal covers three steps of measures that utilize the Smart Corridor infrastructure and adds more elements to optimize traffic flow in Menlo Park, applied to the part of the Menlo street network marked in the following figure (9 traffic lights):



Work package 1: Smartphone based Traffic Light Assistant (TLA) App

The Smart Corridor infrastructure currently does not have the ability to provide individual guidance to drivers, bike riders or pedestrians, however, with new and emerging communication and computer technologies, a new layer of traffic management can provide individual drivers or pedestrians with real-time traffic information via smartphone apps. Recent research and commercial projects are building on navigation systems that have been common for quite some time now to utilize real-time traffic information to further support the efficient movement of people through street networks.

The most important technology utilizing real-time traffic information is termed “traffic light assistance (TLA).” This gives individual drivers a prediction of the timing of a green light for each traffic light that they approach. Either available as a smartphone app or later integrated in the vehicles’ dashboards, these TLA apps allow drivers to move more efficiently, with increased ease and peace of mind, while saving fuel. This is achieved by recommending an individually calculated speed based on the driver's distance to the signal and the signal’s predicted phases, termed “GLOSA” or Green Light Optimized Speed Advisory.

C/CAG, Caltrans, and the City of Menlo Park seek to be at the forefront of this technology and serve as a national leader by partnering with Urban Integrated to develop a “Recommended Speed Assistance” app for the test area. The app will be based on Urban Integrated’s preexisting suite of technology that includes [ui!] UrbanPulse, [ui!] TRAFFIC, and [ui!] ECOMAT.

The benefits provided by the TLA App service are:

- It helps drivers ride efficiently, relax, save fuel
- Finally, if enough drivers are equipped, it results in smoother traffic, less noise, reduced air pollution

- It is the base to provide signal data to automotives and their ADAS systems

The proposed TLA App will be offered as a PoC for a pre-defined test community. The PoC will provide evidence on the quality of the provided data from the ITS and if this allows for the intended service. The pilot phase should be up to twelve months to determine if a productive version of the TLA App should be made available to the public. During the pilot phase, we will verify and negotiate the service level agreement that the ITS have to provide.

Work package 2 (Add-On to WP 1): Dashboard showing specific network indicators

Based on the platform and services implemented for the Traffic Light Assistant App, specific intelligence and dashboards can be added, to provide deep real-time knowledge about traffic in the signalized street network of Menlo park. The Output of this system covers estimations of capacity and other indicators that can only be provided by combining sensor data from the Smart Corridor System with moving data from vehicles in the network (FCD - Floating Car Data), an will be visualized in specifically designed dashboards. Benefits will be:

- Knowledge about degree of saturation at all signals, risk of breakdown of traffic
- Incidents / blockings at traffic lights etc.
- The information allows to trigger management actions in the KITS system during normal and irregular traffic operation situations
- It fully utilizes the existing types of sensors, traffic signals and the potential of the KITS traffic management system in the area of the City of Menlo Park to optimize urban traffic

The dashboard will be based on [ui!] COCKPIT and [ui!] UrbanPulse. We assume to receive the data stream at the expected quality as defined in Work package 1.

Work package 3 (Add-On to WP 2): Specific services and apps

Having all relevant data processed, additional services for citizens and specific interest groups can be implemented easily:

A „Citizen app“ can be established that provides relevant traffic information as open data, to inform Menlo Park citizens about traffic and to raise their awareness about their responsibility with regard to traffic in their city.

Dedicated services for companies located in Menlo Park can be designed and offered, either to support their commuters or to help them improve their logistic activities in the community area. These services should be discussed individually with the possible companies in workshop processes.

The outcome of Work package 3 is a consumption model, which allows third parties to use the data either via an App or as a smart service to be consumed by other systems such as logistics and routing systems or navigation systems, to name some examples.