REPORT TO COUNCIL
City of Sacramento

915 I Street, Sacramento, CA 95814-2604
www. CityofSacramento.org

Consent
March 18, 2008

Honorable Mayor and
Members of the City Council

Title: Contract /Purchase: Radio Activated GPS-Based Emergency Vehicle Pre-emption System Equipment (PN: ST26, S15074500)

Location/Council District: Freeport Boulevard from Broadway to Meadowview Road (Districts 4, 5, 7 & 8); Broadway from 3rd Street to 65th Street Expressway (Districts 4, 5 & 6); Del Paso Boulevard/Marysville Boulevard from SR160 to the City limit (Districts 1, 2 & 3)

Recommendation: Adopt a **Resolution:** 1) approving the contract specifications for the purchase of radio activated GPS-based emergency vehicle pre-emption equipment, and 2) awarding the contract for the purchase of Opticom GPS traffic signal priority control equipment for 53 intersections and 30 emergency vehicles to Advanced Traffic Products, Inc. for an amount not to exceed $365,394.

Contact: Angie Louie, Senior Engineer, 808-7921; Hector Barron, City Traffic Engineer, 808-2669; Lloyd Ogan, Deputy Chief of Operations, 433-1300.

Presenters: Not applicable

Department: Fire and Transportation

Division: Engineering Services and Fire Suppression

Organization No: 3439 and 2532

Description/Analysis

Issue: Emergency vehicle pre-emption system (EVPS) equipment gives right-of-way priority at signalized intersections to authorized emergency vehicles. Green light priority effectively reduces emergency vehicle response times and improves safety. Currently, emergency vehicle pre-emption equipment is specified to be installed as part of new or modified traffic signals; to date approximately 175 of the City's approximately 700 traffic signals are equipped with EVPS. However, with few exceptions, several signalized street corridors which are high priority emergency routes are not equipped with EVPS in its entirety.

To equip three of the 13 priority corridors (encompassing 53 signalized intersections) identified by the Fire Department as having the highest need for EVPS, Global Positioning System (GPS) based technology pre-emption equipment is being specified and ordered (Opticom GPS), as well as 30 transmitters for the emergency vehicles to activate the system. Staff is recommending to purchase and specify the use of GPS-based technology EVPS equipment due to operational advantages, and installation and maintenance savings as compared to the infrared (IR) based technology equipment that is currently specified (Opticom IR) Once acquired, the equipment will be installed by City staff.

Policy Considerations: The requested action is in conformance with City Code Chapter 3.56, Article III, which provides that the City Council may award competitively bid contracts to the lowest responsible bidder. This report's recommendation is consistent with the City's Strategic Plan goals of improving and expanding public safety.

Environmental Considerations: Not applicable.

Rationale for Recommendation: Emergency vehicles can respond more quickly and safely through signalized intersections that have EVPS equipment installed. GPS-based technology equipment as compared to IR-based equipment previously specified provides greater operational accuracy and effectiveness in providing a green light. With simpler installation, less equipment, and no routine maintenance required, GPS-based equipment is also more cost effective.

Financial Considerations: The cost of the Opticom GPS equipment for 53 intersections and 30 emergency vehicles is $365,394 including sales tax and delivery. The Signal Pre-emption Program project (PN: ST26, S15074500, Fund 2001) which has a balance of $399,972 as of February 25, 2008 has sufficient funding to purchase and install the equipment.

Emerging Small Business Development (ESBD): Advanced Traffic Products, Inc. is not certified with the City of Sacramento as an emerging or small business enterprise. They were the sole bidder.

Respectfully Submitted by: _____
Nicholas Theocharides
Engineering Services Manager

Approved by: _____
Ray Jones
Fire Chief

Approved by: _____
Jerry Way
Director of Transportation

Recommendation Approved:

_____
Ray Kerridge
for City Manager

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Attachment 1

Background

Emergency vehicle pre-emption system (EVPS) equipment gives right-of-way priority at signalized intersections to authorized emergency vehicles. Green light priority effectively reduces emergency vehicle response times and improves safety. Currently, emergency vehicle pre-emption equipment is specified to be installed as part of new or modified traffic signals; to date approximately 175 of the City's approximately 700 traffic signals are equipped with EVPS. However, with few exceptions, several signalized street corridors which are high priority emergency routes are not equipped with EVPS in its entirety.

On May 4, 2006, staff reported back to Council on the success of emergency vehicle pre-emption equipment in reducing response times. This report also identified the thirteen highest priority corridors (126 signal locations) citywide, as prioritized by the Fire Department, that have the greatest need for future installations of EVPS equipment. To equip three (encompassing 53 signalized intersections) of the thirteen priority corridors, Global Positioning System (GPS) based technology pre-emption equipment is being specified and ordered (Opticom GPS), as well as 30 transmitters for the emergency vehicles to activate the system. The three corridors that will be equipped are as follows:

	Corridor	From	To	Number of installations	Council District
1	Freeport Blvd	Broadway	Meadowview	14	4, 5, 7 & 8
2	Broadway	3rd Street	65th St Expressway	22	4, 5 & 6
3	Del Paso Blvd/Marysville Blvd	State Route 160	City limit	17	1, 2 & 3

Staff is recommending to purchase and specify the use of GPS-based technology for the EVPS equipment due to operational advantages, and installation and maintenance savings as compared to the infrared (IR) based technology equipment that is currently specified (Opticom IR). Fire Department staff has reviewed the successful use of GPS-based EVPS in Florida cities and counties and fully support the change to use of GPS-based technology. Once the equipment is acquired, City staff will install the equipment on the signals and the vehicles.

GPS-based EVPS integrates use of satellites and highly secure radio communications. Operationally, GPS-based EVPS is more accurate and effective than the IR technology EVPS. With GPS-based EVPS, advance pre-emption of multiple traffic signals along a corridor can occur even when the vehicle is turning. Pre-emption is based on vehicle data such as position, heading and speed. This vehicle data, updated every second from satellite signals, is transmitted via radio to the GPS intersection unit mounted on a traffic signal pole to confirm and activate the pre-emption request. This information provides more accurate and advanced pre-emption to the next intersection as well as to multiple intersections following on the route even when the vehicle is turning. With IR-based

technology EVPS, pre-emption of only one signal at a time occurs and dependent on the vehicle coming into range of the detector mounted on the traffic signal mast arm. Pre-emption of the signal requires the vehicle to have clear line of sight to the detector which involves very careful placement of the detectors on poles. Issues such as trees, dirty detector lenses, fog, and curves in the road can affect the line of sight often requiring multiple advanced detectors to insure the emergency vehicle is detected.

GPS-based EVPS is also simpler and faster to install and does not require routine maintenance. Installation of GPS-based EVPS involves running one wire to a GPS module mounted on the traffic signal pole nearest to the controller cabinet as compared to installation of multiple wires to IR detectors through signal poles and conduits in the roadbed. The average cost per intersection to install a GPS-based EVPS system is $8,000 - $9,000 as compared to $13,000 - $15,000 for an IR based system depending on the availability and condition of conduits. With regard to maintenance, GPS-based EVPS intersection units do not require routine maintenance whereas regular cleaning and line of sights adjustment of the IR detectors is recommended.

GPS-based EVPS is fully interoperable with the traffic signals currently equipped with the IR-based EVPS system by dually equipping the emergency vehicles with a strobe emitter and the GPS-based vehicle transmitter module. GPS-based EVPS, like IR based EVPS, can be used for police and transit pre-emption applications; however, if desired, the GPS output can also be used for other applications such as automatic vehicle location (AVL) systems.

City staff solicited formal bids for providing GPS-based technology EVPS equipment and is recommending that City Council accept the bid from Advanced Traffic Products Inc. for their Opticom Radio Activated GPS based traffic signal priority control system equipment. The sole bid was opened by the City Clerk on November 14, 2007, and are summarized below:

Vendor	**Bid Amount**
Advanced Traffic Products	$365,394.27

The engineer's estimate was $355,000.

Attachment 2

RESOLUTION NO.

Adopted by the Sacramento City Council

AWARD CONTRACT FOR THE PURCHASE OF RADIO ACTIVATED GPS-BASED EMERGENCY VEHICLE PRE-EMPTION SYSTEM EQUIPMENT TO ADVANCED TRAFFIC PRODUCTS INC. FOR AN AMOUNT NOT TO EXCEED $365,394.27

BACKGROUND

A. Emergency vehicle pre-emption system (EVPS) equipment gives right-of-way priority at signalized intersections to authorized emergency vehicles. Green light priority effectively reduces emergency vehicle response times and improves safety. On May 4, 2006, staff reported back to Council on the success of emergency vehicle pre-emption equipment in reducing response times.

B. Staff is recommending to purchase and specify the use of GPS-based technology for the EVPS equipment due to operational advantages, and installation and maintenance savings as compared to the infrared (IR) based technology equipment that is currently specified (Opticom IR).

C. The City requested bids for the purchase of radio activated GPS-based EVPS for 53 traffic signals and transmitters for 30 emergency vehicles. After the equipment is received, City staff will install the equipment on the traffic signals and install the transmitters on the emergency vehicles. The corridors that will be equipped are: Freeport Boulevard from Broadway to Meadowview Road; Broadway from 3rd Street to 65th Street Expressway; and, Del Paso Boulevard/Marysville Boulevard from SR160 to the City limit.

D. Bids for the purchase of the GPS-based EVPS equipment were received on November 14, 2007. Advanced Traffic Products, Inc. was the lowest responsible bidder.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

Section 1. The contract specifications for the purchase of radio activated GPS-based EVPS (PN: ST26, S15074500) are approved, and the contract is awarded to Advanced Traffic Products, Inc. for their Opticom GPS system for an amount not to exceed $365,394.

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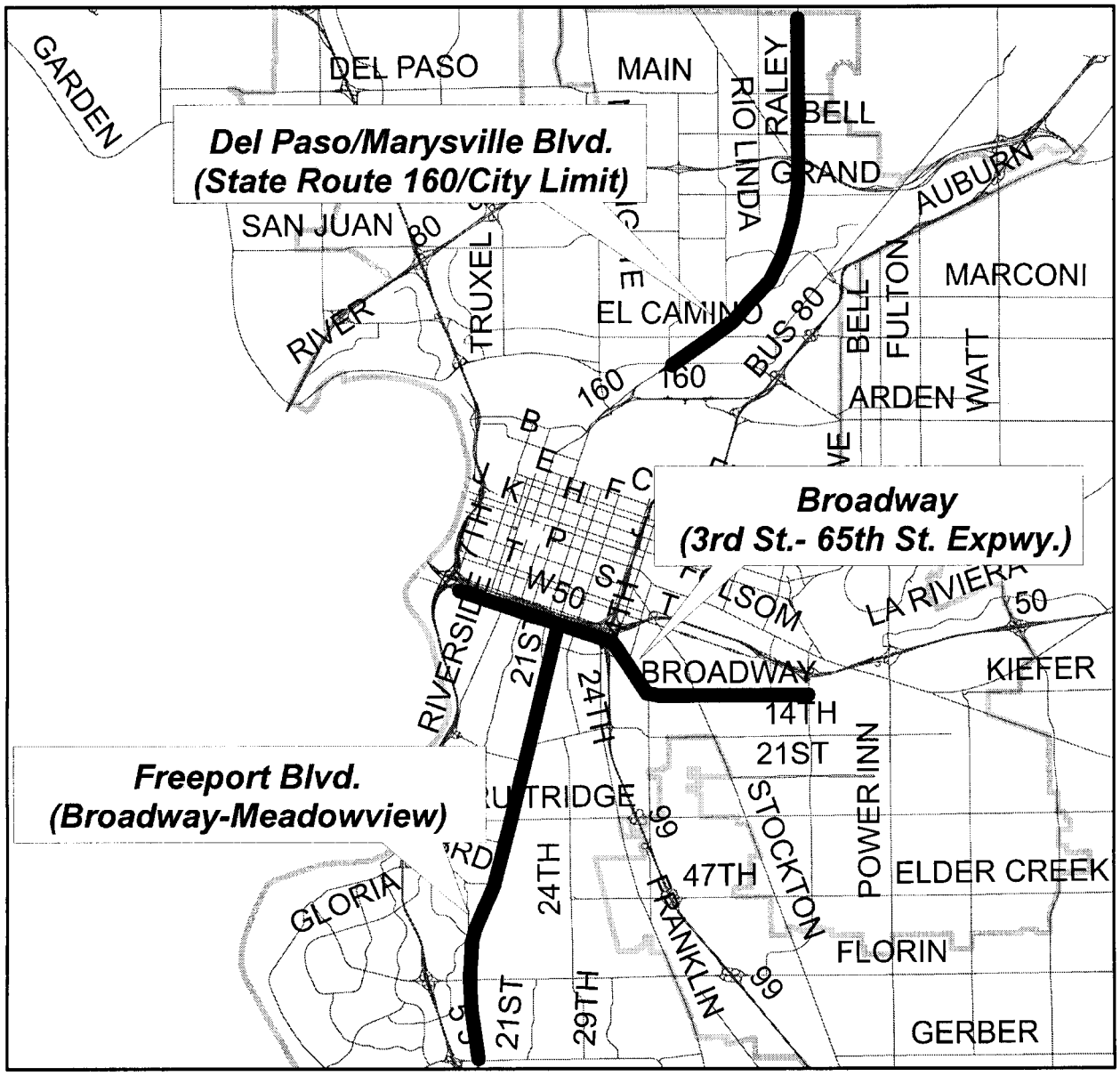
Exhibit A

LOCATION MAP FOR

CONTRACT AWARD FOR RADIO ACTIVATED GPS-BASED EMERGENCY VEHICLE PRE-EMPTION SYSTEM EQUIPMENT (PN:ST26, S15074500)



Map Contact: Hamid Khalessi
Date: February 14, 2008