CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

COUNCIL AGENDA: 06-27-06
ITEM: 2.28

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Scott P. Johnson

SUBJECT: **SEE BELOW**

DATE: June 5, 2006

Approved [signature] Date 6/14/06

SUBJECT: SERIES 2000 TRAFFIC SIGNAL MANAGEMENT SYSTEM UPGRADE

RECOMMENDATION

Authorize the Director of Finance to:

1. Execute an agreement for the purchase of software, hardware and professional services for the Series 2000 Traffic Signal Management System upgrade with TransCore located in Salt Lake City, Utah in the amount not to exceed $205,500, including sales tax, installation, training, and one year of initial maintenance and support, and;

2. Exercise three one-year options to extend the maintenance and support subject to annual appropriations.

OUTCOME

This upgrade will allow new light rail traffic signal controllers to be connected to the current traffic management system, enable staff to remotely monitor and adjust signal timing of all online intersections from one traffic management system, and support all future implementations of advanced traffic controllers that meet the National Transportation Communications for Intelligent Transportation Systems (ITS) Protocol (NTCIP).

BACKGROUND

The National Transportation Communications for Intelligent Transportation Systems (ITS) Protocol (NTCIP) is a communications standard for transmitting data between microcomputer control devices used in ITS. These NTCIP standards are required by the Federal Highway Administration (FHWA) and the American Association of State and Highway Transportation Officials (AASHTO) to allow interchangeability and interoperability between various traffic management devices.

The City's existing TransCore Series 2000 Traffic Signal Management System (Series 2000), which is the foundation for the City's Advanced Traffic Management Systems (ATMS), has been operational since 1990. This system operates 24-hours a day without operator supervision to maintain signal synchronization and allows staff to remotely monitor and adjust signal timing at more than 600 intersections throughout the city. The Series 2000 is critical in managing traffic on a real time basis, such as managing over 200 downtown events like Sharks games and the San José Grand Prix. It is also vital to the City's ability to perform on-going proactive retiming of more than 100 traffic signals per year.

The Series 2000 upgrade is Phase I of Department of Transportation's (DOT) strategy to optimize traffic flow conditions along light rail and bus corridors. The existing light rail traffic signal management systems are unstable and malfunctioning, preventing signal timing coordination along light rail corridors and resulting in motorist complaints, most notably along Capitol Avenue. The existing light rail traffic signal controllers and the traffic management system will need to be replaced. The phased strategy is summarized below:

Phase I: The Series 2000 will be upgraded to bring the future light rail controllers online, as well as the planned NTCIP compliant standard/transit signal controllers. A second component of the Series 2000 upgrade is to maintain the existing interface to the Silicon Valley ITS regional data exchange network, which allows the City to exchange traffic signal data with neighboring agencies.

Phase II: Approximately 90 existing McCain Vector type light rail controllers have been unstable and malfunctioning since their initial installation in 2001. Numerous hardware and software upgrades have not yielded a successful fix. Staff has determined that the TransCore Series 2000 is capable of interfacing with a variety of light rail controllers. Aa Request for Proposals (RFP) is currently in development to purchase light rail and new standard/transit signal controllers.

ANALYSIS

Series 2000 is the only product that supports the City's existing and extensive Traconex controllers installed base. Series 2000 is specialized with proprietary software and can only be upgraded by TransCore, the software developer. Upgrading Series 2000 will provide the following benefits:

1. Continue to support the City's more than 800 Tranconex 390 type controllers;
2. Provide reliable performance, which is critical to DOT's ability to perform real time traffic management, and on-going proactive retiming of more than 100 traffic signals per year city-wide;
3. Deployed on Microsoft's Windows operating system which allows staff to easily maintain, troubleshoot, and mange the system;
4. TransCore is an independent company that supports the highest number of controller firmware and provides the City with the greatest flexibility in selecting and acquiring future traffic controller replacements; and

5. Minimize costs associated with staff training.

To ensure competitive pricing, staff benchmarked pricing with the City of Sacramento who completed a similar upgrade to its TransCore system at a cost of $350K. Below is the price breakdown for the City's upgrade:

Type of Software Upgrade	Amount
TransCore Series 2000 Traffic Control System Upgrade to TransCore TransSuite (includes hardware, software licenses, warranty and labor)	$140,000
Communications Upgrade to support TCP/IP and Ethernet	$25,000
Silicon-Valley ITS Program Data Exchange Network Interface Upgrade	$40,000
Total	$205,000

The City is heavily invested in the existing Series 2000 (approximately $800K) and the existing Traconex controllers (approximately $2.8M) that are linked to it. Staff has determined that upgrading Series 2000 is the most advantageous and cost effective solution and that a sole source purchase is justified. In accordance with Municipal Code 4.12.149, the Director of Finance has reviewed and approved a Sole Source and Brand Name Proprietary Procurement for this purchase only (see attached).

ALTERNATIVES

As discussed in the accompanying BrandName/Sole Source Form, there are similar alternative central traffic signal management systems available. However, these systems do not provide the required flexibility to support various brands of traffic controllers and are estimated to result in a much higher overall cost to the City since these systems require additional software development costs, increase the amount equipment and related installation costs, and require additional staff training.

PUBLIC OUTREACH

Not applicable.

COORDINATION

This memorandum has been coordinated with the Department of Transportation, Information Technology Department, the City Manager's Budget Office, and the City Attorney's Office.

COST IMPLICATIONS

This council item is consistent with Council approved Budget Strategy General Principle #2, "We must focus on protecting our vital core city services", and General Principal #7 "We must

continue to Streamline, innovate, and simplify our operations… so that we can deliver services at a higher quality level, with better flexibility, at a lower cost."

BUDGET REFERENCE

Fund #	Appn #	Appn. Name	RC #	Total Appn.	Amount of Contract	2005-2006 Adopted Budget Page	Last Budget Action (Date, Ord. No.)
001	0512	Non-Personal/Equipment Department of Transportation	477300	**12,217,328**	30,000	N/A	**2/14/06 Ord. No. 27665**
429	5054	ITS: Capitol LRT Signal Upgrade	139843	$300,000	$175,000	Capital Budget Page V-1066	N/A
Total Current Funding Available				**$12,517,328**	**$205,000**		

CEQA

Not a project.

SCOTT P. JOHNSON
Director, Finance

For questions, please contact Walter C. Rossmann, Chief Purchasing Officer at (408) 535-7051.

☒ Brand Name Purchase ☒ Sole Source

Department and Contact Information

Department and Contact Information:

Ho Nguyen (DOT) 975-3279; Ken Salvail (DOT) 975-3705

Required Contract Information

Contractor:

TransCore

Address:

488 East 6400 South, Suite 375
Salt Lake City, Utah 84107

Contact Person and Telephone Number:

Michael Mauritz
(801) 293-1920
michael.mauritz@transcore.com

Type of Product / Service Offered (briefly describe):

DOT is seeking to upgrade the City's existing TransCore Series 2000 traffic signal management system which is the foundation for the City's Advanced Traffic Management Systems (ATMS). The TransCore Series 2000 System monitors traffic and allows for remote control of traffic operations at more than 500 intersections in the city. This system operates 24-hours a day without operator supervision.

The upgrade is required to implement the National Transportation Communications for ITS Protocol (NTCIP) between the central system and the traffic signal controller. NTCIP is a communications standard for transmitting data between microcomputer control devices used in Intelligent Transportation Systems (ITS). NTCIP standards are required by the Federal Highway Administration (FHWA) and the American Association of State and Highway Transportation Officials (AASHTO) to allow interchangeability and interoperability between various traffic management devices.

The upgrade will also transition from a Unix operating system to a Windows based system to minimize system maintenance. The proposed procurement includes three server computers and associated operating system software, and database licenses. On-going annual maintenance agreements are proposed as well.

Complete responses must be provided for all of the items listed below

A. GENERAL INFORMATION:

1. **What are the performance requirements for the product you are requesting?**
   (Please provide documentation if available)

   A. Support multiple controller firmwares
   B. Support City's existing Traconex 390 controllers, and 2070 NTCIP software
   C. Implement fully compliant NTCIP communications to traffic controllers
   D. Support real time communications and error checking
   E. Support IP communications including wireless
   F. Contain advanced controller database management tools with efficient parameter upload/download access
   G. Contain relational database for easy data import/export
   H. Contain flexible, full featured event scheduler
   I. Contain highly configurable, searchable event log
   J. Accommodates up to 2,000 intersection controllers and 2,000 system detectors
   K. Perform traffic signal controller error processing
   L. Contain remote control capability to allow multiple users to concurrently access and interact with the system
   M. Based on the Windows operating system

2. **What products could potentially meet these performance requirements?**

   There are similar products, but TransCore is the only supplier that supports the City's Traconex 390 controllers. Other suppliers cannot not meet all of the requirements without extensive software development that could take years to complete.

3. **What market research was conducted, including evaluation of other items considered? Were there other items with less restrictive specifications available?** *(Describe your efforts to identify other goods/services that could have been procured to meet your requirement and indicate why those alternatives were deemed inappropriate or unavailable. Please include the names and addresses of suppliers contacted and the reasons for not considering them, OR explain why the surveyor effort to identify other goods/services was not performed.)*

   Signal Central Management System: Transcore Series 2000

   A market research was performed and TransCore is the only supplier that can communicate with the Traconex 390 controllers that are currently deployed. The existing TransCore system was selected based on its unique status as a developer of a traffic signal control system that does not sell traffic controller hardware. As a result, such an independence from a traffic controller affords the City greater leverage and flexibility in the City's selection of a controller replacement. At the present, TransCore supports the following controller firmware:

   - Traconex TMP390 TS/1
   - BI Tran Type 170
   - BI Tran Type 179
   - Econolite ASC 2 TS/2
   - Econolite 2070
   - Eagle SEPAC 300 TS/2 and 2070
   - Peek 3000/3000E TS/2
   - Siemens 2070 NextPhase
   - US Traffic ATC

   Other ATMS systems like Econolite's Icons, Eagle's Actra, and Naztec's Streetwise are intrinsically tied to their native controllers with no support for the Traconex 390 controllers. There are ATMS software developers such as

Kimley-Horn and PB Farradyne, that do not sell controller hardware, but support a very limited number of controllers; thus, requiring frequent costly customizations to support additional controller firmware. This limits the City's flexibility in selecting new controllers and subsequently may not be in the City's best interest.

Computer Servers

The upgrade will require the procurement of three servers and associated operating systems and database licenses. A market research was not performed because the vendor has pre-qualified DELL computer equipment for their product. Additionally, the vendor preloads and configures their software in their Utah office in a control environment to minimize the installation time required on-site, eliminate the need to have highly paid staff load software on-site, and avoid dealing with computer issues on-site. Procuring the equipment separately would require the City to ship the servers to the vendor's office.

4. **Are you purchasing this product in order to conduct a field test? Please describe the parameters of the test.**

   No

5. **Is this product necessary to match existing inventory? Please state why.**

   This procurement upgrades the existing TransCore Series 2000 traffic management system. DOT has been using the TransCore system since 1990 with ongoing support. This system is specialized with proprietary software and can only be upgraded by TransCore, the software developer.

   This upgrade will provide support for a wide range of NTCIP compliant equipment vendors, maintain concurrent support for the City's Traconex 390 controllers as well as a large number of industry standard controller platforms, and encourage future deployment of ITS devices as Ethernet and TCP/IP become more pervasive. For more details, please see the attached report titled, "Final Report on TransCore Series 2000 System Upgrade," dated March 9, 2006.

6. **Is the purchase of this product consistent with an approved technology architectural standard? Please attach documentation.**

   This upgrade is identified in the Transportation and Aviation CSA Information Technology Master Plan that was approved by ITPB on February 16, 2006.

B. PRICE ANALYSIS:

7. **What pricing information was obtained?**

   Following are estimated costs for the upgrade:

$140,000	Transcore Series 2000 Traffic Control System upgrade to Transcore TransSuite Traffic Control System (includes hardware, software licenses, warranty and labor)
$ 25,500	Communications Upgrade to support TCP/IP and Ethernet
$ 40,000	Silicon-Valley ITS Program Data Exchange Network Interface Upgrade
$205,500	

Budgetary estimates from other suppliers that do not sell traffic controller hardware, such as Kimley-Horn and PB Farradyne, are comparable to TransCore's, if not slightly higher. These estimates do not include the additional software development cost to support the Traconex 390 controllers or provide staff training,. However, a similar upgrade to TransCore's TransSuite Traffic Control System was performed at the City of Sacramento in August 2003, for approximately $350,000, which is one of the first upgrades to the TransSuite system.

8. Describe any cost savings realized or costs avoided by acquiring only this product versus other products. *(For "standardization" requests please explain significant costs savings. Refer to the San Jose Municipal Code, Section 4.12.149 B (1), (2) and (5) for additional information to justify standardization based on cost savings or cost avoidance.)*

Since the City is heavily invested in the TransCore S2000 System and Traconex 390 controllers, it is most advantageous to upgrade the existing system rather than purchase an entirely new system. By upgrading the existing system, the City will realize the following cost savings:

- Reduced staff training required for system upgrades as compared to replacing the system
- No software development costs and need to wait for Traconex 390 controller support
- Reduction in the amount of equipment and labor needed to deploy new ITS devices

City has invested $800K to procure, upgrade and maintain the TransCore S2000 System, and approximately $2.8M to procure Traconex 390 controllers. If the City were to change systems, the estimated costs for new system would likely exceed acquisition cost of existing system with potential requirement for new controller hardware.

Required Approvals

Requesting Department Director	Purchasing Manager / Agent	Finance Director
☑ Approved ☐ Denied	☑ Approved ☐ Denied	☑ Approved ☐ Denied
James R Helmer 6/05/06	6/5/06 MG	Approval requires written decision consistent with Section 4.12.149 subsection C. Memo attached
Date	Date	Director or Designee/Date

Approved for this one-time purchase only.