CITY OF HAYWARD
AGENDA REPORT

AGENDA DATE 10/25/05
AGENDA ITEM 6
WORK SESSION ITEM

TO: Mayor and City Council

FROM: City Manager

SUBJECT: Public Safety Radio System Replacement Project

RECOMMENDATION:

It is recommended that Council adopt the attached resolution appropriating $1.6 million from the Public Safety Radio System Replacement Reserve to fund the cost of the Public Safety Radio Replacement Project.

DISCUSSION:

One of the major projects that staff has been working on is the Public Safety Radio System Replacement Project. Based on both technical work done by the City's consultant and staff's own evaluation, staff has developed an approach that addresses both short term and long term system requirements. In the long term staff is of the opinion that the City's current analog system must be replaced with a modern, 700/800 MHz digital trunked system. This solution however is costly and funding is not yet resolved. In addition, there are significant lead times associated with the design and implementation of such a system. Given this consideration and the fact that the existing system must continue to operate until a new system can be brought on line, staff developed a short term solution to address these concerns.

Staff's recommended short term solution (Phase I) consists of a limited overhaul of the current system and is designed to stabilize the existing system, provide for "reuse" of certain major subsystems where possible and keep costs within available funds (Public Safety Radio System Reserve). Staff estimates that Phase I work could be accomplished by the end of 2006 at a cost of approximately $1.6 million. Phase I work would stabilize the existing system, enhance coverage and provide the City with much needed time to implement a long term solution.

For the long term (Phase II), staff is recommending a new, expanded system. More specifically, the City would move from the existing analog system with three transmitter sites to a 700/800 MHz digital, trunked system with up to six transmitter sites. The cost for the new system could be in excess of $10 million and as a consequence a funding plan to pay for the system must be developed. Such a system would offer several advantages such as significantly improved coverage, relief of channel congestion, allow for "talk groups" and position the City to join any future regional network. The most significant advantage of a regional network would be the ability to obtain the highest level of interoperability among the system's users.

Staff estimates that the Phase I system will provide three to five years of reliable service.

Phase I (Stabilize and enhance existing system)

The City's existing system has evolved over several years and serves primarily public safety, Police and Fire, by providing central dispatch services and two-way communications between the user(s) and the City's Communication Operations Center (Comm Ops or Dispatch). Public Works also has access to the system. In addition, two-way communication between two users in the field is provided. Examples are a call for service to 911. A Communications Operator evaluates the call and typically Fire/Police units are "dispatched" to the scene. In addition, there is substantial communications traffic between users in the field and Dispatch requesting information, back up, etc. All of this traffic takes place over the exiting analog system.

The existing system consists of several major "subsystems" which are discussed briefly below:

- Transmitter Tower/Microwave subsystem. There are three transmitter sites (towers) in the City. One is located at the Police Department building on Winton, one on Walpert Ridge and one at the Hesperian Pump Station. The sites are connected via microwave and are the backbone of the system for transmitting radio communications to the users. This system is old, fragile and needs to be replaced. This subsystem can be replaced with digital equipment and can be reused in a new 700/800 MHz digital trunked system. In addition, the towers and other transmission equipment must be replaced.

- Simulcast Subsystem. When a message is transmitted from Dispatch it is broadcast from the three transmitter towers ***simultaneously***. This ensures coverage and that users receive one un-garbled transmission as opposed to overlapping transmissions due to timing differences between transmitter sites. The subsystem that manages this function needs replacing. If this subsystem is down, then the overall performance of the system is degraded.

- Voter/Receivers Subsystem. In addition to the transmitter sites noted above the system is equipped with three radio receiver sites. The receiver sites pick up the transmissions of users from the field and complete the two-way radio communication. The receiver sites are located at Fire Station 3, Fire Station 6 and Fire Station 9. All of these receiver sites are connected to the Police Department building by telephone lines. When a receiving site picks up a transmission from the field the voting system selects the strongest signal and uses that site to manage the transmission. If this subsystem is not operating properly, transmissions are garbled and must be repeated resulting in unacceptable delays. This equipment is old and needs to be replaced.

In addition to replacing the major subsystems discussed above, staff is recommending two additional improvements to the existing system. First, staff is recommending that a new receiver

site be located on the Garin Water Tank. The antennas and tower will be unobtrusive, relatively inexpensive to install and will enhance the system's coverage. Finally, the new receiver site will be "forward compatible" with the long-term or Phase II recommendation.

The second enhancement concerns the City's inventory of portable or hand held radio units. The existing units are analog units and are not compatible with a digital system. Because of the cost of replacing approximately 300 units is substantial, staff is not recommending the purchase of new units. Instead, staff is recommending an expanded maintenance program for the existing units. This program will ensure that an adequate number of well maintained units are available at a relatively low cost.

A final equipment area that must be addressed as part of Phase I is the replacement of mobile data terminals (MDT's) used by the Fire Department. Fire Department engines, trucks and support vehicles are equipped with MDT's and are used by fire personnel when responding to calls for service. The current units are over ten years old and are no longer manufactured. The MDT's would be replaced with mobile data computers (MDC's) which represent current technology.

Cost and Funding

The cost of Phase I is approximately $1.6 million. Approximately $600,000 of that amount is required to replace the microwave system, about $300,000 to replace antennas and transmission lines and approximately $300,000 for the simulcast and voting systems. The remainder of the cost, approximately $400,000, is for contingency, MDC's and the new site.

At June 30, 2005 the Public Safety Radio Replacement Reserve was approximately $2 million. Staff is recommending that $1.6 million of this reserve be appropriated to the City's Capital Projects Fund, Public Safety Radio Replacement Project to fund the cost of Phase I. This will leave approximately $400,000 in the reserve for future use.

Council Technology Advisory Committee

At the September 27, 2005 Council Technology Advisory Committee (CTAC) meeting staff reviewed with the Committee the status of the Project and staff's recommendations. The Committee members discussed staff's report and indicated that they were in agreement. Further, the Committee directed staff to forward the report to the full Council for consideration and action and that staff address the project schedule in its report to Council. This information has been included in the following discussion.

Project Schedule

The first task will be the issuance of requests for proposal (RFPs) for the various subsystems that need to be replaced. There are several qualified vendors that could do the work required and depending on cost and scheduling more than one vendor may be used. In terms of work scheduling, the transmitter tower/microwave subsystem would be the first system to be replaced. This work would be followed by the simulcast subsystem and then the voter/receivers subsystem. Replacement of the three major subsystems is anticipated to take from eight to ten months after the

contracts for work are awarded. Consequently, staff estimates that Phase I improvement would be completed by the end of calendar 2006. Staff believes that this schedule is achievable and realistic. However, vendor, equipment and materials availability may cause the schedule to vary from staff's estimate.

Prepared by:

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Recommended by:

Perry H Carter

Perry H. Carter
Acting Assistant City Manager

Approved by:

Jesús Armas, City Manager

Attachment: Draft Resolution

DRAFT

HAYWARD CITY COUNCIL

RESOLUTION NO. 05-__

Introduced by Council Member_____

RESOLUTION AMENDING RESOLUTION 05-078, AS AMENDED, THE BUDGET RESOLUTION FOR FISCAL YEAR 2005-06, RELATING TO AN APPROPRIATION OF FUNDS TO REPLACE THE PUBLIC SAFETY RADIO SYSTEM

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Hayward that Resolution No. 05-078, as amended, the Budget Resolution for fiscal year 2005-06, is hereby amended by approving an appropriation of $1,600,000 from the from the General Fund Public Safety Radio Replacement Fund (Fund 100) to the Capital Projects Fund, Public Safety Radio Replacement Project (Fund 410) to replace the City's Public Safety Radio System.

BE IT FURTHER RESOLVED by the City Council of the City of Hayward that the City Manager is hereby authorized and directed to issue requests for proposals and to negotiate and execute any such contracts necessary to replace the public safety radio system.

IN COUNCIL, HAYWARD, CALIFORNIA_____, 2005

ADOPTED BY THE FOLLOWING VOTE:

AYES: COUNCIL MEMBERS:
MAYOR:

NOES: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ATTEST:_____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

_____
City Attorney of the City of Hayward