RULES AGENDA: 12-7-05
ITEM: G(1)

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: RULES COMMITTEE

FROM: John D. Bjurman
Chief Information Officer

SUBJECT: CELLULAR REINFORCEMENT
[Rules Committee Referral No. 10-05-05G(2)]

DATE: 11-29-05

Approved Kay Winer Date 11/30/05

RECOMMENDATION

Rules Committee review the workload assessment on cellular communication coverage at City Hall.

BACKGROUND

At the October 5, 2005 Rules Committee meeting, staff was directed to prepare a workload assessment on the above-referenced item. This memorandum responds to that direction. During the IT planning stages of the New City Hall, staff envisioned having wireless access throughout the facility.

As part of the wireless strategy, the reinforcement of the cellular communication system is desirable to allow the public to make phone calls throughout the building and site grounds. Enabling cellular technology is consistent with the "Make San Jose a wired and wireless city" priority as identified in the Getting Families Back to Work workshops.

On November 4, 2004, bids for the New City Hall In-Building Re-enforcement of Wireless Radio, Cellular, and Wireless Fidelity (WiFi) Coverage Project were opened. This project provided reinforcement for cellular and public safety radio along with wi-fi coverage for the site. The only proposal received was 164% greater than the budgeted amount and was rejected by Council action in February 2005.

Subsequent work has continued to implement each of these three technologies concurrently. WiFi has been successfully installed throughout the public spaces within the building. Public Safety radio has been enhanced, and ITD continues to analyze options for improving cellular coverage.

ANALYSIS

Cellular technology is very dynamic, and each provider uses its own type of equipment and processes. Phone reception and the quality of phone service are dependent on a number of factors. Location of nearby cellular transmitters for each of the cellular providers, the model and type of phone, the frequency and type of radio technology all affect the voice quality that the user will experience. Providing high quality reception equally across all cellular vendors requires that working agreements be in place and updates be made to keep equipment and processes current.

Issues to Consider

There are a number of other issues to be considered:

1. The cost of a multi-vendor reinforcement system is substantial. These types of systems use a common backbone (generally fiber optics) to provide communication to each area of the building. Antennae are placed at various locations throughout the building. Depending on the requirements, multiple types of antennae may need to be placed to provide access to all the frequencies needed. Based on a previous bid and discussions with vendors, estimates indicate that the cost of such reinforcement is likely to exceed $500,000, excluding operating costs.
2. The City should weigh alternatives of having a City owned and operated system versus having individual cellular providers provide service.
3. The system should not conflict with recommendations and direction given in the recent cell-phone audit.

Short-Term Solutions

The City, through the Finance Department's Procurement Division, works with two cellular phone providers for its own cellular communication needs. Staff has contacted these cell service providers to identify public/private partnership opportunities in the area of cell phone coverage for the new City Hall. The cellular tests completed to date have determined that one provider believes it already has clear communication throughout the site assuming the proper types of cell phones are used, and one vendor has expressed interest in providing some type of reinforcement in City Hall.

Other Solutions

One of the more recent technologies and cost effective means to improve multiple vendor cellular coverage is to install a distributed antenna system. This provides an infrastructure that cellular providers are able to use and minimizes the overall investment. This is a relatively new technology, and City staff does not have extensive experience in the area. Further analysis of

this technology would require the services of a consultant to assist in the evaluation and potential implementation of this type of system. As part of the consultant study, identification of appropriate "in-sourcing" opportunities for City staff will be included. The consultant services would provide the technical depth necessary to implement the project. Combining this with the capabilities of City staff, will afford the greatest opportunity to save money and to provide existing staff with the opportunity to provide services where they are capable.

Understanding that the installation of this type of system would take some time, staff would continue to identify public/private partnership opportunities for City Hall's cellular communication coverage on a shorter term basis. Below is the workload assessment for the work described above.

Other Tasks

Staff will work with the consultant in developing criteria for options of service delivery alternatives. Additionally, the consultant will provide Staff with cost benefit analyses to assist in the selection of the most advantageous choice.

Workload Assessment

The completion of the feasibility of this proposal would require the following workplan of the Information Technology Department and other City Staff:

- **Month 1-2:** Research options for the delivery of this type of service and prepare procurement documents for a consultant [ITD, Finance, and Attorney's Staff].
- **Month 3 - 5:** Consultant to conduct a coverage survey for all areas on the site and for each of the possible providers [ITD and General Services Staff].
- **Month 6:** Evaluate the coverage study, cost-benefit analysis and delivery alternatives of options [ITD Staff].
- **Month 7 - 8:** Council consideration and enter into appropriate agreements with cell phone provider(s) [ITD, Finance and Attorney's Staff].
- **Month 9 - 14:** Procure, design and install a centralized City-owned and operated system or contract with each provider to provide an independent service on site. Facility review and construction coordination. [ITD, Finance and Attorney's Staff].

It is anticipated that this effort would take at least 1650 Staff hours to complete. For the Information Technology Department, the workload impact would cause a delay in completing ongoing and future projects, as staff resources will need to be dedicated to multiple major projects. Some of the projects that would be impacted are the CSA information technology Master Plans as well as the transition from managed network services to in-house phone and network maintenance, and support for existing non-NCH facilities.

COORDINATION

This project and memorandum have been coordinated with the Finance Department and the General Services Department.

JOHN D. BJURMAN
Chief Information Officer