TO: HONORABLE CITY COUNCIL

FROM: CITY MANAGER   DEPARTMENT: UTILITIES

DATE: JUNE 14, 2010   CMR: 265:10

REPORT TYPE: INFORMATIONAL

SUBJECT: **Status Update on Citywide Ultra High-Speed Broadband System Project**

RECOMMENDATION
This report is informational only and no Council action is required.

BACKGROUND
The purpose of this report is to provide the Council with an update regarding activities related to the Citywide Ultra High-Speed Broadband System Project ("Broadband System Project"). These activities include: (1) information about the City's response to the Google *Fiber for Communities* Request for Information (RFI), and (2) the development of a business plan for the Broadband System Project.

DISCUSSION
Google *Fiber for Communities* update:
On February 22, 2010, staff submitted a report (CMR: 147:10) to Council requesting direction to prepare a response to Google's RFI for its *Fiber for Communities* initiative, and to discontinue work by staff to apply for a federal stimulus grant for the Broadband System Project. Council approved the recommendation for this action and directed staff to prepare a response to the Google RFI.

On March 8, 2010, the Council designated the City Manager as the Google *Fiber for Communities* point person. It is essential that the City have a single point of contact and "go-to person" with the authority to make decisions and speak on behalf of the City.

On March 26, 2010, the City submitted its response to the Google RFI. To support the RFI response, a multilevel public grassroots outreach campaign was coordinated by staff, including a committee of citizen advisors and community volunteers to encourage citizens and businesses to nominate Palo Alto as an ideal trial location for Google's *Fiber for Communities* initiative. More than 150 local businesses and community anchor institutions provided letters of support for the City's nomination. The objective of the public grassroots outreach plan was to demonstrate the high level of support in Palo Alto for Google's goal of experimenting with new ways to help make Internet access better and faster for everyone. Google's *Fiber for Communities* goals are closely aligned with the City's long term vision to expand the availability of a fiber-to-the-

premise (FTTP) broadband network using an "open access" operating model giving the user the choice of multiple service providers.

Approximately 1,100 communities (130 in California) responded to the RFI and more than 200,000 people nominated their communities for Google's *Fiber for Communities* initiative. Google has stated that they will make a decision about which communities to build and test their ultra high-speed broadband networks by the end of this calendar year. At a fiber conference on April 21, 2010, a *Fiber for Communities* project manager stated that Google has been reviewing the responses to the RFI with two criteria in mind: (1) the efficiency with which such networks could be rolled out, and (2) how the targeted communities could benefit from the roll-out of such networks.

To date, the City has not been contacted by Google regarding its response to the RFI.

Update on the development of a Business Plan for the Broadband System Project:
Staff is developing the components of a business plan for the Broadband System Project. The purpose of the business plan is to respond to Council's directive to explore the use of the Fiber Optics Fund reserves to independently proceed with a phased build-out of the existing backbone to achieve the City's vision of a universally fiber-connected City. The components of the business plan are:

- An extension of the "dark" fiber network to increase commercial dark fiber license revenues and to expand access to the network by commercial customers;
- An assessment of the conceptual plan to extend the fiber network deeper into the community as a means of providing an inducement for a private-sector broadband provider(s) to form a partnership with the City to design, build and operate a citywide "open access" fiber-to-the-premise (FTTP) network;
- Coordination of the development of the business plan for the Broadband System Project with the development of the Smart Grid Strategic Plan as it relates to evaluating the communication infrastructure required to enable Smart Meters and a Smart Grid network.

Fiber Network Extension:
The Broadband System Project business plan will assess the costs and benefits of the proposal to extend the fiber network by approximately 25 miles to commercial districts, business parks and public facilities. The primary goal of the proposed extension of the fiber network is to increase dark fiber license revenues while concurrently creating a future platform for the build-out of a FTTP network. Extension of the fiber network would be accomplished through phased Capital Improvement Projects. These projects would be funded by the Fiber Optics Fund reserves. The City currently licenses 175 dark fiber service connections to 59 customers (54 private and 5 governmental). Annual gross revenues for dark fiber licenses are approximately $2.5 million. There is approximately $7.8 million in the Fiber Optics Fund reserves.

In addition to extending the fiber network to commercial districts, business parks and public facilities, the business plan will evaluate extending fiber to strategically positioned nodes (*i.e.*, communications network connection points) near residential neighborhoods to provide a more robust fiber network infrastructure. At the nodes, the fiber count would be increased to make available sufficient fiber for commercial users and, at each node, support a migration path for the build-out of a FTTP network.

Extension of the fiber network to nodes near residential neighborhoods would possibly serve as an inducement for investment in a FTTP network by a private-sector partner. To thoroughly consider all options to advance the Broadband System Project, the business plan will evaluate whether the extension of the fiber network and the placement of nodes in the community will provide a sufficient basis to recommend to Council issuing another Request for Proposal (RFP) to attract a private-sector partner(s) to build and operate an open access FTTP network. The primary objective of this evaluation is to determine if the proposed extension of the fiber network closer to residential neighborhoods will encourage interest among qualified firms that will partner with a municipality to provide broadband services to the premise (residential and business). Assessing the City's ability to attract a private-sector partner will take into account the Council's goals of providing each premise with access to a minimum bandwidth of 100 megabits per second symmetrical service; an open access network capable of delivering at least data, video and telephony; minimal financial risk, and eventual ownership of the network by the City.

The business plan will include a return on investment (ROI) analysis for the extension of the fiber network for commercial purposes and for the extension of fiber to nodes for a future FTTP network. The ROI analysis will be based on a market assessment to determine actual demand for commercial dark fiber service connections and confirm a "take rate" by prospective customers to ensure a satisfactory return. It is assumed there is additional demand for the City's commercial fiber optics service, but there is no significant market data available to support this assumption. The City's fiber network already passes most of Palo Alto's commercial districts and business parks and can be extended to nearly all commercial premises within Palo Alto; however, some potential customers (especially small and mid-size businesses) located further away from the fiber network may find the installation cost for a dark fiber service connection to be prohibitive. To develop an accurate market assessment, City of Palo Alto Utilities (CPAU) Marketing staff will contact commercial real estate agencies, commercial property managers, developers, business associations, community anchor institutions and individual businesses to determine the awareness of the City's fiber network and confirm potential interest in licensing dark fiber.

The outreach effort for the market assessment includes continuation of discussions between the City and the Palo Alto Unified School District (PAUSD) regarding connecting the schools with dark fiber service connections. PAUSD sites are currently served by Comcast with dark fiber service through the Institutional Network (I-Net). These fiber connections are provided by Comcast under the Joint Power Authority (JPA) Franchise Agreement. The 10-year Franchise Agreement ends in July 2010. After this date, Comcast is no longer obligated to provide the JPA members and associated school districts (including PAUSD) with I-Net fiber service connections, except for those locations that deliver local public, education, and governmental (PEG) programming. For the past year, JPA representatives have been meeting with Comcast representatives to discuss the transition of the I-Net. Discussions between the JPA and Comcast regarding the future of the I-Net continue. Comcast has agreed that it will not begin billing the JPA for the I-Net as long as the parties are making reasonable progress towards a mutually acceptable agreement and, in any event, not until Comcast has given the JPA 60 days prior written notice. At this time, the preliminary pricing proposed by Comcast for the I-Net replacement options exceed the financial means of the JPA members and school districts.

Network Engineering
The business plan will include a preliminary design and cost estimate to extend the presence of fiber beyond the existing ring structure with nodes located near commercial districts, business

parks, public facilities and residential neighborhoods. To support the development of a preliminary design and cost estimate for the fiber network extension, technical engineering support services will be provided by Columbia Telecommunications Corporation (CTC) under Amendment No. 3 to Contract No. S09128567 approved by the Council on February 1, 2010 (amount not to exceed $50,000). CTC has expertise and experience in designing and implementing telecommunication networks for a multitude of municipalities across the country.

The components of the engineering work include:

- Network logical design
- Core network schematic
- Justification for technology choices
- Backbone routing
- Recommended use of utility poles
- Recommended construction techniques for underground service areas
- Facility entry recommendations
- Fiber multiplexing technology and recommended aggregation points
- Migration and upgrade plan for a FTTP Network, including node design and placement
- Bill of materials
- Cost estimates
- Labor estimate
- Build-out schedule
- Description of areas of risk and measures to mitigate risks

Assessment of Communication Infrastructure for Smart Meters and Smart Grid:
The Utilities Department is currently working with a consultant (EnerNex Corporation) to develop a Smart Grid Strategic Plan. Communication infrastructure (i.e., fiber optics and wireless) is fundamental to all aspects of Smart Meters and Smart Grid networks, including generation, transmission, distribution and consumption. A key task in the development of the strategic plan is to assess the communication infrastructure required to enable well-tested and accurate Smart Meters and a comprehensive Smart Grid network. Any planned expansion of the fiber network related to the Broadband System Project will need to take into account the future deployment of Smart Meters and Smart Grid technology. Coordination of the objectives of the Broadband System Project business plan and the Smart Grid strategic plan will be necessary.

Deployment of Smart Meters and a Smart Grid network is dependent on integrated two-way communications, which makes the Smart Grid a dynamic, interactive, real-time infrastructure. The implementation of Smart Meters and Smart Grid technology requires the integration of electric and communication infrastructure at multiple levels to ensure data quality. Additionally, the vision for a Smart Grid network includes enhanced security for utility infrastructure; therefore, Smart Grid design and deployment takes into account cyber security and addresses vulnerabilities in utility communication infrastructure.

The types of communication medium required to transport information between a utility's operations center and the Smart Meter and Smart Grid network components will be addressed in the strategic plan. The backbone of the Smart Grid, which uses digital technology to deliver electricity and control its use, will be an Internet Protocol-network, and therefore may require

additional deployment of fiber. Complementary wireless technology will also be evaluated to support Smart Meters and a Smart Grid network. Development of the strategic plan for Smart Grid and the business plan for the Broadband System Project will be coordinated. Any proposed expansion of the fiber network to support Smart Meters and a Smart Grid Network will be incorporated into the ROI analysis.

RESOURCE IMPACT
On October 19, 2009, the City hired a full-time project manager (temporary) for the Citywide Ultra High-Speed Broadband System Project. Funds are available in the 2010-2011 Fiber Optics Fund operating budget to support this expense.

Funds are available in the 2010-2011 Fiber Optics Fund operating budget to support the expense for the technical engineering support services to be provided by Columbia Telecommunications Corporation (CTC).

POLICY IMPLICATIONS
This report is consistent with the Council's policy direction provided to staff.

ENVIRONMENTAL REVIEW
The actions requested in this report do no constitute a project for the purposes of the California Environmental Quality Act. Build-out of the Broadband System is subject to the requirements of the California Environmental Quality Act due to the installation, construction and maintenance of facilities in the public rights-of-way. Necessary environmental review will occur when appropriate.
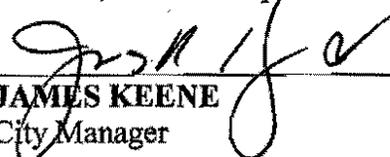
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