Office of the City Manager

CONSENT CALENDAR
June 23, 2015

To: Honorable Mayor and Members of the City Council

From: Christine Daniel, City Manager

Submitted by: Michael Caplan, Manager, Office of Economic Development

Subject: Broadband Infrastructure Report and Recommendations

RECOMMENDATIONS

1. Direct the City Manager to survey City-owned conduit in Downtown and prepare a Request for Proposal so that Downtown and other City-owned conduit in the City can be leased to a qualified broadband fiber service provider.

2. Direct the City Manager to conduct a competitive bid process for fiber conduit installation in select sections of the road reconstruction projects as part of the 2016 paving plan.

3. Direct the City Manager to work with West Berkeley stakeholders to explore funding sources for installation of Internet infrastructure and other District enhancements such as shuttle services.

4. Direct the City Manager to develop a "Shadow Conduit" Ordinance requiring telecommunication providers to allow the City of Berkeley to install conduit whenever those providers undertake suitable excavations for their own infrastructure.

FISCAL IMPACTS OF RECOMMENDATIONS

Recommendation 1

Surveying the connections between the City of Berkeley's Downtown conduit and long-haul Internet carriers is estimated to cost $5,000. An additional $5,000 would be required to retain a consultant to assist in designing a Request for Proposal to identify a private sector partner to lease City conduit and manage the selection process. The cost of these services will occur in FY 2016 and will be shared equally by the City Manager's Office ($2,500 - 010-9701-410-30.38), the Office of Economic Development ($2,500 010-8703-465-30.38), the Department of Information Technology ($2,500 - 010-2701-410-30-38), and the Department of Public Works ($2,500 - 010-5001-410-3038).

Recommendation 2
Adding conduit installation as a standalone, revocable line item in select sections of the 2016 Paving Plan competitive bid process will entail 10-15 additional staff hours.

Recommendation 3
Staff estimate roughly 50 hours of work will be required to research funding sources and meet with stakeholders about West Berkeley Internet infrastructure investments and other District enhancements such as shuttle services. If there is interest in establishing a Property Business Improvement District to support these efforts, a consultant would require as much as $75,000 to conduct a feasibility study and form the District. The funds for this recommendation will be provided by Bayer. The City would send Bayer a check request. Bayer would program the funds and send a check to the City. The corresponding amount would be deducted from Bayer's mitigation obligation. Once the City receives the check, the funds will be deposited into the Bayer (Miles Laboratory) Reimbursement Fund (Fund 641) and be appropriated for expenditure through a future amendment to the Annual Appropriations Ordinance.

Recommendation 4
Developing a Shadow Conduit Ordinance will require an estimated 50-100 hours of staff time per department in the Departments of Public Works and Information Technology and the Offices of the City Attorney and Economic Development.

CURRENT SITUATION AND ITS EFFECTS
Overall Berkeley has average or below average access to Internet services. Residential areas in central Berkeley are better served than residential areas in the hills, or along the City's borders with Oakland to the South and Albany to the North (Attachment 1, p. 1, 4 and 5 for maps). Berkeley's densest commercial districts, Downtown and West Berkeley, have service levels that only meet the minimum standard set by the California Public Utilities Commission (6 Mbps download and 1.5 Mbps upload speeds). By contrast the Federal Communications Commission has set the minimum acceptable level of service as four times greater for download speeds (25 Mbps) and twice as fast (3 Mbps) for upload speeds.

Telecommunication carriers are extremely selective in choosing commercial districts in which to upgrade service. In response a number of municipalities have taken action to expand fiber access. These efforts have focused on areas where the city owns conduit which they make available for high speed fiber installation.

The City of Berkeley owns assets that could be used to increase access to high speed Internet services. The City controls roughly 6,900 linear feet of conduit in the Downtown. These underground pipes were installed in 2004 and run adjacent to the Internet connections which tie the UC Berkeley network with long haul Internet service providers. In addition to these Downtown assets, the City's traffic signal interconnect conduit can also accommodate optical fiber. The traffic signal interconnect runs along University and San Pablo Avenues as well as portions of Sixth and Seventh Streets. In

all, the City of Berkeley controls at least eight miles of conduit which could house high speed Internet infrastructure.

The recommendations proposed are designed to make maximum use of City-controlled assets to increase high speed Internet access in the short term and medium term while minimizing direct costs and financial risk to the City. Recommendation 1 creates a path forward to leverage City conduit for high speed Internet services in the short term. Recommendations 2 uses existing City plans to add capacity to current conduit networks where there is demonstrated demand. Recommendation 3 engages key stake holders to research additional resources to support these efforts and Recommendation 4 provides for a long term strategy to build on existing City conduit for future needs.

BACKGROUND

On October 7, 2014 Councilmember Kriss Worthington submitted to Council "City Manager Referral on 'Digital Divide' in Ultrafast Fiber Optic Internet Technology." The referral suggested the City investigate partnerships to expand access to "ultrafast fiber technology." In response, the City Manager's Office contracted with Tellus Venture Associates to evaluate Berkeley's high speed Internet service levels, assess City assets that could be used to provide services in areas with below grade Internet services, and propose actions the City of Berkeley could take to improve Internet access. Tellus Venture Associates is the same consultancy that authored the January 2014 East Bay Broadband Report Card which evaluated Internet access across Alameda, Contra Costa and Solano Counties.

The Tellus Venture report for the City of Berkeley discusses reasons that telecommunication carriers are so selective in choosing business districts in which to invest. Commercial markets have wide variations in Internet needs. Some firms need only basic email services while neighboring businesses may require extensive bandwidth because their operations are managed in the cloud or they use software as a service across the Internet. Customer density, particularly in industrial areas, is also variable. In contrast, most residential subscribers have very similar use patterns, and tend to purchase high value television service as well. Residential districts tend to be denser, with more potential customers. Because of the variation in the commercial marketplace, Internet service providers are often reluctant to take on the risk of investing in infrastructure in business districts. Firms seeking higher grade services are offered estimates that range from thousands to tens of thousands of dollars for network connection costs. For many small businesses and startups these sorts of expenditures are beyond their budgets.

The largest portion of the cost of installing high speed infrastructure is the trenching needed to install the conduit which houses the optical fiber. Since many cities control extensive conduit networks, a number of municipalities have worked to leverage these assets to expand high speed service in underserved markets. Cities have been more successful when the initial implementation has focused on commercial districts rather

than existing residential homes. There are a number of examples of municipalities which have lost money on efforts to expand high speed Internet service in residential markets. (Attachment 1, pp. 49-52)

Berkeley's densest commercial areas, Downtown and West Berkeley, have below average access to Internet services (see Attachment 1, pp. 4-5). The Office of Economic Development staff report that high growth technology companies located in these districts have identified fast Internet infrastructure as a key retention issue. Given Berkeley's strength in Big Data, bioinformatics, enterprise security and other data intensive industry sectors, access to high speed Internet is an important location factor. A number of local startups have moved out of Berkeley to cities which boast high speed Internet services.

Berkeley competes for these companies with neighboring municipalities which have acted to improve their high speed infrastructure in commercial areas. The City of San Leandro partnered with Lit San Leandro to provide a loop of optical fiber to its commercial districts. The City of Emeryville worked with Paxio to create the Emeryville Connect service that promises symmetrical 100 megabyte to 1 gigabit connections.

Other nearby municipalities are planning to provide similar services. The City of Vallejo contracted with a consultant to create a five year plan to develop a municipal fiber strategy. The City of Oakland is a member of Next Century Cities, a national organization which supports community leaders creating access to fast Internet. According to Next Century Cities, Oakland intends to develop a five-year plan for their fiber optic network. They also have plans to develop a "Dig Once Ordinance" that would allow the City of Oakland to use the public right-of-way as an asset to expand broadband service.

Staff researched adding conduit installation to planned 2015 West Berkeley road reconstruction projects where there is a demonstrated demand high speed Internet. In doing so, learned that the additional costs associated with a non-competitive change order were high and that the construction methods for the roads in question afforded few operational efficiencies to attaching conduit installation to the project. Staff estimate the cost of adding conduit to the Folger Avenue project at $150-200 per linear foot. At 700 feet long, the conduit install would have cost from $105,000 to $140,000. Given these factors, and the limited contingency budget to cover the additional costs, staff opted to keep the summer paving plan unchanged.

In lieu of a late addition to the 2015 Paving Plan, staff proposes launching a pilot program to bid out conduit installation as part of next year's 2016 Paving Plan. Staff will analyze demand and current service levels in order to select blocks for conduit installation to include as part of 2016 street reconstruction competitive bid process. These conduit installation bids would represent revocable line items in the larger road construction bid. Council will have the opportunity to approve or deny the additional

conduit installation work when the street construction contracts are approved in the Spring of 2016.

ENVIRONMENTAL SUSTAINABILITY

High speed Internet access increases the potential for e-commerce, tele-commuting, tele-conferencing. These on-line services reduce vehicle miles traveled and thereby reduce GHG emissions. In addition, by using existing telecommunications and traffic signal interconnect conduit for broadband infrastructure, the City reduces the emissions associated with additional construction projects and material production. Finally, appending conduit installation to planned street reconstruction projects, the City reduces the emissions that would have been associated with installing conduit as a standalone project.

RATIONALE FOR RECOMMENDATION

At a relatively low investment of money and staff resources, the City of Berkeley can increase access to high speed Internet for constituents.

ALTERNATIVE ACTIONS CONSIDERED

The City could take no action and wait to see whether existing telecommunications providers will install infrastructure to support expanded high speed Internet access in Berkeley.

CONTACT PERSON

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Attachments:
1: Tellus Venture Report