

# MEMORANDUM

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**TO: UTILITIES ADVISORY COMMISSION**

**FROM: UTILITIES DEPARTMENT**

**DATE: JANUARY 13, 2016**

**SUBJECT: Update Regarding Staff Work Plan for Fiber to-the-Premises and Wireless Network and Ongoing Discussions with Google & AT&T**

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This update, on staff's Council-approved work plan for fiber-to-the-premises (FTTP) and wireless network and ongoing discussions with Google and AT&T, is for the Utilities Advisory Commission's (UAC) information. This update has been prepared to keep the UAC and Council apprised of the ongoing FTTP and wireless network initiatives. At its November 30, 2015 meeting, Council directed staff to actively pursue the proposed Work Plan in response to the Council Motion on the FTTP Master Plan and Wireless Network Plan and negotiations with third party providers (Google Fiber and AT&T) simultaneously, rather than phasing these efforts.

Items of special interest include:

- FTTP Master Plan review with Citizen Advisory Committee (page 5)
- The Wireless Network Model update based on 20 Year Forecast (page 5)
- Cost Estimate to Expand Wireless Access in City Facilities and Retail Areas (page 6)
- RFP to Add Dedicated Wireless Communications for Public Safety and Utilities (page 6)
- Dig Once Strategy/Ordinance (pages 7-10)
- Co-Build Model discussion with AT&T and Google (page 11)
- RFI to Explore a Municipal-Owned and a Public-Private Partnership FTTP Network (page 11)
- Google Fiber Update (page 12)
- AT&T Update (page 13)
- Request for Temporary Fiber and Wireless Senior Program Manager (page 13)

## **ENVIRONMENTAL REVIEW**

Discussion of the Staff's Work Plan for FTTP and Wireless Network Plan and Ongoing Discussions with Google & AT&T does not meet the California Environmental Quality Act's (CEQA) definition of "project" under California Public Resources Code Sec. 21065, thus no environmental review is required.

**ATTACHMENT**

A. City Council Staff Report #6301 Work Plan for Fiber to-the-Premises and Wireless Network and Ongoing Discussions with Google & AT&T– November 30, 2015

**REVIEWED BY:**

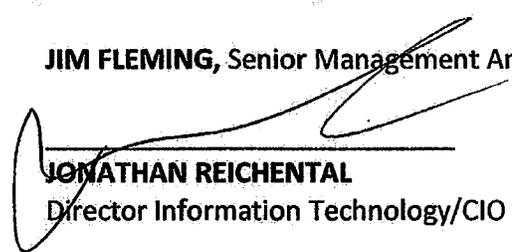
**JIM FLEMING, Senior Management Analyst**



**APPROVED BY:**

**JONATHAN REICHENTAL**

Director Information Technology/CIO





## City of Palo Alto City Council Staff Report

(ID # 6301)

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**Report Type: Action Items****Meeting Date: 11/30/2015****Summary Title: Work Plan for Fiber to-the-Premises and Wireless Network and Ongoing Discussions with Google & AT&T**

**Title: Approval of Staff's Plan to Simultaneously Pursue Response to Council's Motion on Fiber-to-the-Premises Master Plan and Wireless Network Plan and Continuation of Negotiations With Google Fiber, AT&T; Approval and Authorization for the City Manager to Execute Amendments to two Contracts with Columbia Telecommunications Corporation dba CTC Technology & Energy Extending Each Contract Term Through June 30, 2016 and Increasing Compensation Under: (1) Contract Number C15152568 by \$94,490 for a Total not to Exceed Amount of \$226,140; and (2) Contract Number C15152569 by \$58,850 for a Total not to Exceed Amount of \$203,794; Approval of a Temporary Fiber and Wireless Senior Program Manager Position for Three Years at \$228,000/year; and Adoption of a Related Budget Amendment Ordinance for Fiscal Year 2016 to Provide Appropriation in the Amount of \$172,850**

**From: City Manager****Lead Department: IT Department****Staff Recommendation**

Staff recommends that Council:

1. Approve staff's plans to pursue the following work *concurrently*, given that delay in either case could foreclose future options for the City:
  - a. Response to Council Motion (Attachment A) on Municipal Fiber and Wireless: Staff has developed the Work Plan set forth below to address, by the third quarter of 2016, the Council's September 28, 2015 Motion (the "Council Motion") requesting clarification and additional work in connection with the City's Fiber to the Premises ("FTTP") Master Plan and Wireless Network Plan; and
  - b. Third Party Provider (Google Fiber, AT&T) Negotiations: Staff is continuing discussions and negotiations with third parties considering new service deployments in Palo Alto, including both Google Fiber (potential citywide FTTP network) and AT&T (GigaPower service), and is currently targeting the end of

2015 through Q1 2016 for Council consideration of necessary agreements and approvals.

2. Approve a temporary contract position for a *Fiber and Wireless Senior Program Manager*, dedicated to Fiber-to-the-Premises and wireless initiatives, in the amount of \$228,000 annually, \$684,000 for a period up to three (3) years.
3. Approve and authorize the City Manager or his designee to execute amendments to two contracts with Columbia Telecommunications Corporation dba CTC Technology & Energy (“CTC”) as follows:
  - a. Increasing the not-to-exceed amount for Contract No. C15152568 (Wireless Network Plan) by \$94,490 from \$131,650 to \$226,140 (includes a 10% contingency for the provision of related additional, but unforeseen consulting services) and extend the contract to June 30, 2016 to develop a Request for Proposal for dedicated wireless communications for Public Safety and Utilities, in addition to evaluating the expansion of wireless access in retail areas (Attachment B).
  - b. Increasing the not-to-exceed amount for Contract No. C15152569 (FTTP Master Plan) by \$58,850 from \$144,944 to \$203,794 (includes a 10% contingency for the provision of related additional, but unforeseen consulting services) and extend the contract to June 30, 2016 to provide technical analysis of the RFI responses and any consulting services needed to help develop a “Dig Once” ordinance for consideration by the Council (Attachment C).
4. Approve a related Budget Amendment Ordinance (“BAO”) in the total amount of \$172,850 for Fiscal Year 2016 from the Fiber Fund Rate Stabilization Reserve; appropriate \$114,000 to fund the temporary Fiber and Wireless Senior Program Manager position for the second half of FY 2016 and \$58,850 to fund the CTC contract amendments for FTTP (Attachment D).

Staff’s recommendation is to actively pursue the proposed Work Plan in response to the Council Motion on the FTTP Master Plan and Wireless Network Plan and negotiations with third party providers (Google Fiber and AT&T) *simultaneously*, rather than phasing these efforts. Staff’s recommendation that work be completed in parallel is driven by the requirement to preserve both options, inherent in the Council’s motion. There may be a significant risk in delaying third party negotiations (particularly Google Fiber) in order to complete aspects of the Council Motion first, may affect Google Fiber or AT&T interests in building in Palo Alto. At the same time, note that concurrent work required will impact timelines for work products associated with both the Council Motion and negotiations with Google Fiber and AT&T. One of the most critical and immediate requirements then is for direct meetings between the City Manager and Google to clarify and define opportunities sought by the Council for over-build and co-build initiatives, as part of Google’s plans for fiber in Palo Alto.

## **Executive Summary**

On September 28, 2015, staff reviewed with Council the two reports prepared by CTC Technology & Energy (“CTC”) for the Fiber-to-the-Premises Master Plan (“FTTP Master Plan”) and the Wireless Network Plan (Reference CMR ID # 6104)<sup>1</sup>.

Council did not adopt staff’s recommendation. Instead, the Council Motion, among other things, directed staff to (1) proceed immediately with two formal solicitations for an RFI for a municipally-owned and/or public-private partnership FTTP network, and an RFP for wireless communications for Public Safety and Utilities, and potentially the expansion of wireless access in retail areas; (2) perform cost model analyses; (3) develop a “Dig Once” ordinance; (4) discuss a “co-build” with AT&T and Google, based on the City laying its own conduit to the premise during the respective buildouts. A copy of the Council Motion is attached to this Staff Report as Attachment A.

Staff has developed a work plan to address all the components of the Council’s Motion. Work related to the Motion began immediately after the Council meeting and staff recommends Council approval of amendments to the City’s existing contracts with CTC to assist staff in addressing the Council Motion.

Palo Alto and four neighboring cities (Mountain View, San Jose, Santa Clara and Sunnyvale) are under consideration as expansion cities for Google Fiber. Google has indicated that it intends to make an announcement in the beginning of 2016 on whether it will deploy Google Fiber in these cities. Staff understands that Google’s announcement is contingent on each city addressing various agreements and the environmental review by the end of the year (e.g., California Environmental Quality Act (“CEQA”) determination, encroachment agreements for the use of the public rights-of-way, and agreements for utility pole attachments). Staff has reached out to the other cities regarding timelines to formalize applications, permits, agreements and approvals. It appears these cities are on schedule to meet Google’s end-of-the-year target.

AT&T has submitted the first permit application to the City for review. AT&T plans to begin construction and provide service in 2016.

Given the timelines for both the Council Motion and third party providers Google and AT&T, staff recommends moving forward with the activities related to the Council Motion and third party providers concurrently to keep all options viable; however, Google’s timeline for its planned announcement early next year, both third-party providers’ desire to move forward with build-outs in 2016, and the next steps for City fiber and wireless based on Council’s direction create some conflict. For instance, there may be a real risk that delays ( either as a direct or indirect consequence of the current effort to keep both options open) on Google Fiber work could affect Google’s inclusion of Palo Alto in its planned announcement. The work on

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<sup>1</sup> Although staff has not re-attached the underlying agreements with CTC to this staff report, full copies of those contracts are available as attachments to CMR ID # 5443, available here:

<https://www.cityofpaloalto.org/civicax/filebank/documents/45634>

the various items covered in the Motion and our ability to be timely and responsive to the third party providers is slowed and complicated by the additional, unanticipated work required by the Motion. The goals in the motion are worthy—a desire to ensure the potential for near ubiquitous access to fiber, now and into the future, and preserve City flexibility over the long term in the quantity and quality of fiber access in Palo Alto. But the dual directives are not simple to manage and accomplish and are not without risk.

## **Background**

On September 28, 2015, Council reviewed the FTTP Master Plan and Wireless Network Plan (Reference CMR ID # 6104), which had recommended:

1. Defer issuing a Request for Information (RFI) until after December 31, 2015 to determine interest from the private sector in partnering with the City to build and operate a citywide fiber-to-the-premises (FTTP) network. The intervening time between now and the end of the year should enable emerging gigabit broadband services from the private sector to be settled. During this time staff will further evaluate strengths and weaknesses of public utility options.
2. Issue Request for Proposal(s) (RFP) to add dedicated wireless facilities to improve communications for Public Safety and Utilities departments; with an option for expanding Wi-Fi coverage at City facilities and public areas.

The Council did not support staff's recommendation to defer issuing an RFI until after December 31, 2015, while the emerging private broadband services settled. Council directed staff to move forward with the RFI to explore two FTTP models: (1) a municipal-owned model with contractors for build and ongoing operations and (2) a public-private model with City-owned fiber and private partner (such as Sonic.net) operating and owning electronics -- in addition to considering both Google in the market and not in the market. To that end, staff will also need to consider the impact of Google Fiber in both models, if Google elects to build a network in Palo Alto. In addition to issuing the RFI, Council directed staff to:

- Review with the Citizen Advisory Committee ("CAC") the model assumptions and cost estimates in the FTTP Master Plan report for a city owned and operated network. If there is a disagreement between CTC's report and the CAC's recommendation, staff will report to the Council the highlights of the discrepancy and provide the Council with a revised forecast as an Action Item;
- Develop a "dig once" ordinance;
- Initiate discussions with AT&T and Google Fiber on a "co-build" model.

For the Wireless Network Plan, Council approved staff's recommendation to issue an RFP to improve wireless communications for Public Safety and Utilities. Council also directed staff to:

- Work with CTC to develop a 20-year forecast for citywide wireless consistent with the FTTP report; and



term support from equipment manufacturers requires fairly frequent equipment replacement cycles. In the 20-year model, CTC assumes replacement of equipment every seven years so the financial forecast repeats itself after every seven years. It is important to note both staff and CTC are not recommending a citywide public Wi-Fi deployment under scenario 2 phases A and B. Staff's recommendation is to improve Wi-Fi access for Public Safety and Utilities and highly visited public facilities (i.e. community centers, parks) if feasible.

*C. Provide Cost Estimate and Fiber Backhaul Information to Expand Wireless Access in City Facilities and Retail Areas*

Staff has provided CTC with a map of the existing fiber network and splice points in the City. CTC will first focus on the priority I and II sites identified in the report and will eventually address the priority III sites. Based on the existing fiber network and splice points, CTC will provide a high level interconnection cost estimate of each individual access point to a central control and distribution center. CTC may be required to make individual site visits to review existing infrastructure, targeted coverage area and opportunities for a common build. A high level estimate can be completed by December 2015.

Expanding Wi-Fi access to retail areas (e.g. University Avenue, California Avenue) was not included in the original scope of work. Based on the existing fiber network and splice points, CTC can develop an engineering design and cost estimates on the installation and equipment required to provide wireless access in these targeted retail areas. This will require a contract amendment in the amount of \$15,000 and can be completed by December 2015.

*D. Issue RFP to Add Dedicated Wireless Communications for Public Safety and Utilities*

CTC has provided the City an RFP template to construct a Critical Infrastructure Wireless Network (CIWN) that will enable secure wireless data transfer in the FCC-licensed 4.9 GHz Public Safety wireless band. The RFP defines the full range of equipment and services to be procured to support the CIWN deployment, including network hardware components, system integration support for the network implementation, staff training, testing, maintenance, and documentation. A contract amendment (Exhibit B) in the amount of \$94,490 will be required to customize the RFP to meet the business needs of Public Safety and Utilities in scenario 3 (Deploy a Point-to-Multipoint Network for Secure City Enterprise Access) and scenario 4 (Deploy a Citywide Mobile Data Network for Public Safety). CTC will have to gather specific user requirements from the departments including site locations, number of users, minimum throughput and coverage area in order to prepare an engineering design. The RFP would be issued by March 2016 and final findings and recommendations will be completed by the third quarter of 2016.

As noted in Staff Report No. 5443, CTC's assistance with RFP development and evaluation precludes CTC's involvement in subsequent project phases. Where parties collaborate in the

development of an RFP, general conflict of interest prohibitions, including section 1090 of the California Government Code, often preclude such from subsequently bidding on the resultant RFP they have helped to develop. The contract amendments recommended for Council approval here only contemplate CTC's assistance with development of an RFP and evaluation of responses for a possible second build-out phase (if Council decides such an RFP is warranted). The recommended contract amendments do not in any way contemplate CTC's involvement in any manner, including as a bidder, in such a second phase given conflict of interest prohibitions. In addition, CTC is not affiliated with equipment manufacturers or cable operators and has no relationships with firms or individuals who may submit proposals in response to future RFPs that may be developed through this engagement. CTC's responses to the FTTP and Wireless RFPs states that "we can provide independent guidance; we have, as a policy, no financial stake in the strategies you choose and will not bid on any resulting construction work."

*E. Develop a Dig-Once Ordinance*

The Council Motion requested that staff bring forth a "Dig-Once" ordinance to Council as soon as possible. As staff indicated at the September 28, 2015 Council Meeting, development of a Dig-Once strategy for the City requires coordination and input from the City's Utilities, Public Works, and Development Services departments, the City Attorney's Office as well as additional research to: (1) identify the City's existing strengths in coordinating underground work; and (2) survey approaches adopted and/or proposed in other jurisdictions.

Staff is currently pursuing such coordination and research efforts (including federal, state and other municipal Dig-Once approaches) in order to evaluate the City's existing Dig-Once approach and any opportunities that may exist for expansion. Staff recommends approval of the attached contract amendment with CTC (Exhibit C), which includes a not-to-exceed amount of \$10,000 for Dig-Once related research and consulting services to supplement staff's work in this area. Staff is currently targeting the first quarter of 2016 to return to Council with this item.

Although staff's research and coordination effort is already underway, staff may nevertheless benefit from additional direction Council may be to provide, particularly with respect to Council's goals for a City Dig-Once strategy. Additional information concerning Dig-Once policies is provided below, including a description of the City's already existing tools for encouraging coordination amongst internal departments and external parties.

*i. Dig-Once Defined*

"Dig-Once" is typically a reference to polices, practices, ordinances, resolutions, agreements and other efforts that attempt to consolidate work in the Public Right-of-Way ("PROW") amongst utility and telecommunications providers by opening streets and the PROW to related construction simultaneously.

*ii. Goals for a Dig-Once Strategy*

Potential objectives for a Dig-Once strategy vary, and may include:

- Protection of newly and recently paved roads and sidewalks
- Enhancing the uniformity of construction and efficient, non-duplicative placement of infrastructure in the PROW
- Reducing overall costs of all underground work, both utility and telecommunications related, in the PROW for public and private parties.
- Specifically facilitating communications network deployment by private entities by reducing the cost of construction
- Leveraging construction by third party entities for the deployment of a public communications network.

Achievement of any of the above stated goals using a Dig-Once strategy is not without trade-offs. For instance, implementation of a Dig-Once strategy may extend overall construction work on a given project or increase daytime noise and impact parking. A Dig-Once strategy could also have significant staff impacts and costs, including previously unanticipated increases in internal staff work, the need to engage third party consultants and contractors for various studies and construction work, and the sheer cost of materials for installation.

The goals underlying a Dig-Once strategy are also subject to limitations imposed by the legal framework applicable work in the PROW discussed briefly in this staff report.

*iii. Methods for Implementing a Dig-Once Strategy*

Existing Dig-Once strategies can generally be categorized as requiring:

- Some form of joint planning, notice and coordination of work in the PROW; and
- Whenever technically feasible and economically practicable, that the public agency and/or private party install conduit and/or telecommunications infrastructure in an open PROW.

Local governments rely on a patchwork of ordinances, resolutions, formal and informal policies, guidelines, standard specifications for communications conduit installation, joint trench agreements, master conduit agreements to impose the above stated requirements on private and public parties working in the PROW. Such requirements may be imposed on all construction underway in the City, or on a more targeted basis in connection just with capital improvement projects of a significant size being undertaken by the public agency or private party.

*iv. City's Existing Dig-Once and Coordination Tools*

Even though the City has not adopted a formal Dig-Once policy, the City has a suite of policies and negotiated agreements with external parties in place that encourage coordination amongst City departments and external parties when streets or the PROW are opened for construction. These policies and agreements share a number of characteristics with “Dig-Once” policies, ordinances and agreements adopted in other jurisdictions.

*Third Party Applicant Coordination with the City:* Section 12.10.060 of the Palo Alto Municipal Code (“Coordination with City”) requires applicants desiring to utilize the PROW or any street, alley, sidewalk or other public place to notify the City in advance. Those applicants must coordinate, to the fullest extent practicable, utility and street work to minimize damage, avoid undue disruption and interference with the public use of PROW, streets, alleys, sidewalks or other public places. In addition, whenever two or more parties have concurrently proposed a major excavation in the same block, section 12.10.060 directs these parties to meet and confer with the City to determine whether it is feasible to conduct a joint operation.

*Joint Trench Coordination in Underground Utility Districts:* Section 12.16.030 of the Palo Alto Municipal Code (“Underground Utilities”) prohibits poles, overhead lines and associated overhead structures in established underground districts. When the City establishes new underground utility districts, the City must coordinate with existing utility and telecommunications providers in the district in order to cooperatively underground all infrastructure that was previously above ground. The City relies on its existing *Master Agreement for Installation of Underground Facilities in the City of Palo Alto* (the “Master Agreement”) with AT&T and Comcast to facilitate joint trenching and placement of the underground facilities belonging to the City and to third party telecommunications providers in the PROW and on private properties in underground utility districts. Under the terms of the Master Agreement, the trenching party must notify and offer joint participation to the non-trenching parties. In particular, the trenching party provides non-trenching parties with the proposed trenching location, approximate time of opening, and an offer to perform the construction, installation and placement of underground facilities. The cost of the trenching and construction is then shared amongst the participating parties.

*Targeted Work Zones:* In response to the [Audit of Street Maintenance \(Office of the City Auditor, 2006\)](#), staff established a “Targeted Work Zones” concept to improve coordination of street work being performed by the City’s utilities and public works departments to protect street resurfacing projects to minimize utility street cuts in restored streets.

*Master License Agreement for use of City Conduit:* The City also adopted a Master License Agreement for the use of City-controlled spaces for communications infrastructure, including installations on utility poles and streetlight poles and in underground conduit (Resolution 9193), which can obviate the need for time consuming negotiations of new agreements every time a third party provider desires to access City conduit underground.

v. *Other Dig-Once Strategies*

A variety of Dig-Once strategies are being considered or have otherwise been adopted at both the federal and local level.

For instance, both the City and County of San Francisco<sup>2</sup> and Santa Cruz County<sup>3</sup> have adopted local Dig-Once strategies. Each approach takes a number of steps to facilitate cooperation, most notably requiring coordination amongst City departments and third parties working in the PROW and the establishment of standard specifications for the placement of communications conduit in the PROW. In each case, the adopted Dig-Once measures require the placement of conduit where practicable and feasible.

Dig-Once related legislation has been introduced in both houses of Congress. Senator Amy Klobuchar (D-MN) introduced the “Streamlining and Investing in Broadband Infrastructure Act” (S.2163) and Representative Anna Eshoo (CA-18) introduced the *Broadband Conduit Deployment Act* (H.R.3805). Both measures adopt a nearly identical approach to Dig-Once, requiring that conduit be installed in connection with projects that receive federal highway funding. Note that in each case, installed conduit is not dedicated to the federal government’s use for the purpose of establishing a federal, state or local broadband network; the conduit is available to all potential providers. The bills expressly require that “any requesting broadband provider would have access to the installed conduit on a competitively neutral and nondiscriminatory basis, for a charge not to exceed a cost-based rate.” Senator John Thune (R-SD) is also circulating draft legislation, entitled the *MOBILE NOW Act*, which would likely include a Dig-Once component that is less prescriptive than the requirements in the Klobuchar and Eshoo bills. Staff will continue to monitor the draft of the *MOBILE NOW Act* as it is developed.<sup>4</sup>

On June 14, 2012, President Obama signed an Executive Order directing the U.S. Department of Transportation to review Dig-Once requirements in existing programs and opportunities for installation of broadband on highway rights of way.<sup>5</sup> The Executive Order directs the Department of Transportation to identify best practices for minimizing excavations and for opportunities to utilize Dig-Once policies.

#### vi. *Legal Framework*

Generally, under federal and California law, and subject to certain conditions protecting the City’s PROW management and compensation authority and land use authority, the City cannot prohibit most third party providers from gaining access to the PROW and utilities infrastructure

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<sup>2</sup> Ordinance No. 220-14, adopted November 2014 (<http://tinyurl.com/oaz2qly>)

<sup>3</sup> <http://tinyurl.com/oozsug3>

<sup>4</sup> Note that the Klobuchar and Thune bills are not stand-alone Dig-Once legislation. Instead, each measure packages Dig-Once provisions alongside language of great concern to local governments because of its potential to restrict local authority and flexibility in the area of wireless and telecommunications siting.

<sup>5</sup> <https://www.whitehouse.gov/the-press-office/2012/06/14/executive-order-accelerating-broadband-infrastructure-deployment>

located therein. The City can, however, establish reasonable rates, terms and conditions of access to utilities infrastructure in the PROW, including adopting rules and regulations relating to the time, place and manner of attachment to that infrastructure.

*F. Discuss a Co-Build Model with AT&T and Google*

In the September 28, 2015 Motion, Council directed staff to discuss a co-build model with AT&T and Google on how the City can lay its own conduit to the premise during the buildouts. Citizen's Advisory Committee ("CAC") Members discussed the co-build concept at the CAC's November 12, 2015 meeting. CAC Member Bob Harrington provided Council with a memo describing the co-build concept during the September 28, 2015 Council meeting.

Staff has conducted some preliminary research and raised the co-build concept with CTC. Based on initial research and discussions, the City is unaware of any existing co-build model that has occurred between a municipality and an incumbent or an overbuilder.

Staff has informed Google of Council's Motion and Google has requested a more detailed description of the co-build model. Most importantly, as discussed at the most recent CAC meeting, it is imperative that the City Manager meet with top Google Fiber decision makers to discuss the co-build options and opportunities. Clarification on this subject will be most instructive and could influence the next steps the City takes and our timelines in response to current Council directives. Staff also plans to raise the issue in its discussions with AT&T concerning the AT&T GigaPower expansion.

*G. Issue RFI to Explore a Municipal-Owned and a Public-Private Partnership FTTP Network*

CTC will assist the City in developing an RFI to explore and evaluate potential vendors or partners who are interested in building a fiber network in Palo Alto. The RFI document should clearly articulate the City's needs and desires, and invite private companies to respond and outline their unique approaches to solving the City's connectivity needs. The RFI will be strategically developed to elicit interest from an array of vendors or partners and provide the City a better cost estimate associated with its goals. CTC encourages the City to exercise caution in the requirements of the RFI because it may deter potential vendors or partners from responding if they do not believe they possess the staff or qualifications to meet a strict list of City's demands. The RFI will be issued by March 2016.

Given the importance and time sensitivity of the RFI responses, staff recommends amending CTC's contract to provide technical analysis and recommendation of the responses. The additional scope of work includes analysis of the individual responses, high level summary of the responses, outline of the perceived City risks and benefits and areas that require further investigation. Depending on the number of responses and discussions with the potential

provider(s) and the City, the contract amendment is \$58,850. Final findings and recommendations will be completed by the third quarter of 2016.

## 2. *THIRD PARTY PROVIDER (GOOGLE FIBER, AT&T) NEGOTIATIONS*

### A. *Google Fiber*

Google Fiber's proposed FTTP (fiber-to-the-premises) deployment would largely be limited to the public right of way, both underground and on utility poles. Google is proposing to construct an FTTP infrastructure network that would allow them to provide Internet and video service throughout the City. According to Google, the proposed project includes the installation of aggregators that connect to main line fiber-optic infrastructure. From these aggregators (in existing equipment rooms), the fiber cables would travel along existing utility corridors (either above or below ground) into underground vaults (or, if necessary, aboveground utility cabinets) and then the vaults/cabinets to customers. Criteria that would be used to site vaults and other network infrastructure include the following:

- Network optimization
- Conflict with other utilities
- Safety
- Impact on residences
- Aesthetics
- Street characteristics

Google's basic network design would include a fiber ring, in addition to approximately 300 large vaults and up to 4,000 small vaults distributed throughout the City. Although it is anticipated that traditional utility cabinets would not be necessary, certain situations may require the deployment of aboveground cabinets as part of the system to enhance network performance. At this time, Google does not plan to build "Local Aggregation Sites" in Palo Alto (also known as "prefabricated fiber huts"). Google's FTTP network in Palo Alto would be served by fiber huts located in adjacent cities. At this time, staff does not believe that Google's fiber ring would have any impact on the City's existing fiber ring in terms of being a competitor to the commercial dark fiber enterprise.

Google's network design will require attaching fiber-optic cable and supporting infrastructure to the majority of utility poles in Palo Alto. Of the 6,000 utility poles in Palo Alto, approximately 5,400 are co-owned with AT&T under a Joint Pole Agreement executed in 1918. Attachment of Google's fiber and supporting facilities to utility poles, or attachment of similar facilities by any other third party, requires the execution of a Master License Agreement ("MLA") for the use of City-controlled space on utility poles and streetlight poles and in conduits.

The City anticipates that substantial staff and third party contracting resources for legal services, engineering, inspection, planning and administration will be required in connection with the Google Fiber Project. The significant staff and third party contractor time required is

attributable to the both the complex nature of the project and Google's desire to pursue an accelerated timeline. Google's goal is to complete its project within 24 to 36 months. For instance, the Google Fiber project currently requires staff and third party consultant work, including:

- Drafting and negotiation of a Master License Agreement, Master Encroachment Agreement, Cost Recovery Agreement and potential amendments to existing City agreements related to utility poles and development of a California Environmental Quality Act determination.
- Planning for engineering review of work submittals, field inspection of utility poles and construction, joint pole coordination with AT&T, locating of underground infrastructure, mapping and customer communication.
- Preparation for plan reviews, permit processing, traffic control reviews and tree trimming coordination.

As noted above, the City has already incurred and will incur costs and expenses beyond what the City would otherwise recover for under the Municipal Fee Schedule and will request that Google reimburse the City for such costs and expenses through a cost recovery agreement.

#### *B. AT&T GigaPower*

In April 2014, AT&T announced their plan to bring fiber to the Silicon Valley area. Subsequently, in May 2015, AT&T approached the City with intentions to bring its gigabit Internet service to Palo Alto. This service, called "GigaPower", is an upgrade to AT&T's existing U-verse services (Project LightSpeed) and will be deployed to residents by the installation of approximately twenty seven (27) new cabinets that will be placed next to existing U-verse cabinets. Initially, AT&T will select neighborhoods with high potential for adoption and will use consumer demand levels to determine further deployments in the city.

AT&T has submitted the first permit application to the Department of Public Works for review. AT&T plans to begin construction and provide service in 2016.

### *3. STAFFING*

#### *A. Temporary Fiber and Wireless Senior Program Manager*

Approximately 1.75 FTEs are assigned from the Information Technology and Utilities Departments to work on the various fiber-related initiatives. Given the time sensitivity and rigorous workload and expertise needed in relation to Council's Motion, Google Fiber, AT&T GigaPower and other third party telecommunication requests, staff recommends adding a contractor position for up to three years who will be dedicated to the fiber-to-the-premises and wireless initiatives for the City. The current market rate for a non-benefit Senior Project

Manager consultant is \$110/hour, which equated to an annual cost of \$228,000 and an overall cost of \$684,000 over the three-year period.

*B. Cost Recovery for Third Party Projects*

Staff will be returning to Council in January 2016 for approval for reimbursable contract services if the departments of Public Works and Utilities retain temporary staff or through a RFP process to engage third party contract services to facilitate Google's FTTP network deployment and AT&T upgrades, if necessary. Determining total estimated costs for temporary staffing and contract services are in progress. Staff's current plan is to propose funding for these resources initially from Fiber Fund reserves pending Council's approval to use the reserves, in the event that the City's costs are not recoverable up front, but rather require reimbursement.

**Timeline**

Staff expects most of the work on the Motion to be completed by March 2016. The findings and recommendations of the two solicitations will be completed by the third quarter of 2016. The deployment of Google Fiber in the City is expected to take approximately 24-36 months from the start date, which is to be determined. The first phase of AT&T GigaPower is expected to be completed during 2016.

Conclusive decision meetings on co-build between the City Manager and Google need to occur before the end of the calendar year.

Given the aggressive timelines for both the Council Motion and third party providers, staff is concerned about its capacity to complete all the activities described in this report on a timely basis.

**Resource Impact**

A Budget Amendment Ordinance in the amount of \$172,850 for Fiscal Year (FY) 2016, offset with a reduction to the Fiber Fund Rate Stabilization Reserve, is recommended to fund the following:

- \$114,000 for a temporary Senior Project Manager consultant for six months from January through June 2016; beginning in FY 2017, staff will request the full funding for this position as part of the annual budget process.
- \$58,850, which includes a 10 percent contingency, for a contract amendment with CTC to provide analysis and recommendation of the RFI responses for the municipal-owned and public-private partnership FTTP network and consultation on a dig once policy.

A contract amendment in the amount of \$94,490, which includes a 10 percent contingency, with CTC to develop a detailed RFP and provide analysis for wireless communications for Public Safety, Utilities, City facilities and retail areas will be funded by existing operating budgets in IT, Public Safety and Utilities.

If staff is tasked with accomplishing the effort with existing resources, electric and fiber system improvements will be deferred, audits will need to be delayed, and new customer connections will be significantly delayed.

### **Environmental Review**

Council's approval of the following does not meet the California Environmental Quality Act (CEQA) definition of a "project" set forth in California Public Resources Code Sec. 21065, thus no environmental review is required: (1) staff's plan to pursue its response to the Council Motion on Municipal Fiber and Wireless and negotiations with third party providers (Google Fiber, AT&T) concurrently; (2) a temporary contract position for a Fiber and Wireless Senior Program Manager; (3) two amendment to the City's contract with CTC for the FTTP Master Plan and Wireless Network Plan; and (4) related BAOs.

#### **Attachments:**

- Attachment A - 09-28-15 Excerpt Item 8 DRAFT ACTION Minutes (PDF)
- Attachment B - CTC Wireless Network Plan Contract Amendment Final (PDF)
- Attachment C - CTC FTTP Master Plan Contract Amendment Final (PDF)
- Attachment D - BAO XXXX - FTTP AND WIRELESS NETWORK (DOCX)
- Attachment E1 - Palo Alto Wireless Scenario 2 Phase A - 20 Year Forecast (PDF)
- Attachment E2 - Palo Alto Wireless Scenario 2 Phase B - 20 Year Forecast (PDF)



# CITY OF PALO ALTO CITY COUNCIL EXCERPT DRAFT ACTION MINUTES

Special Meeting  
September 28, 2015

The City Council of the City of Palo Alto met on this date in the Council Chambers at 5:36 P.M.

Present: Berman, Burt arrived at 5:49 P.M., DuBois, Filseth, Holman, Kniss, Scharff, Schmid, Wolbach

Absent:

## Action Items

8. Discussion of Fiber-to-the-Premises Master Plan and Direction to Staff on Next Steps for Fiber and City Wireless Services.

**MOTION:** Council Member DuBois moved, seconded by Council Member Burt to:

- A. Adopt a goal of creating a ubiquitous fiber network in Palo Alto with City ownership of Fiber assets; and
- B. Reject the consultant's report "as is" and request:
  - i. In the Fiber-to-the-Premises (FTTP) Master Plan, detailed assumptions, and their impacts, used to forecast the FTTP capital additions are to be reviewed by, and agreed to, by a majority of active citizen advisors; once this is accomplished, a revised forecast is to be provided; and
  - ii. In the Wireless Network Report:
    - a. A 20-year forecast should be provided consistent with the FTTP report; and

# DRAFT ACTION MINUTES

- b. The description of Scenario 1 lacked both a price forecast and fiber backhaul details for the proposed municipal properties to be served; these details should be included in an update prior to a Request for Proposals (RFP). (Scenario 1); and
- C. Issue an RFP for Public Safety and Utilities Departments (Scenarios 3 and 4); and
- D. Wireless plans will not use Fiber funds; and
- E. Direct Staff to bring a dig-once Ordinance as soon as possible; and
- F. Direct Staff to discuss co-build with AT&T, Google, and Comcast how the City can lay its own conduit to the premise during their buildouts; and
- G. Move forward with Request for Information (RFI) exploring both Muni-owned model with contractors for build and ongoing operations, and public-private model with City owning fiber and private partner (such as Sonic) operating and owning electronics, considering both Google in the market and without Google in the market.

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion Part A, "reaching nearly all residents" after "Palo Alto."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion at the end of Part D, "at this time."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion Part B, Subsection (ii)(b), "expanding wireless to retail areas in North and South Palo Alto."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion at the end of Part A, "and that goal will be revisited in the first quarter of 2016."

# DRAFT ACTION MINUTES

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion at the end of Part B, Subsection (i), "to the Council as an Action Item."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to replace in the Motion Part B, Subsection (i), "and agreed to, by a majority of active citizen advisors" with "Citizens Advisory Committee (CAC); if there is a disagreement between the consultant's report and the CAC's recommendation, the Staff Report to Council will highlight the discrepancy."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to replace in the Motion Part B, "Reject the consultant's report "as is" and request" with "Request an update to the consultant's report including:"

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to replace in the Motion Part A, "goal" with "preferred alternative."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to remove from the Motion Part F, "Comcast."

**AMENDMENT:** Council Member Berman moved, seconded by Council Member Scharff to remove from the Motion Part G, "Move forward with Request for Information (RFI) exploring both Muni-owned model with contractors for build and ongoing operations, and Public—private model with City owned fiber and private partner (such as Sonic) operating and owning electronics, considering both Google in the market and without Google in the market."

**AMENDMENT FAILED:** 4-5 Berman, Holman, Kniss, Scharff yes

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to remove from the Motion Part B, Subsection (i) "by the majority of."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to remove from the Motion Part E, "as soon as possible."

# DRAFT ACTION MINUTES

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion Part C, "to add dedicated wireless communications to increase communication" after "Issue RFP."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion at the end of Part D, "but will be revisited when Council reviews Fiber Goals in the first quarter of 2016."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion at the end of Part B, Subsection (ii)(b), "with an option for expanding Wi-Fi coverage at City facilities and public areas as part of the Request for Proposals (RFP)."

**INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER** to add to the Motion Part A, "as a public benefit" after "Fiber assets."

**MOTION AS AMENDED PASSED: 9-0**

Adjournment: The meeting was adjourned at 11:58 P.M.

**AMENDMENT ONE TO CONTRACT NO. C15152568  
BETWEEN THE CITY OF PALO ALTO AND  
COLUMBIA TELECOMMUNICATIONS CORPORATION DBA CTC  
TECHNOLOGY & ENERGY**

This Amendment One (“First Amendment”) to Contract No. C151525668 (“Agreement”) is entered into \_\_\_\_\_, 2015 (“Amendment Effective Date”), by and between the CITY OF PALO ALTO, a California chartered municipal corporation (“CITY”), and COLUMBIA TELECOMMUNICATIONS CORPORATION, dba CTC Technology & Energy, a Maryland corporation, located at 10613 Concord Street, Kensington, MD (“CONSULTANT”) (collectively, the “Parties”).

**RECITALS**

A. The Agreement dated effective December 1, 2014, was entered into between the Parties for Consultant to develop a Wireless Network Plan with a near-term focus on Wi-Fi deployment and a long-term consideration of other wireless technologies (“Project”) for the City.

B. The Parties now desire to expand the scope of work, extend the term of the Agreement from its current expiration date of May 30, 2015 to June 30, 2016 and to increase the current “Not to Exceed Amount” by from \$131,650 to \$217,550, with a contingency (10 percent of the increased amount) for the provision of related additional, but unforeseen consulting services for a total Not-to-Exceed Amount of \$226,140, to allow for Consultant to work with staff to: (1) evaluate expanding wireless access in retail areas, with an option to expand Wi-Fi coverage of City facilities and public areas as part of a Request for Proposal; and (2) issue a Request for Proposal and analyze responses to add dedicated wireless communications to increase communication for Public Safety and Utilities departments.

C. To accomplish these purposes, the Parties wish to amend the Agreement.

NOW, THEREFORE, in consideration of the covenants, terms, conditions, and provisions of this First Amendment, the Parties agree:

SECTION 1. Section 2. TERM is hereby amended to read as follows:

“**SECTION 2. TERM.** The term of this Agreement shall be from December 1, 2014 through June 30, 2016, unless terminated earlier pursuant to Section 19 of this Agreement.”

SECTION 2. Section 4. NOT TO EXCEED COMPENSATION is hereby amended to read as follows:

“**SECTION 4. NOT TO EXCEED COMPENSATION.** The compensation to be paid to CONSULTANT for performance of the Services described in Exhibit “A-1”, including both payment for professional services and reimbursable expenses, shall not exceed Two Hundred and Twenty-Six Thousand and One Hundred and Forty Dollars (\$226,140), which includes a contingency amount of Eight Thousand, Five Hundred and Ninety Dollars (\$8,590) as described in

Exhibit “C-2” for the provision or related additional, but unforeseen consulting services. The applicable rates and schedule of payment are set out in Exhibit “C-1”, entitled “COMPENSATION,” which is attached to and made a part of this Agreement.

Additional Services, if any, shall be authorized in accordance with and subject to the provisions of Exhibit “C-1”. CONSULTANT shall not receive any compensation for Additional Services performed without the prior written authorization of CITY. Additional Services shall mean any work that is determined by CITY to be necessary for the proper completion of the Project, but which is not included within the Scope of Services described in Exhibit “A-1”.

SECTION 3. The following exhibit(s) are hereby added to the Agreement as set forth in the attachment(s) to this First Amendment, which are incorporated in full by this reference:

- a. Exhibit “A-1” entitled “SUPPLEMENTAL SCOPE OF SERVICES”.
- b. Exhibit “B-1” entitled “SUPPLEMENTAL SCHEDULE OF PERFORMANCE”
- c. Exhibit “C-2” entitled “SUPPLEMENTAL COMPENSATION”

SECTION 4. Except as herein modified, all other provisions of the Agreement, including any exhibits and subsequent amendments thereto, shall remain in full force and effect.

IN WITNESS WHEREOF, the Parties have by their duly authorized representatives executed this First Amendment on the Amendment Effective Date.

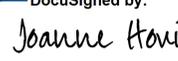
CITY OF PALO ALTO

\_\_\_\_\_  
City Manager

APPROVED AS TO FORM:

\_\_\_\_\_  
Senior Deputy City Attorney

COLUMBIA TELECOMMUNICATIONS  
CORPORTION dba CTC  
TECHNOLOGY & ENERGY

By:   
\_\_\_\_\_  
DocuSigned by: 6CEA239B9D3F430...

Name: Joanne Hovis

Title: President

**EXHIBIT “A-1”  
SUPPLEMENTAL SCOPE OF SERVICES**

**Background:**

The City desires to engage Consultant to assist staff with preparing a response to the City Council’s September 28, 2015 Motion, including the following work that was not covered in by Exhibit “A”:

1. Evaluate expanding wireless access in retail areas, with an option for expanding Wi-Fi coverage at City facilities and public areas as part of the RFP (Scenario 1).
2. Issue a Request for Proposal (RFP) and provide technical analysis of responses to add dedicated wireless communications to increase communication for Public Safety and Utilities departments (Scenarios 3 and 4).

**Tasks for Evaluating Expansion of City Wi-Fi in City Sites and Retail Areas:**

1. Based on the maps of the existing fiber optic backbone network, Consultant will work with staff to identify splice points in the network (including the amount of dark fiber strands available at these points) to support backhaul for wireless access points. This information will be used to analyze the capacity of the existing network to support fiber backhaul for priority City sites 1 and 2, and eventually priority site 3 listed in the Wireless Network Plan, in addition to Wi-Fi service in retail areas such as California Avenue and University Avenue.
2. Dependent on the analysis of the fiber maps, splice points and available dark fiber strands at these splice points, review existing infrastructure (e.g. streetlight poles and traffic signal poles) to support the installation of wireless access point, and identify targeted coverage areas and opportunities for a common build.

**Deliverables:**

1. Based on this analysis and identification of fiber-connected wireless access points, Consultant will provide a cost estimate for the interconnection of each access point to a central control and distribution center.
2. Consultant to develop an engineering design and cost estimate for the installation of equipment required to expand the City’s existing Wi-Fi Network (i.e. priority sites noted above), in addition to deploying Wi-Fi access in retail areas to be identified by staff.

**Tasks for Issuing a Request for Proposal (RFP) to add dedicated wireless communications to increase communication for Public Safety and Utilities departments (Scenarios 3 and 4):**

1. Consultant has provided staff with a RFP template to construct a Critical Infrastructure Wireless Network (CIWN) that will enable secure wireless data transfer in the FCC-licensed 4.9 GHz Public safety wireless band. The RFP template defines the full range of equipment and services to be procured to support the CIWN deployment, including network hardware components, system integration support for the network implementation, staff training, testing, maintenance, and documentation. The RFP will be customized for Scenario 3 (*Deploy a Point-to-Multipoint Network for Secure City*

*Enterprise Access*) and Scenario 4 (*Deploy a Citywide Mobile Data Network for Public Safety*).

- a. In Scenario 3, the City would deploy a citywide high-reliability, dedicated, critical infrastructure broadband wireless network to support Public Safety and Utilities' needs. City Hall would serve as the core site for a point-to-multipoint deployment. Consultant will confirm information gathered during the April-May 2015 user assessment conducted with Public Safety and Utilities for Scenario 3, including site locations, number of users, minimum throughput and coverage area; Consultant to prepare an engineering design for the contemplated RFP; Consultant to work with staff to confirm the estimated capital costs stated in the Wireless Network Plan to construct the infrastructure for this deployment and the estimated annual operating costs.
- b. In Scenario 4, the City would create hot spots for Public Safety mobile data network access to augment existing wireless operations at key facilities (e.g. schools, stadiums, business/commercial zones). The hot spots would provide radial coverage to first responders and other authorized users. The City would equip its public safety vehicles with exterior mounted antennas and mobile routers capable of acting as access points. Consultant to evaluate locating access points at Utilities' nine electric substations and other fiber-connected City facilities to provide coverage to a significant portion of the City. Consultant to work with Public Safety staff to confirm the estimated capital costs stated in the Wireless Network Plan to construct the infrastructure for this deployment and the estimated annual operating costs.

**Deliverables:**

1. Upon completion of (a) and (b), Consultant to finalize the RFP(s) and work with staff to identify potential respondents prior to issuance. Staff will determine with Consultant if one comprehensive RFP will be issued for Scenarios 3 and 4, or separate RFPs for each scenario.
2. Consultant to work with staff to evaluate the RFP responses for Scenarios 3 and 4 and present findings and recommendations for City Council review and approval.

**EXHIBIT “B-1”  
SUPPLEMENTAL SCHEDULE OF PERFORMANCE**

CONSULTANT shall perform the Services so as to complete each milestone within the number of days/weeks specified below. The time to complete each milestone may be increased or decreased by mutual written agreement of the project managers for CONSULTANT and CITY so long as all work is completed within the term of the Agreement. CONSULTANT shall provide a detailed schedule of work consistent with the schedule below within 2 weeks of receipt of the notice to proceed.

<b>Milestones<sup>1</sup></b>	<b>Completion No. of Days/Weeks From NTP</b>
Evaluate Wi-Fi Expansion at City Facilities/Parks & Retail Areas	30 days
RFP(s):	60 days
<ul style="list-style-type: none"> <li>• Scenario 3 – Point to Multipoint Network</li> <li>• Scenario 4 – Mobile Data Network</li> </ul>	
RFP(s) Evaluation	120 days

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<sup>1</sup>References to Deliverables correspond to the Deliverables in Exhibit “A” attached to this Agreement.

**EXHIBIT “C-2”  
SUPPLEMENTAL COMPENSATION**

The CITY agrees to compensate the CONSULTANT for professional services performed in accordance with the terms and conditions of this Agreement, and as set forth in the budget schedule below. Compensation shall be calculated based on the hourly rate schedule attached as Exhibit C-1 up to the not to exceed budget amount for each task set forth below.

The compensation to be paid to CONSULTANT under this Agreement for all services described in Exhibit “A-1” (the “Supplemental Services”) and 10 percent contingency shall not exceed \$94,490. CONSULTANT agrees to complete all Supplemental Services, including reimbursable expenses, within this amount. Additional Services are not authorized under this Agreement. Any work performed or expenses incurred for which payment would result in a total exceeding the maximum amount of compensation set forth herein shall be at no cost to the CITY.

CONSULTANT shall perform the tasks and categories of work as outlined and budgeted below. The CITY’s Project Manager may approve in writing the transfer of budget amounts between any of the tasks or categories listed below provided the total compensation for Supplemental Services, including reimbursable expenses, does not exceed \$94,490. Additional Services are not authorized under this Agreement.

<b>BUDGETSCHEDULE <sup>2</sup></b>	<b>NOT TO EXCEED AMOUNT</b>
Evaluate Wi-Fi Expansion at City Facilities/Parks & Evaluate Retail Areas	\$15,000
RFP(s):	
• Scenario 3 – Point to Multipoint Network	\$25,000
• Scenario 4 – Mobile Data Network	\$27,900
RFP(s) Technical Analysis and Recommendation	\$18,000
Sub-total Supplemental Services	<b>\$85,900</b>
Reimbursable Expenses	<b>\$0</b>
Total Supplemental Services and Reimbursable Expenses	<b>\$85,900</b>
10 Percent Contingency for the provision of related additional, but unforeseen consulting service <sup>3</sup>	\$8,590
Total Supplemental Services, Reimbursable Expenses & Contingency	<b>\$94,490</b>
Additional Services (Not to Exceed)	<b>\$0</b>

<sup>2</sup> References to deliverables correspond to the deliverable set forth in Exhibit “A” attached to this Agreement.

<sup>3</sup> Calculated as 10% of Total Supplemental Services and Reimbursable Expenses.

**AMENDMENT ONE TO CONTRACT NO. C15152569  
BETWEEN THE CITY OF PALO ALTO AND  
COLUMBIA TELECOMMUNICATIONS CORPORATION DBA CTC  
TECHNOLOGY & ENERGY**

This Amendment One (“First Amendment”) to Contract No. C15152569 (“Agreement”) is entered into \_\_\_\_\_, 2015 (“Amendment Effective Date”), by and between the CITY OF PALO ALTO, a California chartered municipal corporation (“CITY”), and COLUMBIA TELECOMMUNICATIONS CORPORATION, dba CTC Technology & Energy, a Maryland corporation, located at 10613 Concord Street, Kensington, MD (“CONSULTANT”) (collectively, the “Parties”).

**RECITALS**

A. The Agreement dated effective December 1, 2014, was entered into between the Parties for Consultant to develop a Fiber-to-the-Premises Master Plan (“Project”) for the City.

B. The Parties now desire to expand the scope of work, extend the term of the Agreement from its current expiration date of May 30, 2015 to June 30, 2016 and to increase the current “Not to Exceed Amount” from \$144,944 to \$198,444, with a contingency (10% of the increased amount) for the provision of related additional, but unforeseen consulting services for a total Not-to-Exceed Amount of \$203,794, to allow for Consultant to work with staff to: (1) research and provide advice regarding “Dig Once” strategies; (2) develop a Request for Information and provide technical analysis of the responses for exploring both municipal-owned fiber-to-the-premises (FTTP) models and contractors for build and ongoing operations, and a Public-Private model with City-owned fiber and private partner operating and owning electronics, considering both Google Fiber in the market and not.

C. To accomplish these purposes, the Parties wish to amend the Agreement.

NOW, THEREFORE, in consideration of the covenants, terms, conditions, and provisions of this First Amendment, the Parties agree:

SECTION 1. Section 2. TERM is hereby amended to read as follows:

“**SECTION 2. TERM.** The term of this Agreement shall be from December 1, 2014 through June 30, 2016, unless terminated earlier pursuant to Section 19 of this Agreement.”

SECTION 2. Section 4. NOT TO EXCEED COMPENSATION is hereby amended to read as follows:

“**SECTION 4. NOT TO EXCEED COMPENSATION.** The compensation to be paid to CONSULTANT for performance of the Services described in Exhibit “A-1”, including both payment for professional services and reimbursable expenses, shall not exceed Two Hundred and Three Thousand and Seven Hundred and Ninety-Four Dollars (\$203,794), which includes a contingency amount of Five Thousand, Three Hundred and Fifty Dollars (\$5,350) as described in Exhibit

“C-2” for the provision of related additional, but unforeseen consulting services. The applicable rates and schedule of payment are set out in Exhibit “C-1”, entitled “COMPENSATION,” which is attached to and made a part of this Agreement.

Additional Services, if any, shall be authorized in accordance with and subject to the provisions of Exhibit “C-1”. CONSULTANT shall not receive any compensation for Additional Services performed without the prior written authorization of CITY. Additional Services shall mean any work that is determined by CITY to be necessary for the proper completion of the Project, but which is not included within the Scope of Services described in Exhibit “A-1”.

SECTION 3. The following exhibit(s) are hereby added to the Agreement as set forth in the attachment(s) to this First Amendment, which are incorporated in full by this reference:

- a. Exhibit “A-1” entitled “SUPPLEMENTAL SCOPE OF SERVICES”.
- b. Exhibit “B-1” entitled “SUPPLEMENTAL SCHEDULE OF PERFORMANCE”
- c. Exhibit “C-2” entitled “SUPPLEMENTAL COMPENSATION”

SECTION 4. Except as herein modified, all other provisions of the Agreement, including any exhibits and subsequent amendments thereto, shall remain in full force and effect.

IN WITNESS WHEREOF, the Parties have by their duly authorized representatives executed this First Amendment on the Amendment Effective Date.

CITY OF PALO ALTO

\_\_\_\_\_  
City Manager

APPROVED AS TO FORM:

\_\_\_\_\_  
Senior Deputy City Attorney

COLUMBIA TELECOMMUNICATIONS  
CORPORTION dba CTC  
TECHNOLOGY & ENERGY

DocuSigned by:  
By: Joanne Hovis  
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Name: Joanne Hovis

Title: President

**EXHIBIT “A-1”  
SUPPLEMENTAL SCOPE OF SERVICES**

**Background**

The City desires to engage Consultant to assist staff with preparing a response to the City Council’s September 28, 2015 Motion, including the following work that was not covered in by Exhibit “A”: :

1. Assist with research and development of a “Dig Once” strategy, as requested by City. Many localities have adopted some form of “dig once” policy that opens streets and rights-of-way to utility construction when related projects are underway.
2. Move forward with an Request for Information (RFI) exploring both municipal-owned models and contractors for build and ongoing operations, and Public-Private model with City owned fiber and private partner (such as Sonic.net) operating and owning electronics, considering both Google in the market and not.

**Task for “Dig Once” Ordinance:**

Consultant will work with City (including City Attorney’s Office), as requested by City, to assist with research and analysis of “dig once” ordinances and approaches in other communities and to evaluate existing City policies, practices and municipal codes that are already in place assure coordination among City departments and external parties (e.g. Google Fiber, AT&T and Comcast) for installing communication conduit for future use when any underground utility work occurs.

**Deliverable for “Dig Once” Ordinance:**

1. As requested by City, written materials and/or oral reports concerning City policies, practices and municipal codes and Dig Once approaches in other communities.

**Tasks for Request for Information:**

The RFI will be completed under the current contract scope of services(Exhibit “A”). Consistent with the Supplemental Schedule of Performance set forth in Exhibit “B-1”, a draft of the RFI will be completed by mid-December 2015 in the current Agreement; however, due to the importance and time sensitivity of the RFI response, Consultant to provide technical analysis and recommendations of the RFI responses.

**Deliverables for Request for Information:**

1. Consultant to prepare a preliminary technical analysis of all of the RFI responses. After this preliminary analysis is completed, prepare a high level summary of all responses. This analysis will include conducting follow up teleconferences with up to three of the respondents if additional information is necessary to complete the analysis. Once the analysis and summary are completed, conduct a WebEx with staff to review the summary and findings and recommendations.
2. Consultant will work with City to conduct a detailed analysis of the preferred RFI responses. This analysis will include detailed discussions and information requests from the respondents. Consultant will prepare a report with findings and recommendation regarding the feasibility of the response and the vendor’s ability to offer a viable proposal to deploy a citywide fiber-to-the-premises network solution in the City.

**EXHIBIT “B-1”  
SUPPLEMENTAL SCHEDULE OF PERFORMANCE**

CONSULTANT shall perform the Services so as to complete each milestone within the number of days/weeks specified below. The time to complete each milestone may be increased or decreased by mutual written agreement of the project managers for CONSULTANT and CITY so long as all work is completed within the term of the Agreement. CONSULTANT shall provide a detailed schedule of work consistent with the schedule below within 2 weeks of receipt of the notice to proceed.

<b>Milestones<sup>1</sup></b>	<b>Completion No. of Days/Weeks From NTP</b>
1. Dig Once Strategy	120 days
2. Request for Information Deliverables	
• Prepare RFI Draft	30 days
• Initial Technical Analysis of Responses	90 days
3. Report with an in-depth analysis of the responses that Consultant and staff deem to be the most responsive to the RFI	120 days

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<sup>1</sup>References to tasks correspond to the Deliverables in Exhibit “A-1” attached to this Agreement.

**EXHIBIT “C-2”  
SUPPLEMENTAL COMPENSATION**

The CITY agrees to compensate the CONSULTANT for professional services performed in accordance with the terms and conditions of this Agreement, and as set forth in the budget schedule below. Compensation shall be calculated based on the hourly rate schedule attached as Exhibit C-1 up to the not to exceed budget amount for each task set forth below.

The compensation to be paid to CONSULTANT under this Agreement for all services described in Exhibit “A-1” (the “Supplemental Services”) and 10 percent contingency shall not exceed \$58,850. CONSULTANT agrees to complete all Supplemental Services, including reimbursable expenses, within this amount. Additional Services are not authorized under this Agreement. Any work performed or expenses incurred for which payment would result in a total exceeding the maximum amount of compensation set forth herein shall be at no cost to the CITY.

CONSULTANT shall perform the tasks and categories of work as outlined and budgeted below. The CITY’s Project Manager may approve in writing the transfer of budget amounts between any of the tasks or categories listed below provided the total compensation for Basic Services, including reimbursable expenses and 10 percent contingency, does not exceed \$58,850. Additional Services are not authorized under this Agreement.

<b>BUDGET SCHEDULE<sup>2</sup></b>	<b>NOT TO EXCEED AMOUNT</b>
Deliverable 1 (Dig Once Strategy) <sup>3</sup>	\$10,000
Deliverable 2 (Initial RFI Response Analysis)	\$13,500
Deliverable 3 (Report with technical analysis and recommendation of preferred RFI responses)	\$30,000
Sub-total Supplemental Services	<b>\$53,500</b>
Reimbursable Expenses	<b>\$0</b>
Total Supplemental Services and Reimbursable Expenses	<b>\$53,500</b>
10 Percent Contingency for the provision of related additional, but unforeseen consulting services <sup>4</sup>	
Total Supplemental Services, Reimbursable Expenses & Contingency	<b>\$58,850</b>
Additional Services (Not to Exceed)	<b>\$0</b>

<sup>2</sup> References to deliverables correspond to the deliverable set forth in Exhibit “A-1” attached to this Agreement.

<sup>3</sup> Not-to-Exceed Amount is not a lump sum payment, and total amount is not guaranteed. Consultant agrees to bill City for work related to Dig-Once strategy only for such work requested by City, based on hourly rates set forth in Exhibit C-1 up to the Not-to-Exceed Amount identified herein.

<sup>4</sup> Calculated as 10% of Total Supplemental Services and Reimbursable Expenses

Ordinance No. XXXX

ORDINANCE OF THE COUNCIL OF THE CITY OF PALO ALTO AMENDING THE BUDGET FOR FISCAL YEAR 2016 IN THE FIBER OPTIC FUND TO PROVIDE AN APPROPRIATION OF \$172,850 TO THE FIBER OPTICS FUND BUDGET TO FUND A TEMPORARY PROJECT MANAGER CONSULTANT FOR FIBER-TO-THE-PREMISES AND WIRELESS INITIATIVES AND THE AMENDMENT OF A CONSULTANT CONTRACT WITH CTC TECHNOLOGY & ENERGY FOR THE FIBER-TO-THE-PREMISES MASTER PLAN, OFFSET BY A REDUCTION TO THE FIBER OPTIC FUND RATE STABILIZATION RESERVE.

The Council of the City of Palo Alto does ORDAIN as follows:

SECTION 1. The Council of the City of Palo Alto finds and determines as follows:

A. Pursuant to the provisions of Section 12 of Article III of the Charter of the City of Palo Alto, the Council on June 15, 2015 did adopt a budget for Fiscal Year 2016; and

B. Palo Alto and four neighboring cities (Mountain View, San Jose, Santa Clara and Sunnyvale) are under consideration as expansion cities for Google Fiber, with a potential deployment start in early 2016. Google has indicated that the City will only remain in contention for Google Fiber expansion if various agreements and environmental reviews are resolved by the end of the year; and

C. Palo Alto is in negotiations with AT&T regarding implementation of AT&T GigaPower internet service upgrades; and

D. On September 28, 2015, the City Council reviewed two reports prepared by CTC Technology & Energy (CTC) for the Fiber-to-the-Premises Master Plan (FTTP Master Plan) and the Wireless Network Plan; and

E. Council approved a motion directing staff to proceed immediately with two formal solicitations for a Request For Information (RFI) for a municipally-owned and/or public-private partnership FTTP network, and a Request For Proposals (RFP) for wireless communications for Public Safety and Utilities, and potentially the expansion of wireless access in retail areas; perform cost model analyses; develop a "Dig Once" ordinance; and discuss a "co-build" with AT&T and Google, based on the City laying its own conduit to the premise during the respective buildouts; and

F. In response to Council's motion, staff has developed a wireless initiatives work plan to accommodate Google Fiber's proposed FTTP deployment, parallel review of Google and AT&T's plans, possibility of infrastructure "co-build," and develop a "Dig Once ordinance"; and

E. Staff recommends adding additional resources to supplement staff currently working on wireless initiatives to meet targeted timelines in Fiscal Year 2016; and

F. One Hundred Seventy Two Thousand Eight Hundred Fifty Dollars (\$172,850) is needed to fund these wireless initiatives for the remainder of Fiscal Year 2016, of which \$114,000 will fund a temporary Senior Project Manager consultant dedicated to Fiber-to-the-Premises and wireless initiatives, and \$58,850 for a contract amendment with CTC to provide analysis and recommendation of the Request For Information responses for the municipal-owned and public-private partnership FTTP network and consultation on a “dig once” policy; and

SECTION 2. The sum of One Hundred Seventy Two Thousand Eight Hundred Fifty Dollars (\$172,850) is hereby appropriated to the Fiber Optic Fund operating budget to fund the temporary Senior Project Manager consultant and the amendment to the CTC contract. This increase is offset by a reduction to the Fiber Optics Fund Rate Stabilization Reserve.

SECTION 3. As provided in Section 2.04.330 of the Palo Alto Municipal Code, this ordinance shall become effective upon adoption.

SECTION 4. The Council of the City of Palo Alto hereby finds that this is not a project under the California Environmental Quality Act and, therefore, no environmental impact assessment is necessary.

INTRODUCED AND PASSED:      Enter Date Here

AYES:

NOES:

ABSENT:

ABSTENTIONS:

NOT PARTICIPATING:

ATTEST:

\_\_\_\_\_  
City Clerk

\_\_\_\_\_  
Mayor

APPROVED AS TO FORM:

APPROVED:

\_\_\_\_\_  
Senior Assistant City Attorney

\_\_\_\_\_  
City Manager

\_\_\_\_\_  
Director of Administrative Services

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Utilities Director

City of Palo Alto  
Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
Financial Projections Rev 2  
Palo Alto, CA  
November 4, 2015

**Wireless Financial Analysis - Scenario 2 Option A**

The projections used in this analysis were prepared to assist in the assessment of the financial feasibility of establishing a enterprise to offer connectivity services in the identified service area. Where appropriate, the analysis includes projected operating revenues, expenses, and cash flows for the life of the system based on estimated construction costs and various market penetration rates. This analysis should not be used for any other purpose. There will be differences between the projected and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material. CTC has no responsibility to update or certify this projection for events and circumstances occurring after the date of this projection.

City of Palo Alto  
Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
Financial Projections Rev 2  
November 4, 2015

Income Statement

Year	1	2	3	4	5	6	7	8	9	10
<b>a. Revenues</b>										
Wireless Connection	\$ 492,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	612,000	612,000	612,000
Wireless Equipment and Connection Fees (non-recurring)	-	-	-	-	-	-	-	-	-	-
Total	\$ 492,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000
<b>b. Operating Expenses - Cash (not including taxes in line h)</b>										
Operating Expenses	\$ 171,510	\$ 383,160	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730
Operating Expenses - Misc.	256,700	185,200	160,200	160,200	160,200	160,200	160,200	142,200	142,200	142,200
Support Allocations	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Total	\$ 478,210	\$ 618,360	\$ 605,930	\$ 605,930	\$ 605,930	\$ 605,930	\$ 605,930	\$ 587,930	\$ 587,930	\$ 587,930
<b>c. Revenues less Cash Operating Expenses (a-b)</b>										
	\$ 13,790	\$ (6,360)	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 24,070	\$ 24,070	\$ 24,070
<b>d. Operating Expenses - Non-Cash</b>										
Depreciation	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500
<b>e. Operating Income (d-c)</b>										
	\$ (600,710)	\$ (620,860)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)
<b>f. Non-Operating Income</b>										
Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Investment Income	-	-	-	-	-	-	-	-	-	-
Interest Expense (Short-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Long-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Internal)	-	-	-	-	-	-	-	-	-	-
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>g. Net Income</b>										
	\$ (600,710)	\$ (620,860)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)
<b>h. Taxes</b>										
	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Income After Fees &amp; In Lieu Taxes</b>										
	\$ (600,710)	\$ (620,860)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)

City of Palo Alto  
Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
Financial Projections Rev 2  
November 4, 2015

Income Statement

Year	11	12	13	14	15	16	17	18	19	20
<b>a. Revenues</b>										
Wireless Connection	612,000	612,000	612,000	612,000	612,000	612,000	612,000	612,000	612,000	612,000
Wireless Equipment and Connection Fees (non-recurring)	-	-	-	-	-	-	-	-	-	-
Total	\$ 612,002	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000	\$ 612,000
<b>b. Operating Expenses - Cash (not including taxes in line h)</b>										
Operating Expenses	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730	\$ 395,730
Operating Expenses - Misc.	142,200	142,200	142,200	142,200	142,200	142,200	142,200	142,200	142,200	142,200
Support Allocations	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Total	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930	\$ 587,930
<b>c. Revenues less Cash Operating Expenses (a-b)</b>	\$ 24,072	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070
<b>d. Operating Expenses - Non-Cash</b>										
Depreciation	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500
<b>e. Operating Income (d-c)</b>	\$ (590,428)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)
<b>f. Non-Operating Income</b>										
Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Investment Income	-	-	-	-	-	-	-	-	-	-
Interest Expense (Short-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Long-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Internal)	-	-	-	-	-	-	-	-	-	-
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>g. Net Income</b>	\$ (590,428)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)
<b>h. Taxes</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Income After Fees &amp; In Lieu Taxes</b>	\$ (590,428)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)

City of Palo Alto  
Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
Financial Projections Rev 2  
November 4, 2015

Cash Flow Statement

Year	1	2	3	4	5	6	7	8	9	10	11
<b>a. Net Income (From Income Statement)</b>	\$ (600,710)	\$ (620,860)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (608,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,428)
<b>b. Cash Outflows</b>											
Debt Service Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Interest Reserve	-	-	-	-	-	-	-	-	-	-	-
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-	-	-
Financing	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	\$ (4,686,660)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (4,184,160)	\$ -	\$ -	\$ -
<b>Total</b>	\$ (4,686,660)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (4,184,160)	\$ -	\$ -	\$ -
<b>c. Cash Inflows</b>											
Interest Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-	-	-
Short Term Financing	-	-	-	-	-	-	-	-	-	-	-
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-	-	-
Cash Start	-	-	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	4,686,660	-	-	-	-	-	-	4,184,160	-	-	-
<b>Total</b>	\$ 4,686,660	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,184,160	\$ -	\$ -	\$ -
<b>d. Total Cash Outflows and Inflows (b+c)</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>e. Non-Cash Expenses - Depreciation</b>	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500
<b>f. Adjustments (Proceeds from)</b>											
Short Term Financing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	(4,686,660)	-	-	-	-	-	-	(4,184,160)	-	-	-
<b>Total</b>	\$ (4,686,660)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (4,184,160)	\$ -	\$ -	\$ -
<b>g. Adjusted Available Net Revenue</b>	\$ (4,672,870)	\$ (6,360)	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ (4,160,090)	\$ 24,070	\$ 24,070	\$ 24,072
<b>h. Principal Payments on Debt</b>											
Short Term Bond/Loan Principal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Bond Principal	-	-	-	-	-	-	-	-	-	-	-
Internal Loan Principal	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Cash</b>	\$ 13,790	\$ (6,360)	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,072
Avoided Costs (see j and k below)	-	-	-	-	-	-	-	-	-	-	-
<b>Adjusted Net Cash</b>	\$ 13,790	\$ (6,360)	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 6,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,072
<b>Cash Balance (Enterprise)</b>											
Unrestricted Cash Balance	\$ 13,790	\$ 7,430	\$ 13,500	\$ 19,570	\$ 25,640	\$ 31,710	\$ 37,780	\$ 61,850	\$ 85,920	\$ 109,990	\$ 134,062
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Balance</b>	\$ 13,790	\$ 7,430	\$ 13,500	\$ 19,570	\$ 25,640	\$ 31,710	\$ 37,780	\$ 61,850	\$ 85,920	\$ 109,990	\$ 134,062

City of Palo Alto  
Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
Financial Projections Rev 2  
November 4, 2015

**Cash Flow Statement**

Year	12	13	14	15	16	17	18	19	20
<b>a. Net Income (From Income Statement)</b>	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)	\$ (590,430)
<b>b. Cash Outflows</b>									
Debt Service Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Interest Reserve	-	-	-	-	-	-	-	-	-
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-
Financing	-	-	-	-	-	-	-	-	-
Capital Expenditures	\$ -	\$ -	\$ -	\$ (4,184,160)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	\$ -	\$ -	\$ -	\$ (4,184,160)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>c. Cash Inflows</b>									
Interest Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-
Short Term Financing	-	-	-	-	-	-	-	-	-
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-
Cash Start	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	-	-	-	4,184,160	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ 4,184,160	\$ -	\$ -	\$ -	\$ -	\$ -
<b>d. Total Cash Outflows and Inflows (b+c)</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>e. Non-Cash Expenses - Depreciation</b>	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500	\$ 614,500
<b>f. Adjustments (Proceeds from)</b>									
Short Term Financing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	-	-	-	(4,184,160)	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ (4,184,160)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>g. Adjusted Available Net Revenue</b>	\$ 24,070	\$ 24,070	\$ 24,070	\$ (4,160,090)	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070
<b>h. Principal Payments on Debt</b>									
Short Term Bond/Loan Principal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Bond Principal	-	-	-	-	-	-	-	-	-
Internal Loan Principal	-	-	-	-	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Cash</b>	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070
Avoided Costs (see j and k below)	-	-	-	-	-	-	-	-	-
<b>Adjusted Net Cash</b>	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070	\$ 24,070
<b>Cash Balance (Enterprise)</b>									
Unrestricted Cash Balance	\$ 158,132	\$ 182,202	\$ 206,272	\$ 230,342	\$ 254,412	\$ 278,482	\$ 302,552	\$ 326,622	\$ 350,692
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-
<b>Total Cash Balance</b>	\$ 158,132	\$ 182,202	\$ 206,272	\$ 230,342	\$ 254,412	\$ 278,482	\$ 302,552	\$ 326,622	\$ 350,692

City of Palo Alto  
 Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
 Financial Projections Rev 2  
 November 4, 2015

Capital Additions

Year	1	2	3	4	5	6	7	8	9	10
<b>a. Fiber Implementation Costs</b>										
Fiber (30 year depreciation)	\$ 502,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Expansion Fiber (30 year depreciation)	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (10 year depreciation)	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (7 year depreciation)	-	-	-	-	-	-	-	-	-	-
Network Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-
CAI Customer Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$ 502,500</b>	<b>\$ -</b>								
<b>e. Wireless Network Costs (7 year depreciation)</b>										
Microwave (10 year)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Structures (20 year)	-	-	-	-	-	-	-	-	-	-
Access (10 year)	-	-	-	-	-	-	-	-	-	-
Network Equipment (7 year)	3,045,500	-	-	-	-	-	-	3,045,500	-	-
Spare Equipment (7 year)	25,000	-	-	-	-	-	-	25,000	-	-
Installation & Engineering (7 year)	1,113,660	-	-	-	-	-	-	1,113,660	-	-
<b>Total</b>	<b>\$ 4,184,160</b>	<b>\$ -</b>	<b>\$ 4,184,160</b>	<b>\$ -</b>	<b>\$ -</b>					
<b>f. Wireless Customer Connection Cost (5 year depreciation)</b>										
CPE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>									
<b>Total Capital</b>	<b>\$ 4,686,660</b>	<b>\$ -</b>	<b>\$ 4,184,160</b>	<b>\$ -</b>	<b>\$ -</b>					
<b>Total Accrued Capital</b>	<b>\$ 4,686,660</b>	<b>\$ 8,870,820</b>	<b>\$ 8,870,820</b>	<b>\$ 8,870,820</b>						
<b>Total Funded by Depreciation Account</b>	<b>\$ -</b>									

City of Palo Alto  
Scenario 2 Option A - Blanket Wi-Fi 802.11 g/n  
Financial Projections Rev 2  
November 4, 2015

Capital Additions

Year	1	11	12	13	14	15	16	17	18	19	20
<b>a. Fiber Implementation Costs</b>											
Fiber (30 year depreciation)	\$ 502,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Expansion Fiber (30 year depreciation)	-	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (10 year depreciation)	-	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (7 year depreciation)	-	-	-	-	-	-	-	-	-	-	-
Network Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-	-
CAI Customer Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$ 502,500</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>				
<b>e. Wireless Network Costs (7 year depreciation)</b>											
Microwave (10 year)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Structures (20 year)	-	-	-	-	-	-	-	-	-	-	-
Access (10 year)	-	-	-	-	-	-	-	-	-	-	-
Network Equipment (7 year)	3,045,500	-	-	-	-	3,045,500	-	-	-	-	-
Spare Equipment (7 year)	25,000	-	-	-	-	25,000	-	-	-	-	-
Installation & Engineering (7 year)	1,113,660	-	-	-	-	1,113,660	-	-	-	-	-
<b>Total</b>	<b>\$ 4,184,160</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 4,184,160</b>	<b>\$ -</b>				
<b>f. Wireless Customer Connection Cost (5 year depreciation)</b>											
CPE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>					
<b>Total Capital</b>	<b>\$ 4,686,660</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 4,184,160</b>	<b>\$ -</b>				
<b>Total Accrued Capital</b>	<b>\$ 4,686,660</b>	<b>\$ 8,870,820</b>	<b>\$ 8,870,820</b>	<b>\$ 8,870,820</b>	<b>\$ 8,870,820</b>	<b>\$ 13,054,980</b>					
<b>Total Funded by Depreciation Account</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>					

City of Palo Alto  
Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
Financial Projections Rev 2  
Palo Alto, CA  
November 4, 2015

**Wireless Financial Analysis - Scenario 2 Option B**

The projections used in this analysis were prepared to assist in the assessment of the financial feasibility of establishing a enterprise to offer connectivity services in the identified service area. Where appropriate, the analysis includes projected operating revenues, expenses, and cash flows for the life of the system based on estimated construction costs and various market penetration rates. This analysis should not be used for any other purpose. There will be differences between the projected and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material. CTC has no responsibility to update or certify this projection for events and circumstances occurring after the date of this projection.

City of Palo Alto  
 Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
 Financial Projections Rev 2  
 November 4, 2015

Income Statement

Year	1	2	3	4	5	6	7	8	9	10
<b>a. Revenues</b>										
Wireless Connection	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000
Wireless Equipment and Connection Fees (non-recurring)	-	-	-	-	-	-	-	-	-	-
Total	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000
<b>b. Operating Expenses - Cash (not including taxes in line h)</b>										
Operating Expenses	\$ 170,440	\$ 225,990	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180
Operating Expenses - Misc.	242,700	150,200	150,200	150,200	150,200	150,200	150,200	150,200	150,200	150,200
Support Allocations	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Total	\$ 463,140	\$ 426,190	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380
<b>c. Revenues less Cash Operating Expenses (a-b)</b>										
	\$ (19,140)	\$ 17,810	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
<b>d. Operating Expenses - Non-Cash</b>										
Depreciation	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400
<b>e. Operating Income (d-c)</b>										
	\$ (462,540)	\$ (425,590)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)
<b>f. Non-Operating Income</b>										
Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Investment Income	-	-	-	-	-	-	-	-	-	-
Interest Expense (Short-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Long-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Internal)	-	-	-	-	-	-	-	-	-	-
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>g. Net Income</b>										
	\$ (462,540)	\$ (425,590)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)
<b>h. Taxes</b>										
	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Income After Fees &amp; In Lieu Taxes</b>										
	\$ (462,540)	\$ (425,590)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)

City of Palo Alto  
 Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
 Financial Projections Rev 2  
 November 4, 2015

Income Statement

Year	11	12	13	14	15	16	17	18	19	20
<b>a. Revenues</b>										
Wireless Connection	444,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000	444,000
Wireless Equipment and Connection Fees (non-recurring)	-	-	-	-	-	-	-	-	-	-
Total	\$ 444,002	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000	\$ 444,000
<b>b. Operating Expenses - Cash (not including taxes in line h)</b>										
Operating Expenses	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180	\$ 233,180
Operating Expenses - Misc.	150,200	150,200	150,200	150,200	150,200	150,200	150,200	150,200	150,200	150,200
Support Allocations	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Total	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380	\$ 433,380
<b>c. Revenues less Cash Operating Expenses (a-b)</b>	\$ 10,622	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
<b>d. Operating Expenses - Non-Cash</b>										
Depreciation	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400
<b>e. Operating Income (d-c)</b>	\$ (432,778)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)
<b>f. Non-Operating Income</b>										
Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Investment Income	-	-	-	-	-	-	-	-	-	-
Interest Expense (Short-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Long-Term)	-	-	-	-	-	-	-	-	-	-
Interest Expense (Internal)	-	-	-	-	-	-	-	-	-	-
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>g. Net Income</b>	\$ (432,778)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)
<b>h. Taxes</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Income After Fees &amp; In Lieu Taxes</b>	\$ (432,778)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)

City of Palo Alto  
 Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
 Financial Projections Rev 2  
 November 4, 2015

Cash Flow Statement

Year	1	2	3	4	5	6	7	8	9	10	11
<b>a. Net Income (From Income Statement)</b>	\$ (462,540)	\$ (425,590)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)
<b>b. Cash Outflows</b>											
Debt Service Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Interest Reserve	-	-	-	-	-	-	-	-	-	-	-
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-	-	-
Financing	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	\$ (3,324,160)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (3,036,660)	\$ -	\$ -	\$ -
<b>Total</b>	\$ (3,324,160)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (3,036,660)	\$ -	\$ -	\$ -
<b>c. Cash Inflows</b>											
Interest Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-	-	-
Short Term Financing	-	-	-	-	-	-	-	-	-	-	-
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-	-	-
Cash Start	-	-	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	3,324,160	-	-	-	-	-	-	3,036,660	-	-	-
<b>Total</b>	\$ 3,324,160	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,036,660	\$ -	\$ -	\$ -
<b>d. Total Cash Outflows and Inflows (b+c)</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>e. Non-Cash Expenses - Depreciation</b>	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400
<b>f. Adjustments (Proceeds from)</b>											
Short Term Financing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	(3,324,160)	-	-	-	-	-	-	(3,036,660)	-	-	-
<b>Total</b>	\$ (3,324,160)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (3,036,660)	\$ -	\$ -	\$ -
<b>g. Adjusted Available Net Revenue</b>	\$ (3,343,300)	\$ 17,810	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ (3,026,040)	\$ 10,620	\$ 10,620	\$ 10,620
<b>h. Principal Payments on Debt</b>											
Short Term Bond/Loan Principal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Bond Principal	-	-	-	-	-	-	-	-	-	-	-
Internal Loan Principal	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Cash</b>	\$ (19,140)	\$ 17,810	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
Avoided Costs (see j and k below)	-	-	-	-	-	-	-	-	-	-	-
<b>Adjusted Net Cash</b>	\$ (19,140)	\$ 17,810	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
<b>Cash Balance (Enterprise)</b>											
Unrestricted Cash Balance	\$ (19,140)	\$ (1,330)	\$ 9,290	\$ 19,910	\$ 30,530	\$ 41,150	\$ 51,770	\$ 62,390	\$ 73,010	\$ 83,630	\$ 94,250
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Balance</b>	\$ (19,140)	\$ (1,330)	\$ 9,290	\$ 19,910	\$ 30,530	\$ 41,150	\$ 51,770	\$ 62,390	\$ 73,010	\$ 83,630	\$ 94,250

City of Palo Alto  
 Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
 Financial Projections Rev 2  
 November 4, 2015

**Cash Flow Statement**

Year	12	13	14	15	16	17	18	19	20
<b>a. Net Income (From Income Statement)</b>	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)	\$ (432,780)
<b>b. Cash Outflows</b>									
Debt Service Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Interest Reserve	-	-	-	-	-	-	-	-	-
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-
Financing	-	-	-	-	-	-	-	-	-
Capital Expenditures	\$ -	\$ -	\$ -	\$ (3,036,660)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	\$ -	\$ -	\$ -	\$ (3,036,660)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>c. Cash Inflows</b>									
Interest Reserve	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-
Short Term Financing	-	-	-	-	-	-	-	-	-
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-
Cash Start	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	-	-	-	3,036,660	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ 3,036,660	\$ -	\$ -	\$ -	\$ -	\$ -
<b>d. Total Cash Outflows and Inflows (b+c)</b>									
<b>e. Non-Cash Expenses - Depreciation</b>	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400	\$ 443,400
<b>f. Adjustments (Proceeds from)</b>									
Short Term Financing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Financing (Bond)	-	-	-	-	-	-	-	-	-
Internal Loan	-	-	-	-	-	-	-	-	-
Internal Funding (non-loan)	-	-	-	(3,036,660)	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ (3,036,660)	\$ -	\$ -	\$ -	\$ -	\$ -
<b>g. Adjusted Available Net Revenue</b>	\$ 10,620	\$ 10,620	\$ 10,620	\$ (3,026,040)	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
<b>h. Principal Payments on Debt</b>									
Short Term Bond/Loan Principal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Long Term Bond Principal	-	-	-	-	-	-	-	-	-
Internal Loan Principal	-	-	-	-	-	-	-	-	-
<b>Total</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>i. Net Cash</b>	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
Avoided Costs (see j and k below)	-	-	-	-	-	-	-	-	-
<b>Adjusted Net Cash</b>	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620	\$ 10,620
<b>Cash Balance (Enterprise)</b>									
Unrestricted Cash Balance	\$ 104,870	\$ 115,490	\$ 126,110	\$ 136,730	\$ 147,350	\$ 157,970	\$ 168,590	\$ 179,210	\$ 189,830
Depreciation Operating Reserve	-	-	-	-	-	-	-	-	-
Debt Service Reserve	-	-	-	-	-	-	-	-	-
<b>Total Cash Balance</b>	\$ 104,870	\$ 115,490	\$ 126,110	\$ 136,730	\$ 147,350	\$ 157,970	\$ 168,590	\$ 179,210	\$ 189,830

City of Palo Alto  
 Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
 Financial Projections Rev 2  
 November 4, 2015

Capital Additions

Year	1	2	3	4	5	6	7	8	9	10
<b>a. Fiber Implementation Costs</b>										
Fiber (30 year depreciation)	\$ 287,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Expansion Fiber (30 year depreciation)	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (10 year depreciation)	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (7 year depreciation)	-	-	-	-	-	-	-	-	-	-
Network Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-
CAI Customer Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$ 287,500</b>	<b>\$ -</b>								
<b>e. Wireless Network Costs (7 year depreciation)</b>										
Microwave (10 year)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Structures (20 year)	-	-	-	-	-	-	-	-	-	-
Access (10 year)	-	-	-	-	-	-	-	-	-	-
Network Equipment (7 year)	1,995,500	-	-	-	-	-	-	1,995,500	-	-
Spare Equipment (7 year)	25,000	-	-	-	-	-	-	25,000	-	-
Installation & Engineering (7 year)	1,016,160	-	-	-	-	-	-	1,016,160	-	-
<b>Total</b>	<b>\$ 3,036,660</b>	<b>\$ -</b>	<b>\$ 3,036,660</b>	<b>\$ -</b>	<b>\$ -</b>					
<b>f. Wireless Customer Connection Cost (5 year depreciation)</b>										
CPE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>									
<b>Total Capital</b>	<b>\$ 3,324,160</b>	<b>\$ -</b>	<b>\$ 3,036,660</b>	<b>\$ -</b>	<b>\$ -</b>					
<b>Total Accrued Capital</b>	<b>\$ 3,324,160</b>	<b>\$ 6,360,820</b>	<b>\$ 6,360,820</b>	<b>\$ 6,360,820</b>						
<b>Total Funded by Depreciation Account</b>	<b>\$ -</b>									

City of Palo Alto  
 Senerio 2 Option B - Blanket Wi-Fi 802.11 ac  
 Financial Projections Rev 2  
 November 4, 2015

Capital Additions

Year	11	12	13	14	15	16	17	18	19	20
<b>a. Fiber Implementation Costs</b>										
Fiber (30 year depreciation)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Expansion Fiber (30 year depreciation)	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (10 year depreciation)	-	-	-	-	-	-	-	-	-	-
Headend and Hub Equipment (7 year depreciation)	-	-	-	-	-	-	-	-	-	-
Network Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-
CAI Customer Equipment (6 year depreciation)	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$ -</b>									
<b>e. Wireless Network Costs (7 year depreciation)</b>										
Microwave (10 year)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Structures (20 year)	-	-	-	-	-	-	-	-	-	-
Access (10 year)	-	-	-	-	-	-	-	-	-	-
Network Equipment (7 year)	-	-	-	-	1,995,500	-	-	-	-	-
Spare Equipment (7 year)	-	-	-	-	25,000	-	-	-	-	-
Installation & Engineering (7 year)	-	-	-	-	1,016,160	-	-	-	-	-
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 3,036,660</b>	<b>\$ -</b>				
<b>f. Wireless Customer Connection Cost (5 year depreciation)</b>										
CPE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ -</b>									
<b>Total Capital</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 3,036,660</b>	<b>\$ -</b>				
<b>Total Accrued Capital</b>	<b>\$ 6,360,820</b>	<b>\$ 6,360,820</b>	<b>\$ 6,360,820</b>	<b>\$ 6,360,820</b>	<b>\$ 9,397,480</b>					
<b>Total Funded by Depreciation Account</b>	<b>\$ -</b>									