

**Request for Proposal (RFP) For An Internet Service Provider (ISP)/Internet Network Service Provider Administrator (NSP NSA) To Provide Internet Access and Management Services For the Fiber-To-The-Home (FTTH) Trial Project in Palo Alto, California**

**1. INTRODUCTION**

**1.1 Background**

In 1997, City of Palo Alto Utilities (CPAU) constructed a 30 mile (4,870 fiber-mile) fiber optic cable backbone (Backbone). The Backbone contains 144 strands of fiber, with 288 strands in certain sections. Development and construction of the Fiber Optic (FO) ring was approved by the Palo Alto City Council (Council) in August 1996, after completion of a detailed Telecommunications Strategy Study (<http://www.cpau.com/fiberservices/>). The City of Palo Alto (CPA) Backbone (Exhibit A) surrounds the City and passes Palo Alto's major business parks, local exchange offices (LEC), and has access points in several buildings and the Palo Alto Internet Exchange (PAIX) PAIX.net, Inc. (<http://www.paix.net/>). To-date, CPA's involvement in telecommunications has been limited to licensing dark fiber optic capacity to various entities within Palo Alto.

On April 5, 1999, Council voted 7 to 1 in favor of a six year project that will attempt to evaluate Fiber-To-The-Home (FTTH) services, mainly Internet access data services, in Palo Alto's Community Center Neighborhood (CCN) (Exhibit B) (<http://www.cpau.com/fth/>). A conceptual diagram outlining key FTTH geographic domains, PAIX and CCN, is displayed in Exhibit C. The FTTH trial project applies a tried and true network design, using state-of-the-art networking equipment, enabling extremely high speed telecommunication services to the CCN community in Palo Alto.

**1.2 Fiber-To-The-Home (FTTH) Trial Project Description**

The FTTH trial project (<http://www.cpau.com/fth/>) will provide up to 100 residents of the Community Center Neighborhood (CCN) in Palo Alto with a fiber optic cable connection between their homes and the Internet PAIX over CPAU's Backbone at speeds of 10 or 100 Mega bits per second (Mbps). An ISP will provide a high-speed connection to the Internet. The FTTH trial is expected to start service in July 2000 and to last approximately six years. CPAU will construct the fiber optic delivery system and make it ready for Internet access services. On behalf of the FTTH trial participants, CPAU will select an Internet Service Provider (ISP) and/or a FTTH Network Service Administrator (NSA) to provide Internet access, technical support, network management services, and to manage day-to-day FTTH activities.

**1.3 Goals & Objectives**

It is CPA's goal to accelerate the rate at which affordable and advanced telecommunications services are made available to all residents, businesses, and institutions in Palo Alto. To that end, while not the first in the nation, the FTTH trial project will endeavor to test a high-speed Internet access application over a fiber optic link to residences. ~~Internet~~ Local network speeds of up to 100Mbps (up to 2,000 times faster than a standard 56Kbps standard modem) will be provided to residences in CCN, along with a high-speed connection to the Internet. This service could be provided City wide if a decision to build a City wide FTTH project is approved.

Ultimately, CPA's goal is to enter into an agreement with a well established, qualified ISP or Internet

Network Service ~~Provider~~ Administrator (NSP NSA) for reliable, secure, high speed, cost effective connection to the Internet per the specifications contained in this Request For Proposal (RFP). It is the intention of CPA to award one contract in response to this RFP, and to have in place Transport infrastructure, Internet connectivity, and network management systems must be in place and operational by July 1, 2000, provided that the project is implemented by CPA

### 1.4 Opportunity

Palo Alto (<http://www.city.palo-alto.ca.us/palo/city/guide.html/>) is a thriving community of nearly 60,000 people situated adjacent to Stanford University in the heart of Silicon Valley, approximately 25 miles south of San Francisco and 14 miles north of San Jose (<http://maps.yahoo.com/py/maps.py/>). Palo Alto's residential community has impressive demographics with above-average household incomes and above-average educational levels. Approximately two-thirds of Palo Alto residents who are over the age of 25 have had four or more years of college, half of whom have received at least one graduate degree. Also, an estimated 80% of households own at least one personal computer.

Following are characteristics that make Palo Alto a desirable choice for doing business, and the FTTH project a significant project to be associated with:

- The City's aspiration to become a world class telecommunications center, and its desire to provide a test bed for FTTH technology. A major portion of the FTTH project construction costs will be borne by CPA, with the remainder being borne by CCN FTTH participants;
- The City's flexibility in dealing with potential partners or service providers;
- PAIX in Palo Alto, one of a few national Internet Access Points (NAP), a data and communications exchange center at which ISPs and their customers can locate their equipment for redundant access, reliability and operational stability. PAIX allows regional ISPs to connect to large backbone providers (AKA: Tier 1 ISPs), and to other regional ISPs for the exchange (AKA: peering) of Internet traffic. The facility provides the necessary fabric to take Internet Commerce to a new level of quality.
- Local grass roots efforts collaborating with the City to educate, support, and help alleviate barriers that may hinder the introduction of new infrastructure. Groups that want to "...find and show a way to build a sustainable local infrastructure to support community dialogue, learning, and engagement that will lead to a revitalization of our community" (<http://www.pa-comnet.org/index.html/>). And groups who are "...committed to residential network access using high speed optical fiber", and who also "...believe in city-wide access, rapid deployment, and affordable pricing" (<http://www.pa-fiber.net/index.htm/>).

FTTH strategies are slower to be adopted because of concerns for the high cost of trenching and placing fiber and fiber's inability to carry electrical current also means that Direct Current (DC) would not be delivered to the home to ensure operation of telephones in the event of a power outage. Telephone and Cable Television companies are themselves moving into the broadband services with their introduction of Hybrid Fiber Coaxial (HFC) and Digital Subscriber Line (DSL) technologies. While these technologies may serve as a transition strategy, they may suffer from a number of limitations. Essentially they are trying to modify

and adapt infrastructure that was designed for another purpose. At a time when applications are demanding more of the networks they currently depend on, the usual “best effort” delivery of networked services falls short of emerging needs. The FTTH project brings forth a design with limitless bandwidth, and positions the network for the bandwidth-rich future.

The successful bidder will have a chance and opportunity to participate in a unique project, enabling Internet services to local residents over a fiber optic connection. Connection to the Internet at PAIX will afford participants access to the uppermost levels of the Internet hierarchy resulting in improved access, improved processing speeds, reduced download times, and improved capabilities. The high cost of fiber optics had long been a formidable hurdle, copper lines are merely an entry point to the digital future. As providers migrate towards fiber optics, significant obstacles will have to be dealt with. The benefits of participating in CPA's FTTH project gives the successful bidder a head in the areas of technology, high speed Internet service management, service options, etc.

**1.5 Internet Service Provider (ISP)/Network Service Administrator (NSA) - RFP**

The basic service requested in this RFP is the exchange of Internet Protocol (IP) packets between CPA's FTTH network in the CCN, the PAIX network in downtown Palo Alto, and the generally accessible Internet (Exhibit C). Any contract CPA enters into for this service will include defined service level guarantees intended to ensure that IP packets routed to the Internet service provider's network will reach their destination network or another major national Internet backbone network within an acceptable measure of quality and reliability.

The terms ISP and NSA are used interchangeably throughout this RFP. An ISP is typically an organization that provides access to the Internet. A NSA is typically an organization that manages a communications network with a multi-user computer system.

It is CPA's intention to contract with an organization that will provide Internet access and manage the communications delivery system between PAIX and CCN residents participating in the FTTH trial. In addition to Internet access, it is expected that the ISP/NSA will have the additional responsibilities of ensuring and managing network security, distributing software upgrades (if applicable), providing customer support and technical assistance twenty-four hours per day, seven days per week (24/7), monitoring daily network activities, enforcing licensing agreements, billing FTTH trial participants, etc.

**1.6 ISP Selection Criteria**

Price is an important yardstick, but not the only one. As a minimum, the evaluation of proposals and selection of the successful bidder will be based on the following criteria:

1. Qualifications of the organization, including their ability to deliver a “Total Solution”;
2. Deviations from specifications and their impact, positive or negative;
3. Bid pricing;
4. Ability to meet the project timeline.

**1.7 ISP Evaluation and Selection Process**

- **Step 1:** An evaluation team will review submitted proposals with respect to the criteria listed above. The evaluation team will consist of CPA staff, and may include advisors and/or experts or consultants selected by CPA.
- **Step 2:** The successful bidder will be asked to make a presentation to CPA staff, detailing their proposal.
- **Step 3:** Upon completion of the evaluation, the evaluation team will present a recommendation to Council for their approval.
- **Step 4:** Upon approval by Council, CPA will prepare contract documents for signatures by the successful bidder.

**1.8 Desired Profile of Bidders**

CPA seeks proposals from organizations that are technically and financially capable of assuming all the duties of the ISP/NSA as described in 1.4. Bidders to this RFP should have experience with the installation, operation, and maintenance of high-speed data networks, including Local Area Networks (LAN), the Internet, including the necessary support staff to support technical, billing, and customer service functions.

Only ISPs with experience in the operations and maintenance of Internet Services, and with a record of successful completion of similar projects, will be considered. Bidder's are hereby notified to submit a typewritten list of similar projects, detailing: type of project, description of the project, magnitude of the contract, extent of involvement, client name and telephone number, and date of completion.

**1.9 Timeline**

- Release of RFP: October 21, 1999
- Written Clarifications Due Date: October 28, 1999
- Responses to Written Clarifications Mailed: November 3, 1999
- Proposal Due Date: November 12, 1999  
(see Part I, Request For Proposal for Proposal delivery instructions)
- Internet Access/Network Management Services: July 1, 2000

**1.10 Miscellaneous**

CPA reserves the right to reject as unresponsive any proposal which is incomplete, modified, unsigned, or illegible or which is not otherwise submitted in accordance with the requirements of this RFP.

## 2. SCOPE OF WORK

### 2.1 Project Description

The FTTH network design utilizes standard office-grade computer networking equipment to enable the delivery of high speed data (10 Mbps or 100Mbps). The design involves LAN technology that is currently used in a campus/office building environment.

Essentially, Multimode (MM) fiber optic strands will connect every participant's home to a centralized switch/router (S/R) site at CPAU's Hopkins Substation, which is located at 1350 Hopkins Avenue, Palo Alto (Exhibit B).

The S/R, based on a Gigabit Ethernet platform, and built in accordance with the Institute of Electrical and Electronics Engineers (IEEE) standard IEEE 802, will be located in a weatherproof enclosure which is also the terminating point for all MM fibers from the participants. The S/R's main function is to manage local traffic and to aggregate local traffic to the Internet and raise the transmission speed to 1 Giga bit per second (1Gbps) before transporting the packets via CPA's Backbone and delivering them to the ISP at PAIX. Most ISPs have standards for equipment deployment, and typically purchase equipment from one or two suppliers. In order to minimize confusion and the introduction of new equipment to an ISP's lineup, CPA will work closely with the selected ISP's network engineers to jointly specify/purchase/install the appropriate S/R for the application.

CPAU will deliver FTTH traffic, on CPA's Backbone, to terminate at CPAU's fiber optic distribution panels at PAIX. The ISP will work with PAIX to arrange a FO cross-connect between CPAU's FO distribution panels and the ISPs facilities at PAIX.

At the customer's premise, CPAU will provide and install all FO cables, a multimedia converter to provide for a MM fiber to Unshielded Twisted Pair (UTP) Category 5 cable connection to a participant-supplied Ethernet Network Interface Card (NIC). The ISP will be responsible for all aspects of providing, loading, and testing software at the customer's computer.

In general, CPAU will purchase and place all FO infrastructure and equipment. CPAU together with the ISP will jointly specify/purchase/install the S/R, with CPA bearing all costs.

For planning and service estimating purposes the estimated customer count is 100 with the following service requirements, the actual and final customer count may vary:

- 15 customers at 100Mbps;
- 85 customers at 10Mbps;
- Project is expected to last 6 years;
- The Contract with the ISP will span a ~~72~~ 36 month term, with an option to extend with the same terms and conditions for an additional 36 months. ~~and will be coterminous with Broadband Access Transport Service (BATS) Exhibit D.~~

**2.2     Project Location**

Although the project is divided into two geographically-separated sites, the main project location is considered to be CCN, the other being PAIX (Exhibit B). At the release of this RFP, CPA was still in the process of soliciting participant interest in the FTTH project. As soon as an official customer list and network design is available, CPA will forward the information to the successful ISP.

**2.3     Division of Work (CPA-Work)**

CPA will provide materials and install the following:

1. All MM FO cables and equipment between the S/R and the customer's premise;
2. All MM FO cable and terminating equipment at the customer's premise;
3. MM to UTP multimedia converters and UTP cables to the participant's computer, NIC will be provided by the participant;
4. S/R in conjunction with the ISP;
5. All switch site preparatory work;
6. SM fiber interconnection between the S/R and PAIX;
7. Operate, maintain, and service all Outside Plant (OSP) equipment, remote S/R, Customer Premises Equipment (CPE);
8. Provide 24/7 telephone support for all OSP activities. The ISP will be the point of contact for FTTH customers. The ISP will rectify all network problems, and will only contact CPA for OSP problems after reasonable efforts to locate a network problem have been fully exhausted;
9. Provide an estimated group of 100 customers of CCN Internet access customers to the ISP; and
10. Act as a liaison between the participant and the ISP (as-needed basis) .

**2.4     Division of Work (ISP-Work)**

1. Jointly with CPAU staff, specify and purchase the remote S/R;
2. S/R site and equipment set-up and configuration;
3. Provide ~~Internet~~ local network access services to the FTTH project participants at 10Mbps or 100Mbps at the CCN location;
4. Provide high-speed Internet access capacity to the S/R;
5. FTTH initial setup, 1<sup>st</sup> point of customer contact, network operations, management, monitoring, diagnostics, 24/7 technical support, and administrative services; and

6. Domain Name Service (DNS) support, with up to 5 static IP addresses per participant, e-mail services, Post Office Protocol 3 (POP3) services; Network News Transfer Protocol (NNTP) services, Web page bandwidth for participants.

### **3. SPECIAL CONDITIONS**

#### **3.1 Proposal**

CPA hereby requests all bidders to complete and submit the attached CPA Proposal Form, together with responses to all questions as well as attachments as required.

#### **3.2 Deviations from Requirements**

The bidder shall with this Proposal, indicate any and all deviations from the requirements of this RFP. The Project Manager will review any discrepancies for a determination to their equivalency of that intended.

#### **3.3 Project Site Tours**

The bidder agrees to be responsible for examining the site(s) and to have compared them with the specifications, and to be satisfied as to the facilities and difficulties involved with the execution of the proposed contract before the delivery of his/her Proposal.

By entering into the contract, the bidder represents that he/she has inspected in detail the project scope and requirements and has become familiar with all the technical and physical conditions affecting the project.

#### **3.4 Prebid Meetings**

No pre-Proposal meetings will be arranged for this project.

#### **3.5 RFP Project Manager**

Upon release of this RFP, all correspondences and communications concerning this project must be directed to the City's Project Manager for this RFP:

Mohammad M. Fattah, Project Manager  
City of Palo Alto Utilities  
1007 Elwell Court, Palo Alto, CA 94303  
Tel.:(650)-566-4541  
FAX:(650)-566-4536  
E-Mail: Mohammad\_Fattah@city.palo-alto.ca.us

### **4. TECHNICAL REQUIREMENTS**

#### **4.1 Internet Access Services**

This RFP requests high-speed Internet access services for 100 subscribers in the CCN as part

of the FTTH trial project. Specific local network service levels include the following:

- Approximately 85 subscribers at a ~~guaranteed~~ 10Mbps rate;
- Approximately 15 subscribers at a ~~guaranteed~~ 100Mbps rate.

The ISP may aggregate data to/from the FTTH participants together or with other ISP customers. The Internet access services should be adequate to provide rapid data transfer between the FTTH local network and the Internet under typical usage.

Bidders are hereby requested to complete the CPA-supplied Proposal form, describing their intention to provide Internet access services to the CCN subscribers, and the charges that will be billed as a result.

### **4.2 Network Management and Administrative Services**

This RFP solicits interest from ISPs to manage the day-to-day activities of the FTTH trial. This includes managing all ISP related issues (billing, technical, etc.) as well as managing the S/R located at the Hopkins Substation site in CCN. CPAU will be responsible to rectify any OSP or hardware problems, should they arise.

### **4.3 Technical Support**

The ISP shall supply technical support, on demand and as needed, to CPA personnel and FTTH trial participants. This includes configuration of the S/R and the FTTH network management.

A lead technical support employee shall be assigned by the ISP to oversee the CPA account.

The ISP shall supply specific escalation procedures to assure timely identification and resolution of problems.

The ISP shall provide 24 hours 7 day per week local live call-in support. ~~Local technical support means that the technical person must be physically located within the San Francisco Bay Area.~~

The ISP shall work with CPA personnel to help resolve any and all problems.

### **4.4 Service Reliability**

Although CPA is not requesting specific reliability guarantees, the ISP shall provide a written guarantee describing uptime and bandwidth. This guarantee must include a description of network availability; network performance; network service and support, packet loss (within the ISP's backbone and at all peering points with other backbones), latency and latency variation, as well as uptime of the access port.



## PART III – SCOPE OF WORK

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### 4.5 IP Licenses

The ISP shall provide Class 'C' license(s) capable of 255 addresses. A minimum of 5 at least one static IP addresses shall be provided to each subscriber. Additional static IP addresses are to be available for subscribers which require them.

### 4.6 Domain Name Services (DNS)

The ISP shall provide DNS support services for the FTTH project.

## 5. ADMINISTRATIVE INFORMATION

### 5.1 Proposal Certification

Bidders to this RFP must certify that submitted proposals will not be withdrawn for 180 days after the due date for the proposal.

### 5.2 Delivery of Proposals

An original plus six (6) copies of the bidder's proposal in its entirety must be received by CPA, at the designated address (see Part I, RFP, for submittal/delivery instructions) by no later than 3:00 p.m. on November 30 12, 1999.

Bidders to this RFP are responsible for ensuring that proposals are delivered on time. Delays caused by any delivery service, including the U.S. Postal Service shall not be grounds of an extension of the deadline for receipt of proposals. Proposals received after the deadline will be deemed rejected and will be returned unopened.

### 5.3 Proposal Presentation and Format Requirements

Proposals must be "Hard Copy" and prepared on standard 8-1/2" x 11" paper. Fold-outs containing charts, spreadsheets are permissible. The pages should be placed in binders with tabs separating major sections. A table of contents, sections headings, and

page numbers are encouraged. Proposal packages must be clearly marked on exterior, in minimum 18 font bold lettering: **PROPOSAL ENCLOSED**.

Failure to provide such marking may result in the package being opened prematurely, thereby invalidating the proposal.

### 5.4 Multiple Proposals

Bidders may not submit more than one proposal in response to this RFP.

### 5.5 Proprietary Proposal Materials

Subject to the requirements of the California Public Records Act, CPA will maintain as confidential all information contained in the proposal that is designated as proprietary. Such

information should be separately bound and labeled clearly with the words “Proprietary Information”. Appropriate reference to this separately bound information must be made in the body of the proposal.

**5.6 Cost of Preparing Proposals**

CPA will not be liable for any costs incurred by bidders in the preparation and presentation of proposals submitted in response to this RFP or in presentations to CPA.

**5.7 Errors in Proposals**

Bidders are responsible for errors and omissions in their proposals. Any such errors and omissions will not serve to diminish their obligations to CPA.

**5.8 Rejection of Proposals**

CPA reserves the right to reject any or all proposals at any time with no penalty, and to waive immaterial defects and minor irregularities in proposals.