Applicant Name: CITY AND COUNTY OF SAN FRANCISCO

Project Title: San Francisco Community Broadband Opportunity Program

Project Type: Comprehensive Community Infrastructure

_______________________ Executive Summary _______________________

The San Francisco Community Broadband Opportunities Program (SF-CBOP) network is a technologically advanced broadband project that will resoundingly achieve all of NTIA's goals for BTOP middle-mile infrastructure grants, leverage NTIA's funding with a 30 percent match, and enable fiber-to-the-premises (FTTP) last-mile partners to serve San Francisco's neighborhoods and underserved communities. SF-CBOP will be owned and operated by the City and County of San Francisco ("City" or "San Francisco"), which has extensive experience not just in operating communications networks, but also in partnering with non-profit and for-profit entities to deliver communications services to its neediest residents. On an intangible level, the network will stand as a symbol of American broadband innovation in a region synonymous with American technological knowledge. The proposed SF-CBOP network is necessary to (1) advance the ultimate goal of fiber to the home and business (2) encourage non-incumbent last mile providers to compete by providing cost-based wholesale middle mile rates and (3) improve the quality of broadband services for community anchor institutions. The SF-CBOP will also advance the goals of the recently released National Broadband Plan. In particular, SF-CBOP will support: ' Goal 1: At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second and ' Goal 4: Every community should have affordable access to at least 1 Gbps broadband service to anchor institutions such as schools, hospitals and government buildings. SF-CBOP will achieve Goal 1 by bringing 100 mbps broadband connections to San Francisco Housing Authority low income housing units. Through a public private partnership, the City is already achieving this in over 400 units. With BTOP funding, the City will be able to accelerate the expansion of this service to additional SFHA units and design new units to exceed this standard as it redesigns and rebuilds public housing at Hunters View and six other sites. SF-CBOP will achieve Goal 4 by bringing gigabit speeds to each San Francisco Public Library Branch and other community anchor sites. Working with our key partner, San Francisco City College, our digital media community and others, these sites will become laboratories of innovation where the possibilities and potential of a gigabit connection will be discovered. SF-CBOP will serve the City and County of San Francisco on a middle mile basis. The network will pass San Francisco's 329,700 households, 72,000 businesses and over 390 community anchor institutions, including over 50 public safety anchor locations. SF-CBOP will offer six services on the network, two services for community anchor sites and four on a wholesale basis. The two community anchor services will be: ' SF CBOP Connect: 20 symmetrical average peak Internet with burst to 100 Mbps; 100 symmetrical peak on-net with burst to 1 Gbps ' SF CBOP Connect Plus: 250 symmetrical average peak Internet with burst to 1 Gbps; 1 Gbps symmetrical on-net; The wholesale offerings will mirror the two community anchor services and also
offer: 'Dark fiber' Wavelength service at 2.5 to 10 Gbps. The City is committed to non-discrimination and network interconnection, and as the operator of the SF-CBOP network, will meet or exceed the BTOP obligations. For the Internet and managed Ethernet services, the City will comply with all nondiscrimination policies in the NOFA. Any community anchor or other network user will be able to connect to the Internet service provider of their choice. SF-CBOP will not employ any traffic management mechanisms, except for generally accepted technical measures and as required by law enforcement or as necessary to provide the quality of service guarantees promised to each user on the network. Internet access shall be provided at reasonable rates based on the negotiated wholesale Internet pricing provided by the ISPs through interconnection with the local POPs. In addition to Internet and managed Ethernet service, SF-CBOP will offer dark fiber and wavelength services on a nondiscriminatory basis. The City will interconnect with the public Internet but also with other private, public, and public interest networks and entities for purposes of resource sharing and data exchange at two major network interconnection points with carriers, Internet service providers, and with regional, national and international networks serving educational, medical, research, and governmental users, such as Internet(2), National LambdaRail and National Public Lightpath. The SF-CBOP will be a fully fiber-optic Gigabit Ethernet network serving over 390 anchors and interconnecting with two Internet points of presence. The system consists of a 35-mile backbone ring between ten hub sites. Lateral fiber connects each of the anchor sites to the ring. Most lateral fiber is constructed in a ring topology, providing two survivable routes from most anchor sites to the backbone. It is also possible to connect each lateral ring endpoint to separate hub sites, so that there is no single physical point of failure to the site. The backbone will consist of 20.1 miles of 864-count fiber to be constructed new and 15.5 miles of existing city fiber. The laterals are to be constructed of 48-count fiber, and the drop fibers (the last 100 feet) of 6-count fiber. Each site will initially be connected over two fibers (larger 250 anchors) or one fiber (smaller 140 anchors). Last-mile service providers will be able to connect to the fiber at the Interconnection points, at the hub locations, or at outdoor splice points. The City will provide managed Ethernet and Internet services through Gigabit Ethernet network connections using multiprotocol packet label switching (MPLS) technology. Services can be provided at layers 2 or 3. The network will be capable of providing networks-within-networks and pseudowire services with quality of service guarantees. The network design will enable the City to serve anchors requiring HIPAA compliant communications and communications subject to public safety and other government security standards. It will also enable the City to provide multiple simultaneous logical links from a single site. For example, to enable a site to simultaneously obtain connectivity to the public Internet, public safety, confidential medical information, and public educational networks, without compromising the security or operations of any one network. The City has experience in installing and maintaining fiber networks, managing broadband wide area networks and providing broadband service directly to low income housing developments. The City has a staff of 23 that have installed and currently maintain 90 miles of fiber as well as a legacy copper public safety network. These fiber networks support an emergency service network, an enterprise wide area network known as the 'Fiber WAN', a network connecting public safety radio towers, traffic and transit automation systems and a community video camera system. The Department has installed dark fiber networks to support City College, the California Academy of Sciences, San Francisco State University and the Bay Area Video Coalition. The City’s Fiber WAN provides a MPLS network connecting 30 of the City’s major administrative facilities. The City, together with its
non-profit partner the Internet Archive, provides broadband service to over 3000 units in 10 low income housing development, a portion of which are operated by the San Francisco Housing Authority. The overall infrastructure cost of the system is $20,523,180, with Applicant seeking $14,366,226 in federal funds and providing a $6,156,952 (30.0%) match. San Francisco estimates that there will be approximately 28 anchor institutions, 24,700 households and 5,400 businesses served by third party service providers using the proposed CBOP network for middle mile services. San Francisco does not propose to offer last mile services. The project will create or save 223 total jobs, of which 70 will be direct, 73 indirect and 80 induced.