

## Broadband USA Applications Database

**Applicant Name:** City of Boston

**Project Title:** BBNET- Boston Broadband Network

**Project Type:** Last Mile

---

### Executive Summary

---

a. Opportunity Addressed: Boston's project (BBNet) is a broadband fiber/wireless network, backhauled on the City's existing fiber network, supplemented by new fiber/wireless connectivity to public housing which addresses two opportunities and fulfills two key City objectives: 1. Provides the foundation for digital inclusion with a network that will provide free broadband access (3/1mbps) into the homes of the City's lowest income, most vulnerable, majority-minority citizens in underserved neighborhoods. 2. BBNet will deliver a broadband solution for public safety by creation of public safety hot spots providing police field access to crime fighting data and filing reports, eliminating the need to return to headquarters. Boston's infrastructure project, coupled with its grant proposals for Public Computing Centers and Sustainable Broadband adoption, will render Boston a replicable urban showcase for how to meet the goals of ARRA and digital inclusion. b. Description of Proposed Funded Service Area (PFSA): Boston's survey of its PFSA shows that this area has low broadband adoption rates (See Q. 17 herein.) That is not a surprising finding since this area covers approximately 7 square miles of the lowest income residents and the highest crime areas of the City. The median income in the PFSA is only \$34,626. This median household income is at or below Boston's median of \$46,362 which is already lower than MA and US medians of \$61,785 and \$50,007. The PFSA also includes the families, seniors and disabled tenants in 11,000 units of public housing where the median income is \$9,606. In a high cost city such as Boston, these very low medians are indicative of true household financial distress and vulnerability. For further evidence of the financial distress of residents in the PFSA consider: This area is home to fully 64% of Boston's public schoolchildren, the very poorest. 74% of all Boston schoolchildren qualified for free or reduced price school meals in 2008 – an increase from 71% in 2007. In some areas of the PFSA, 90% of children qualify for free or reduced school meals. Between 2005 and 2007, 21% of Boston children lived in poverty compared to 10% statewide and 42% of children in Boston live in high-poverty neighborhoods compared to 13.8% for MA. Sharon Gillett, incoming Chief of the FCC's Wireline Bureau, told the Boston Globe in 2007 that Boston's Broadband Task Force on which she served in 2006 found that 80% of Boston public school children had no broadband in their homes because: "It's not an access issue, it's an affordability issue." BBNet will solve the affordability issue, extending a free broadband lifeline to Boston's schoolchildren, their families and other vulnerable citizens. Boston's other grants for Public Computing and Sustainable Broadband will add the other elements for digital inclusion. c&d. Community Anchor Partners and Network Beneficiaries: BBNet will pass 117,506 households, 11,930 businesses, 148 community anchor organizations, 22 public safety entities, 91 schools and libraries. The following are Boston's lead partners. They operate community anchor organizations in the pfsa and/or provide support services to those anchors. These partners will utilize BBNet to improve public safety, health,

education and human service delivery through BBnet's in-home broadband enabled communications with residents they serve and for police on the streets as follows: the Boston Police Department which will utilize hot spot capabilities of BBNet for in-field data access in the PFSA, Boston's highest crime area; Timothy Smith Network, a private non-profit serving the needs of 34 human services agencies in the PFSA, dedicated to training clients to effectively access and use technology; DotWell, the partnership of a PFSA health center and multi-service center, now partnering with the City to test Meraki mesh technology. BBNet will cover all of DotWell's service territory and enable expansion and improvement of health services delivery by at-home internet communications with clients, a model for other Boston health centers; Boston Digital Bridge Foundation, in partnership with the Boston Public Schools, operates the 10-year-old award winning family broadband education/computer supply program in 52 middle and high schools, TechnologyGoesHome@Schools.org (TGH). Many TGH family graduates live in the PFSA and now use dialup, will be direct beneficiaries of the free, in-home broadband connectivity; WGBH, Boston's PBS affiliate, working on a pilot broadband adoption program for family engagement which depends on BBNet to reach families at home; the Boston Housing Authority, public housing for 11,000 households of Boston's most vulnerable citizens, all of whom will be wired to receive in-home broadband connections from BBNet; openairboston.net, Boston's technology partner during the past three years, deploying two wireless mesh pilots, and who will help spread awareness and adoption of BBNet connectivity; Boston Main Streets, the commercial district revitalization group that strengthens local business districts, which will utilize outdoor connectivity of BBNet to enhance PFSA business districts; Boston Public Library and its 25 neighborhood branches, 47 Boston Centers for Youth and Families and 12 Boston Housing Authority Tech Centers which will offer public computing center training to facilitate clients at-home use of BBNet and, with Sustainable Broadband funding, will train and equip with netbooks their clients who take advanced broadband training.

f. Interconnection and non-discrimination obligation: BBNet will be owned and operated by the City as a free service to low income residents and meet all applicable requirements. e&g. Type of Broadband System/Services and Applications for Digital Inclusion and Public Safety: Boston will deploy last mile wireless mesh technology to provide in-home broadband connectivity at 3/1mbps free of charge to the 117,506 households in the PFSA, backhauled on the City's existing fiber network. In order to extend this broadband wireless service to 11,000 public housing households, Boston will deploy middle mile high speed broadband to those sites. Boston also will provide broadband signals in the outdoor areas of distressed neighborhood small business districts to increase area appeal and help business development. Boston will dual-purpose this mesh network for a key public safety application: by Virtual Network Isolation capability and newly developed software, BBNet will provide public safety "hot spots" in the highest crime neighborhoods of Boston. This will allow police to download crime fighting data and upload crime and other reports without the need to return to station houses, maximizing in-field time. Boston has trialed various broadband technologies, including Meraki and Open Mesh, which utilize unlicensed spectrum in the 2.4GHz range. Boston is convinced that mesh technology is the most cost effective way to deliver community broadband service and this public safety application in a dense urban area. A combination of outdoor repeaters mounted on extensive City infrastructure and indoor customer premise equipment, backhauled on city fiber will produce reliable in-building internet connectivity at robust speeds (3/1mbps), with low capital and operating costs – ideal for city operation and sustainability.

h. The City's Qualification to Implement, Operate and be a Sustainable Broadband

Provider: \*\*Existing Fiber Optic Network: the City has made substantial capital investments in fiber connection to over 130 facilities including public schools, the central and neighborhood branch public libraries, Boston Centers for Youth and Families, and every police, fire and EMS facility and successfully operated this fiber network for the past 4 years. \*\*City Commitment to/Preparation for Broadband Network for Digital Inclusion and Public Safety: Since mid-2006, Boston has been working toward deploying broadband for digital inclusion and public safety. Since 2006, Boston has deployed 3 pilot networks with 2 non-profit partners and the police to choose the right technical model. The City is ready to begin network deployment within one month of receipt of grant funding and will substantially complete BBNet within 24 months. i. Cost of Network: Boston is required by law to issue an RFP to select a vendor for BBNet but has received a reliable estimate of cost and a design plan for purposes of this grant application. The total cost for BBNet, including the public safety software and middle mile connection to public housing is \$10,000,000, fully deployed. With Boston's 20% match, the total NTIA grant request is for \$8,000,000. Assigning 1/3 of the network cost to public safety, the NTIA cost is \$54.00/household passed. With 100 % assigned to households, the cost is only \$68.00/household passed. j. Expected Subscribership: Boston projects 40% of 117,506 households in the proposed funded service area will be using this network by year 5. Initial subscribers will be a combination of: residents who have a home computer – eg many of the 5,000 family graduates of TGH who received a low cost computer live in the PFSA.; future graduates of TGH, estimated to be 1800 families/year by year two and growing thereafter if Boston's Sustainable Adoption Grant is successful; graduates of Public Computing Center adoption programming funded through collaboration with TGH under Boston's Sustainable Grant . Finally, as community anchors like DotWell and Timothy Smith Networks integrate broadband into delivery of health, human services and employment training, Boston's most vulnerable residents will acquire home computers and use BBNet to improve their life circumstances. Boston is dedicated to digital inclusion. All three grants will work together to boost the City's ability to achieve that result. k. Number of Jobs to be Created by Project: Approx. 45.