Broadband USA Applications Database

Applicant Name: TOWERSTREAM I, INC.

Project Title: Boston Underserved Broadband Solution

Project Type: Comprehensive Community Infrastructure

Executive Summary

Opportunity: This request is for an urban Middle Mile project addressing the following BTOP statutory purposes to the benefit of the Boston, MA area: (i) Improving access to consumers residing in 'underserved' areas; (ii) Improving access to, and use of, broadband service by public safety agencies; and (iii) Stimulating demand for broadband, economic growth, and job creation. Description: This project will solve the ongoing problem of the digital divide that exists for urban underserved communities in the City of Boston. It will do so with a model based on competitive rates for anchor institutions and businesses that will sustain underserved area service. Towerstream is a proven broadband provider that will utilize a redundant and scalable fixed wireless network to reach underserved urban areas in a cost-effective manner. TWER owns its broadband network, and is not dependant on a local exchange-carrier network of phone wires or cable systems to provide Internet service. TWER's wireless approach avoids the significant disadvantages associated with using the traditional broadband approach, namely high installation costs, underground excavation, and disruption of vital public safety services through cable interferences and interruptions. Its cost structure provides a significantly more affordable option for public safety, Small Disadvantaged Businesses (SDB) and other anchor institutions, so that the project can fulfill the statutory purposes in these areas. Further, a substantial benefit of the network design is that it presents a scalable future network upgrade path as capacity is needed or new technology becomes available. Existing PoPs can easily be upgraded with new equipment without making major changes to the network. This means the project is both scalable and sustainable over the long term. Households and businesses: Underserved portion of the proposed funded service area (PFSA) covers 124,698 households with average incomes ranging from $12,307 to $29,348. The demographic of the area can be typically defined as vulnerable minority population. The percentage of households with an education level less than the 9th grade ranges from 2.1% to 35.4% with a blended average of 19.6%. The percentage of households with a high school graduation level of education ranges from 3.8% to 31% with a blended average of 18.9%. The number of households passed is 5,024 in underserved, last mile area. The number of businesses passed totals 80,616 -- 599 of which are in underserved areas. Community Anchor Institutions: The number of anchor institutions passed totals 10,812 ' 312 of which are in the underserved areas. These include community colleges and Towerstream is in active conversations with Bunker Hill Community College about improving its broadband service. Services and applications: TWER proposes service to households in the underserved service area of the PFSA through partnerships with consumer organizations and on a resale basis to other service providers. To this end, Towerstream is in active conversations with the City of Boston to be a partner in its 'BPS Connect' program. This partnership will support Boston's Sustainable Broadband
Adoption application which will provide affordable broadband connections with particular focus on school aged youth and their families. BPS Connect will also work to identify affordable options for all Boston's lowest income residents. In support of BPS Connect, Towerstream proposes to provide 4G wireless in Boston's underserved areas for $8.95/month. This would be an affordable option for Boston's most vulnerable, where current commercial broadband rates are more than 4 times this cost. In the remaining PFSA, TWER will provide service to business and anchor institutions. TWER's speed is scalable from 0.5Mbps to over 1Gbps (1000Mbps), often with no equipment changes needed. Customers can increase their speed on demand easily, and with little to no delay. The affordability and quality of service will allow it to fulfill the statutory purposes of the program to stimulate economic growth, particularly in underserved areas. Non-discrimination and interconnection: TWER displays non-discrimination and network interconnection policies on its web page and internally; adheres to the minimum interconnection requirements as stated in the BTOP NOFA; and follows the principle of 'network neutrality.' TWER does not filter, prioritize, or de-prioritize Internet traffic in any way. It supports actions such as caching and application-neutral bandwidth allocation which are measures to address spam, denial of service attacks, and illegal content. TWER complies with applicable statutes such as CALEA. TWER encourages interconnection with other providers utilizing peering points and similar arrangements. It provides open access to intermediate and end-users, and is committed to offering wholesale prices and access at reasonable rates and terms. It is committed to binding private arbitration of disputes concerning interconnection obligations. Broadband System: Towerstream's 'Core Network' strategically connects its facilities through a fully redundant, high capacity wireless mesh ring which serves as the 'middle mile.' Advances in wireless technology enable a network to be built out in months, not years. The need for fiber at the needed end points poses infinite build out problems, time delays, and major cost concerns for wireline projects. The core network mitigates those issues with its speed of deployment and cost effective middle mile bandwidth with lower entry cost structures. By having a middle mile network that is easily accessible in all directions, it is more easily connected to any party who is seeking to exchange traffic. This not only guarantees open access but stimulates competition. TWER delivers access using fixed wireless and WiMAX technologies. Point to multipoint (PTMP) base stations connected to sector antennas are located on building roof tops, broadcast towers, radio towers or cell towers that transmit radio frequency from our Points of Presence (PoP) to the subscribers. The base station is then connected to an IP standards based infrastructure consisting of switches and routers. The customer’s traffic is routed through the TWER network to the closest available egress point to the public Internet. On average, customer traffic takes less than 20 milliseconds (ms) to reach the public Internet. Point to Point (PTP) high capacity microwave links are used to connect the PoPs or roof tops. The microwave links are easily upgradeable for further capacity needs. Existing backhaul providers include Cogent and Level3. TWER uses a wide range of licensed and unlicensed spectrum frequencies. TWER guarantees (i) 99.99% network availability, (ii) less than 75ms round trip delay on the TWER backbone and less than 50ms round trip delay on TWER last mile, and (iii) packet loss less than 1% on the TWER backbone. The network is designed with multiple points of failure to prevent downtime. Multiple fiber links, wireless links and hardware redundancy are built into the core to support the SLA's guarantee stated above. PoP locations take approximately 12 weeks to construct, and can serve a 10 mile radius area. Qualifications: TWER has a decade of experience building and operating broadband networks. It has established wireless broadband networks in ten major metropolitan markets including:
New York City, Boston, Los Angeles, Chicago, San Francisco, Miami, Seattle, Dallas-Fort Worth, Philadelphia and Providence. TWER's track record in existing markets allows it to quickly deploy services to new areas utilizing existing resources, staff, equipment, management protocols and established operations. The TWER organization is 'shovel ready.' TWER senior management has a strong record of managing complex projects and successfully leading organizations during periods of rapid growth. It is supported by a highly skilled team of dedicated professionals who have significant experience operating a broadband network. TWER's 140 employees work in teams dedicated to Field Engineering, Customer Care, Engineering including Network Operations, Finance including Human Resources and Information Technology, and Sales including Sales Support. Cost and Match: The overall infrastructure cost is $11,580,818. The Company match is 30%. Subscriber projections: Over the term of the project, subscriber projections total 1627 for businesses, 1,407 for households, and 520 for community anchor institutions. Jobs created: According to the Council of Economic Advisers report of May, 2009 job calculation formula, TWER expects to create a total of 88 jobs. The company will hire 18 employees (direct jobs); its vendors, 38 (indirect); and 32 jobs will be created throughout the economy (induced). TWER believes that these estimates are very conservative.