

Broadband USA Applications Database

Applicant Name: City of Houston

Project Title: City of Houston Municipal Broadband Network Initiative

Project Type: Middle Mile

Executive Summary

The City of Houston (CoH) seeks BTOP grant funds to extend its “middle mile” municipal broadband network to provide greater access to users in underserved areas and public safety officers across the service area. The CoH has funded a municipal broadband network initiative broadband access to key field applications including supervisory control and data acquisition (SCADA) for the City's vast water utility infrastructure, citywide traffic control equipment (Intelligent Transportation System), parking pay stations, and 10 underserved Houston communities. However, the existing network does not provide citywide access, and the City presently relies on private-sector providers for much of its broadband access at higher costs to taxpayers than the City would see were it to operate its own network for municipal services. The grant request will enable CoH to expand the capacity and coverage of the network to provide middle mile WiFi public access to 17 additional underserved neighborhoods, citywide public safety hot zone access, and expanded WiMAX access for water/waste water facilities. Further, it will allow CoH to build the municipal broadband network and fund ongoing network operation and maintenance through cost savings that result from reduced/avoided commercial costs for wired/wireless service and sharing the cost across CoH departments and partner organizations. The proposed WiMax service will establish a network across Houston's nearly 640 square miles, while the planned WiFi hot zones will be sited in 27 underserved neighborhoods; these tend toward higher percentages of minority populations and generally have lower mean household incomes than are seen citywide. They cover much of the city's northeastern quadrant, and also occur on a more limited bases in the northwest and southwest areas of the city. The selected areas are based on statistical analysis of Houston's “super neighborhoods;” during the 1990s, the City divided its area into 88 of these units, the boundaries of which track mostly along major thoroughfares and geographic features. The super neighborhoods served by the proposed WiFi include more than 356,700 residents in 110,182 households, along with 20,000 businesses, according to 2000 Census data and City estimates. Overall, the WiMax will benefit all of Houston's 2,144,491 residents, 782,009 households and 187,124 businesses by improving broadband access for the public-safety agencies and other City functions that will utilize the network in providing public services. The WiMax service provide broadband service for key City departments across Houston's 640 square miles, enabling use by key public-safety functions and other service-related groups responsible for to 2,500 traffic management communication systems, 500 water and waste water facilities, 30 water automated meter reading collection sites (500,000 meter accounts), 100 fire stations, 10 police divisions, 51 library sites, 56 community centers, 100 community-based public computer centers, and 1,000 WiFi hot zones in neighborhoods where market research shows broadband subscribership at less than 40 percent of all households. The WiFi hot zones will

provide easily accessible service to over 448,076 residents and 17,183 small businesses in underserved areas as well as nomadic access for public safety access for 2,000 police patrol units, 2,000 public works units, 500 fire emergency response units, and 3,000 parking pay stations. The WiFi hot zones service is not a last mile service like cable or DSL service that is provided directly to residential subscribers. The service is free and operates like most WiFi hot spot services except the service is provided through outdoor access points rather than traditional hot spots installed in airports, restaurants, business centers, and hotels. Over the past year, CoH successfully operated a business/retail center and underserved community WiFi networks that include over 110 outdoor access points. The business center WiFi network was installed across the downtown Houston area to interconnect 1200 parking pay stations. Excess network bandwidth is made available to provide free Internet access for 1,200 user sessions per day. The community WiFi network includes 30 access points across a 4-square mile area that includes 60-thousand residents. Most of the area residents live at or below poverty – Houston has over 480,000 residents that live at or below poverty. While the network has not been in place long enough to substantiate its effects via market research, anecdotal evidence indicates the network has proven to be a catalyst for broadband adoption by residents and businesses alike. The community network currently provides service for over 500 user sessions per day but recent user growth is being spurred by the availability of affordable computer equipment offerings (i.e., netbook computers, iPods, and low-cost laptops). It has been widely established that broadband networks provide a constructive platform for addressing a variety of public challenges including healthcare, education, homeland security and workforce/economic development. Yet, at the beginning of 2009, many communities in Houston still have not adopted Internet broadband services. The significant increase/acceleration in broadband adoption for over 356,700 Houstonians will correspondingly create new technology-related jobs, access to online health care services, and increased demand for commercial broadband services. The increased demand for commercial broadband service is significant because it may drive the economic support for commercial network infrastructure upgrades (i.e., fiber) in underserved areas that are limited to copper-based DSL network service. The CoH does not intend to provide operator service through its middle mile network but any future backhaul service will address the non-discrimination and interconnection obligations by following guiding principles that include mandatory interconnection of all networks, reciprocity of interconnection charges among key user organizations, not discrimination across network operators for the same service, unbundling of interconnection charges, geographic de-averaging of interconnection charges, and exclusion of monopoly rents from interconnection charges. The CoH Municipal Broadband Network is a middle mile network that includes fiber optic, microwave, WiMax, and WiFi Mesh technology. The core network includes a fiber optic backhaul network that interconnects 10 core cell sites, microwave links interconnect 30 secondary cell sites, and WiMax 802.16e (FCC 3650 MHz licensed frequency) service is broadcast at each of the 40 cell sites. Over 80 percent of the CoH network service connections are provided through WiMax. Through its experience of building the existing municipal broadband network as well as building and maintaining road, water, and wastewater infrastructure for one of the largest cities in the country; the CoH is highly qualified to build, maintain, and operate the planned municipal broadband network. The overall cost of the municipal broadband network is \$18,759,038.42 including \$10,039,663.60 for network access, \$3,624,285.67 for network plant, \$1,692,048.18 for buildings, \$16,868.11 for CPE, \$187,200.00 for billing and support, \$160,000.00 for CPE, \$2,687,600.00 for professional services, \$29,422.86 for testing,

and \$321,950.00 for other up front costs. The overall users projection is approximately 150,000 users or 30% of the total underserved area public access population of approximately 500,000 residents. Additional users will access WiFi networks in other business (i.e., central business district, medical district, Herman Park, etc.) and retail centers across the city. Total expected users will be 200,000. The planned CoH municipal broadband network will create both direct and indirect job growth. The network buildout will create jobs for over 250 technicians, electricians, technical support, and construction personnel. Indirectly, 50% of the community users will purchase a new computer (i.e., netbooks, laptops, iPods, etc.) in the next 2-years, 300 new small business tech support jobs will be created (one for every 500 new WiFi users), 25% of online economic users have used the internet to seek material about how to improve their skills to qualify for better jobs, 41% of online economic users have sought information in the past year about jobs that might be available.