Executive Summary

a. Opportunity the proposed system seeks to address: For years, the technology staff from the City of Madison, the Madison Metropolitan School District, Dane County, the University of Wisconsin-Madison and Xiocom collaborated about problems with broadband access, capacity, cost and the lack of readily accessible dark fiber. The group desired to combine efforts on fiber runs to connect institutions, provide broadband access for vulnerable, at-risk populations of the metropolitan area, meet rapidly changing needs of public safety and improve the capacity and affordably to serve public schools through combined efforts of Public/Private Partnership. Until now, only a few small-scale projects have been implemented due to construction and deployment costs and annually declining public sector budgets. Furthermore, insufficient projected short-term return on investment has failed to entice the private sector to meet public sector needs and serve underserved areas, especially for dark fiber. This project seeks to address the need for consistent, affordable access to broadband services for anchor tenants, last mile providers and vulnerable populations through a Comprehensive Community Infrastructure comprised of private and public entities. The MUFN II network complements and extends to new service areas the University of Wisconsin MUFN Network approved previously by the NTIA, Easy Grant ID 3576. In addition MUFN II will interconnect with the WISC Network, Madison Internet Exchange (MadIX) and the Wisconsin Independent Network (WIN), which extends for 3,000 miles into Rural Wisconsin, Michigan, Minnesota and Illinois with 64 points of presence. b. A general description of the proposed funded service areas (location, number of communities, etc.): The Madison Unified Fiber Network II (MUFN II), is a NTIA BTOP Comprehensive Community Infrastructure, middle mile proposal which includes 5 PSFAs that reside primarily in the City of Madison, Wisconsin and extending into the communities of Waunakee, Verona, Middleton, Sun Prairie, McFarland and Cottage Grove. In addition through its interconnection with WIN it extends into many other rural communities as well. The network is designed to complement the MUFN Network and provide as many new anchor institutions as possible with affordable, scalable broadband to address rapidly increasing data transport requirements. c. Number of households and businesses passed: The MUFN II project proposed funded service area would provide 163 miles of fiber comprised of 139 miles of backbone and 24 miles of laterals. This service area will allow access to the network for approximately 2,922 businesses and 165,538 people in more than 73,074 households, many of whom reside in underserved areas. d. Number of community anchor institutions, public safety entities, and critical community organizations passed and/or involved with project (e.g., health care, education, libraries, etc.): This project has been crafted through a collaborative effort with the City of Madison and other cities including Maple Bluff, Middleton, Waunakee, Verona, Sun Prairie, McFarland, and Cottage Grove plus the Madison Metropolitan School District, and other
school districts including Middleton-Cross Plains, Waunakee Community, Verona, McFarland, and Cottage Grove, plus Dane County, the University of Wisconsin-Madison DoIT, DaneNet, the Dane County Jobs Center, the Wisconsin Mendota Mental Health Institute and the Dane County Landfill, UW Business Services-Verona, UW Health-Verona, the Dane County Highway Garage, UW Health-Fitchburg, Monona Community Center, and the Monona Library. The result of this collaboration is that 103 anchor institutions will have access to dramatically improved and affordable broadband access. These institutions include 59 schools, 1 library 3 healthcare facilities, 16 public safety facilities, 22 other government facilities and 3 community organizations. e. Proposed services and applications for the funded service areas and users: This project will provide a dramatic, long-term, cost-effective improvement of affordable middle mile broadband access for last mile providers and service for critical community facilities, anchor institutions and public safety entities. This project delivers on this claim by offering dark fiber connections on portions of the network. Participants will be able to connect to various ISPs at a minimum of 100Mbps and up to gigabit or 10Gbps Ethernet speeds, given hardware availability and cost factors. With fiber connectivity we foresee facilities connected by this project being able to almost infinitely scale up for the expected 20-25 year life cycle of the fiber. Individual institutions and other service providers at interconnect locations will be able to make their own choices in regards to speed based on their selection of edge or customer premise equipment that fits their needs and budget. We note several ISPs are prepared for such connections at affordable rates. f. Approach to addressing the nondiscrimination and interconnection obligations: Interconnect and non-discrimination policies will permit service providers to interconnect with this network at anchor institution locations as well as various handhold, and splice point locations along the route such that there are at least 100 locations where interconnection is available on a long-term basis. These connections will have best-effort, full line rate, non-discriminated use of fiber services without application, content prioritization or capacity limits. The fiber services will be able to connect to at least 10 Internet service providers. Xioicom and UW-Madison will prominently display non-discrimination, network management and interconnect policies on their websites and provide notice of policy changes to system users. In addition the long-term sustainability of the network and the objective of proving a economical solution to anchor institutions reinforces the need to develop strategic relationships with other last mile providers. Both Merimac Communications and WIN have committed to utilizing the network and promising preliminary discussions have be held with several other last mile providers. g. Type of broadband system that will be deployed (network type and technology standard): This project will install a fiber-optic cable wire line broadband system in service areas identified above. We offer point-to-point services with the ability to connect from any proposed funded service area to another funded service area. Ethernet (1Gbps/10Gbps) will be used at aggregation node locations with end-users providing their own network edge or customer premise equipment. h. Qualifications of the applicant that demonstrate the ability to implement and operate a broadband infrastructure, and/or be a sustainable broadband services provider: This project will be implemented and operated by Xioicom in collaboration with the University of Wisconsin-Madison and the City of Madison Traffic Engineering Department. Xioicom, dba Mad City Broadband (MCB) has been a provider of broadband services in the Madison area since 2006 through an 8 square mile wireless mesh. Over the last 6 months MCB has completed fiber deployments on a limited basis to connect new customers and anchor institutions. In addition Xioicom has developed and operates networks in Panama City, Florida and the Dominican Republic. The city brings over 20 years of conduit
and fiber construction knowledge as well as fiber restoration, permitting and planning expertise. UW-Madison has experience, systems, tools, process and personnel knowledgeable in deploying and operating fiber networks for over 20 years including: a large campus network of over 275 buildings, 75 miles of metropolitan networks in 5 cities and over 2600 miles of fiber in 6 states.

i. Overall infrastructure cost of the broadband system: Overall cost of this proposed broadband system is $10.2 million with cash and in-kind contributions of conduit and fiber totaling $3.33 million. This proposal requests an NTIA BTOP grant of approximately $6.9 million.

j. Overall expected subscriber projections for the project: By the end of year 3, 122 anchor institutions will be connected to the network through this middle mile project and 6,740 homes and 416 businesses will be connected to the network. By the end of year 5, 124 anchor institutions will be connected to the network through this middle mile project and 10,458 homes & 895 businesses will be connected to the network.

k. Number of jobs estimated to be created or saved as a result of this project: One of the key goals of this project is to use local resources in construction and on-going maintenance of the MUFN II Network. 91 Direct Job years 59 Indirect Job years 33 Induced Job years