Applicant Name: MOUNTAIN AREA INFORMATION NETWORK

Project Title: Community Cloud Computing for Broadband Adoption and Job Creation

Project Type: Sustainable Broadband Adoption

_______________________ Executive Summary _____________________

The Mountain Area Information Network (MAIN) is a 15-year-old nonprofit Internet service provider serving Asheville, N. C. and the surrounding mountain region, an area roughly the size of Vermont. MAIN launched in 1995 via a Technology Opportunities Program (TOP) grant from NTIA. MAIN proposes to create the nation's first community-based, cloud-computing platform for broadband adoption, job creation, community collaboration and social capital formation, and digital literacy/job-skills training for at-risk populations. The cloud will be designed in partnership with Red Hat, the NC-based global leader in cloud computing. Red Hat will produce a case study and assist MAIN in developing a replicable model to share with other communities. MAIN has a proven record as a technology partner for nonprofits, local businesses, government agencies, and underserved populations. Cloud hardware will be co-located with ERC Broadband, our sister nonprofit fiber network housed in the federal building in Asheville (also home to the National Climatic Data Center). This existing infrastructure, technology experience, and regional ties position MAIN for successful project execution. Cloud computing allows a user to operate software and services via remote servers rather than their own computer. MAIN's cloud computing platform will level the playing field for individuals, rural schools, local businesses, and nonprofits, which unlike Fortune 500 companies do not have affordable access to advanced IT expertise and infrastructure. The cloud will support digital literacy and job-skills training for vulnerable populations, including public-housing residents, at-risk students, citizens with disabilities, and special-needs students. The project is supported by a growing coalition of community partners which will conduct SBA training and outreach. Training will be supported by cloud-based tools, applications, and training modules, thereby reducing project operating costs, promoting coordination and cost-sharing among partners, and boosting project sustainability. Rugged 'thin-client' laptops will be configured for use only when connected to the cloud via MAIN's Wi-Fi network. The laptops include IP-based tracking so that participants can use them with a reduced concern for theft. SBA training will be conducted in public libraries, community centers, public housing, or anywhere MAIN's Wi-Fi signal is available. The cloud will spur job-creation and small-business incubation by providing advanced services like 'capacity on demand' bandwidth and computational power, as well as routine data-backup to prevent the catastrophic loss of business or personal data. In partnership with local banks and credit unions, we are exploring a 'buy local' rewards program tied to the banks' merchant credit-card service to encourage support of locally-owned businesses (this would be in phase-two of the project). While many of the cloud utilities we will offer are well-known to IT professionals, our cloud will cater to 'mom and pop' businesses, 'lone eagle' entrepreneurs, and small nonprofits which lack the expertise to use cloud services. More importantly, this community-based cloud will be an engine for 'social-capital formation,' an innovation and job-
creation driver often overlooked by economic development planners. Social capital is most often created where we live. While we may innovate in virtual spaces with colleagues thousands of miles away, innovation more often comes from ideas hatched over a beer after work, or on the sidelines at a youth soccer game. Seeds of innovation are planted years in advance when professionals share their expertise in their children's classrooms (see Malcolm Gladwell on Bill Gates in 'Outliers'). With digital technologies more affordable, powerful, and easier to use, innovation and social capital formation are no longer limited to communities with research universities or high-tech firms. This community cloud will provide a 'collaboration' platform for local job-creation in fields such as digital media production, web programming, and climate science. Local videographers can collaboratively edit 'shared-source video' using cloud-based editing and production tools. Web developers can form short-term collaborations to compete for projects otherwise beyond their reach. Greg Wilson is a climate scientist and entrepreneur who works from his mountaintop home in Madison County, N.C., where he is launching a venture to capture and market low-altitude weather data beyond the reach of National Weather Service Doppler radar. An independent entrepreneur, Greg has limited access to government or university IT infrastructure. The cloud will provide the capacity-on-demand and advanced services he needs and allow him to collaborate with high school science classes across the region. While the cloud will mainly offer open-source applications, it will also provide via multi-user licenses proprietary programs upon request, such as fundraising software, payroll processing, and tools for students with disabilities. By aggregating demand region-wide, we will offer rural schools advanced applications used by affluent school systems. As concerns over privacy grow, this local cloud will be increasingly valued as a privacy oasis. A 2009 Aspen Institute study, 'Identity in the Age of Cloud Computing,' noted the growing threat of 'data-mining' and other ways third-parties capture our personal information. The study asked: 'Is personalization something that is done to you or done for you'? It concluded that the future of our privacy rights will depend on 'user-centric' tools that allow us to determine the personal information we disclose based on context, such as health, business, education, or social networks. Red Hat's design will enable 'user-centric' control of personal information; it will also allow agencies to isolate and secure sensitive data (e.g., health and student information) as needed. This SBA project also includes three community-engagement projects: WNC Data Library, Healthy Living Portal, and Video-Conferencing-in-a-Box. * Western North Carolina is home to a wealth of GIS professionals, many of whom donate countless hours to regional environmental preservation efforts. For years, these GIS professionals have envisioned a regional data library that aggregates state and federal data, supplements it with local and regional data, and puts community-mapping in reach of small nonprofits and citizens. More recently, this vision includes 'crowd-sourced' data from citizens and local groups. For example, scientists watched in alarm as the woolly-adelgid infestation spread to virtually all the Hemlock trees in Southern Appalachia. Early on, scientists proposed a 'crowd-sourced' photo survey to track the infestation using the region's 4-H Clubs. But IT infrastructure for this effort was not available. This SBA project will make such rapid-response efforts possible. * Every four years, all public health departments in North Carolina must conduct a community health assessment. The Buncombe County Health Department, via its Health Partners coalition, envisions this quadrennial study as a 'living document' that deeply engages the community ' especially at-risk populations ' rather than sitting on the shelf for four years. Planners envision crowd-sourcing and community-mapping to deepen community engagement. With this SBA project, the planners will make their vision a reality. Red Hat will build the Healthy Living
portal around two major goals: helping at-risk populations gain access to healthy food, such as local produce; and access to physical activity, such as walking trails and exercise classes. The portal will include interactive maps and crowd-sourcing; training will introduce 'readiness-to-change' strategies. The Buncombe County Medical Society will coordinate outreach to physicians' offices and medical facilities so that doctors and nurses can engage patients during appointments to map healthy food and physical activity opportunities near where they live and work. * Western North Carolina has a wealth of nonprofits and public-interest agencies serving the entire mountain region. However, the region's size and rugged terrain makes region-wide travel and collaboration difficult, especially during winter months. Even under ideal conditions, the drive from Murphy in the west to Boone in the northeast can take six hours. As a result, regional initiatives are inevitably handicapped. To make matters worse, deep cuts in the state's travel budget prevent WNC representatives on statewide boards from attending meetings in other parts of the state. Our SBA project will demonstrate a 'video-conferencing in a box' solution for key regional organizations using a personal computer, video camera, and the open-source program, Ekiga. As early-adopters, these organizations will, in turn, help spread the use of these broadband technologies.