

## **FirstMile.US second set of comments to NTIA and RUS**

Docket Number 090309298-9299-01

### **Executive Summary**

FirstMile.US is 501c3 nonprofit organization headquartered in California. Since 2005, our mission has been to educate and advocate regarding the promise of big broadband in the United States. Our vision is that every member of the American public has access to big broadband, the 21<sup>st</sup> century pathway to a better overall quality of life.

We believe that widespread open broadband deployment will create jobs. There will be initial job creation directly from the ARRA funding and secondary job creation once broadband deployment is final and adoption has begun.

Initial job creation will be catalyzed if NTIA and RUS focus on funding of strategically located “open” middle mile infrastructure(s) paired with low-cost, regional “community connection points”. We believe this funding ideology will create the most initial jobs: 1) the federally funded jobs created to build the middle mile and 2) the locally funded jobs created to build the first mile to residences and businesses (made affordable by the federal investment in the costly middle mile and interconnection mechanism.)

Secondary job creation to meet the country’s ‘grand challenges’ -- healthcare, public safety, education, civic participation, energy independence/efficiency, and economic growth – will be enabled the adoption of broadband and through the other ARRA spending. Smart grids are one example of two ARRA funding projects – broadband and Smart Grid software – that can have a catalytic effect on each other.

We believe the NTIA and RUS should ensure that applicants not only understand the technology that they are proposing to deploy, but also the effects of that technology on the community. We have included a sample community readiness assessment to illustrate this idea.

## About FirstMile.US

FirstMile.US is 501c3 nonprofit organization headquartered in California. Since 2005, our mission has been to educate and advocate regarding the power and promise of big broadband in the United States. Our vision is that every member of the American public has access to big broadband, the 21<sup>st</sup> century pathway to a better overall quality of life.

## Broadband = jobs

### Initial Job Creation From ARRA Funding

In our earlier submission, we stated that through funding of strategically located “open” middle mile infrastructure(s) paired with low-cost, regional “community connection points” (also known as exchange/peering/transit points), the NTIA and RUS can effectively ameliorate the enormous costs that have prevented many local broadband buildouts. This middle mile buildout would have a secondary effect by creating the opportunity for many local service providers to expand their services and reduce their overall costs for provisioning and operating big broadband services. As such, we believe this funding ideology will create the most initial jobs: 1) the federally-funded jobs created to build the middle mile and 2) the locally-funded jobs created to build the first mile to residences and businesses.

Local job creation, in many of the underserved rural and urban communities, is important. ARRA funds should be leveraged to create a nationwide foundation of technology-savvy workforce, especially in underserved communities. Local networks reinvest local digital dollars in the community and create sustainable business models. Local network operators live and work in the communities they serve, so they are more responsive to local needs including finding the right services/applications/devices that create widespread broadband adoption.

### Secondary Job Creation from ARRA Funding

As job creation occurs, the role of broadband will be critically important but indirect. As with most things, there are many forces driving an outcome. In real life, drawing direct linkages between one input and one outcome is nearly impossible. The jobs boost will come over a period of time, not so much while the ARRA projects are in implementation, but rather as adoption increases and the benefits of greater connectivity spread through a community.

Secondary job creation to meet the country’s ‘grand challenges’ -- healthcare, public safety, education, civic participation, energy independence/efficiency, and economic growth – will be enabled the adoption of broadband and through the other ARRA spending. Smart grids are one example of two ARRA funding projects – broadband and Smart Grid software – that can have a catalytic effect on each other.

A Benton Foundation web posting called *Economic Development and Job Creation*<sup>1</sup> cites a number of studies from the early 2000s that discuss how deployment of universal, robust, affordable broadband will generate billions in economic development and create over a million jobs.

In 2003, Gartner conducted a study<sup>2</sup> for California that looked at the economic benefit of broadband deployment statewide at one Gigabit per second. Gartner found “A \$376-billion upside in gross state product (GSP) and 2 million additional jobs are estimated by 2010 with implementation of the focused One Gigabit or Bust broadband initiative.” [utilizing an ITU study, Gartner found,] “The ITU study illustrated that there is a positive correlation between level—or degree of sophistication—of communications and level of economic growth. As long as exchange of information plays an integral role in the economy, we believe the correlation continues as the level of sophistication deployed increases—that is, narrowband versus broadband communications.”

In addition, the Gartner study found there was widespread industry benefit from broadband deployment – many areas that are critical drivers of our nation’s economy.

The distribution of gain in gross California state product by industry from highest to lowest included the following vertical segments:

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<sup>1</sup> "Economic Development and Job Creation | Benton Foundation." Benton Foundation | The Benton Foundation works to ensure that media and telecommunications serve the public interest and enhance our democracy. <[http://www.benton.org/initiatives/broadband\\_benefits/action\\_plan/economic\\_development](http://www.benton.org/initiatives/broadband_benefits/action_plan/economic_development)>.

<sup>2</sup> One Gigabit or Bust Initiative, A Broadband Vision for California Summary Report. May 2003. Corporation for Education Network Initiatives in California -- CENIC. <[http://www.cenic.org/publications/archives/glossies/Gartner\\_Short.pdf](http://www.cenic.org/publications/archives/glossies/Gartner_Short.pdf)>.

- Retail trade
- Manufacturing
- Health care and social assistance
- Public education
- Services
- Business services
- State and local govt
- Wholesale trade
- Construction
- Finance and insurance
- Forestry, fishing, hunting and agricultural support
- Transportation and warehousing
- Arts, entertainment and recreation
- Computer programming services
- Utilities (communications included)
- Federal govt
- Private educational services
- Real estate, rental and leasing
- Hotels and other lodging
- Personal services
- Mining

## Community Readiness Assessment for the Deployment and Impact of Broadband

In 2006, FirstMile.US framed the idea a “hot broadband” community. A hot broadband community meets a variety of broadband connection characteristics that allow great strides in the types of applications used. These include the size of the bandwidth, latency (bottlenecks) as well symmetry (same speed both up and downstream). Most experts agree that we need at least 100 megabits of broadband bandwidth to provide big enough infrastructure for the kind of applications we expect in the next five years.

We believe the NTIA and RUS should ensure that applicants not only understand the technology that they are proposing to deploy, but also the effects of that technology on the community.

The following questionnaire was adapted from the 2004-2005 CENIC<sup>3</sup> work and is intended to benchmark a community readiness for participation in a broadband-enabled society. The statements below reflect a continuum of broadband readiness and signify a “hot community”. It covers many of the grand challenge applications and could be adapted further to encompass specific NTIA and RUS goals for ARRA funding.

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<sup>3</sup> On the Road to a Gigabit, A Self Assessment Guide for Communities. May 2005. Corporation for Education Network Initiatives in California -- CENIC. <<http://www.cenic.org/publications/archives/glossies/guide.pdf>>.

## FirstMile.US Hot Broadband Communities Questionnaire

### Communications

Communities must have advanced telecommunications services to compete in the 21st century.

This question focuses on the wired and wireless technologies that provide communications services to residential areas of your community.

#### *Residential:*

- At least 60 percent of the community has access to services with actual speeds exceeding 100 mbps downstream for less than \$50/mo.
- At least 60 percent of the community has access to services with actual speeds exceeding one gigabit downstream for less than \$50/mo.
- All new homes have fiber connections.
- Fiber has been pulled into most neighborhoods.
- 100 mbps or faster wireless service is available in some restaurants, hotels and the airport. Service plans are available for less than \$30/mo.
- One gbps or faster wireless service is available in some restaurants, hotels and the airport. Service plans are available for less than \$30/mo.
- Two mbps data service is available for phones and other mobile devices for \$50/mo.
- 100 mbps data service is available for phones and other mobile devices for \$50/mo.

This question focuses on the wired and wireless technologies that provide communications services to the business-related areas of your community.

#### *Commercial:*

- Symmetric speeds of at least 155 mbps are available for less than \$600/mo. to at least 60 percent of the business market.
- Symmetric speeds of at least one gigabit is available for less than \$600/mo. to at least 60 percent of the business market.
- At least 30 percent of offices have fiber optic connections.
- At least 60 percent of offices have fiber optic connections.
- Fixed wireless service with nominal speeds over 150 mbps is available for less than \$300/mo. for multiple users.
- One gbps fixed wireless service is available for businesses for less than \$300/mo. for multiple users.
- 100 mbps wireless service is available in some restaurants, hotels and the airport.
- One gbps wireless service is available in some restaurants, hotels and the airport.

- Two mbps data service is available for phones and other mobile devices for rates less than or equal to equivalent wired broadband service.
- 100 mbps data service is available for rates less than or equal to equivalent wired broadband service.

This question focuses on the quality of service and guarantees of network performance offered by wired and wireless services.

#### *Quality*

- Connections fail no more than once every three months.
- Connections fail no more than once a year.
- Most networks are self-healing. Residential service providers offer robust filters against spam and most viruses.
- All networks are self-healing.

#### **Governments**

Next-generation broadband offers local government the ability to do more with less -- to deliver better services to the public in less time and at less cost. This section assesses your community's use of and planning for advanced services and applications.

#### *The Network*

- At least 50 percent of offices have a one gbps LAN.
- At least 75 percent of offices have a multigigabit LAN.
- Wireless services are widely available.
- An intranet has been implemented for at least 60 percent of sites.
- An intranet is being widely used.
- Most facilities have a 100 mbps symmetrical connection to the Internet
- Most facilities have a one gbps symmetrical connection to the Internet

#### *Networked Places*

- Desktop video conferencing is used by some employees.
- Desktop video conferencing is widely available.
- Video communications are routine.
- Sensors and webcams monitor locations, such as rivers, that may be a threat to public safety.
- Some field workers use wireless networks to upload and download data in the field
- At least 40 percent of field workers use wireless networks to upload and download data in the field.
- Traffic signals are connected to a central control station
- The telephone system is being converted to VoIP to save money
- VoIP has replaced conventional telephones.
- Satellite images are used to speed emergency response.

#### *Applications and Services*

- Interactive applications such as customer relationship management, online GIS and video streaming, are in use
- Building inspections and violations are entered from the field
- At least 50 percent of customer payment transactions, such as building permits and parking fines, can be completed online
- Police in the field utilize wireless for routine activities
- Emergency response teams can reliably communicate across jurisdictions
- Council meetings are indexed and available for searching and retrieval online

#### *Leadership*

- Government is a role-model user of technology and plays an active role in collaborating with community groups to further the technology plans of the community.
- At least 50 percent of agencies have a formal policy that allows some employees to work at home at least one day a week
- The government has telecommunications, e-government and IT master plans in place to guide its efforts
- Innovative processes are used to collaborate with the private sector.

#### **Healthcare**

The healthcare industry is highly information-intensive. Doctors have to keep up with the latest research, patient records have to be easily accessible and accurate, and images, test results and prescriptions have to be delivered promptly, without errors. This section assesses the healthcare sector's understanding and usage of telecommunications services and technologies.

#### *The Network*

- At least 50 percent of offices have a one gbps LAN
- At least 90 percent of offices have a one gbps LAN
- One gbps networks connect most buildings
- One gbps or faster networks connect all buildings
- Fifty percent of facilities have a 100 mbps symmetrical connection at the main office
- Fifty percent of facilities have a one gbps symmetrical connection at the main office
- Wireless networks are available in many areas
- Wireless networks are widely available

#### *Networked Places*

- Internet-based videoconferencing is used to consult experts and for training programs
- Desktop videoconferencing is routine at all hospitals and major clinics
- Most equipment has been converted to digital
- Some patients are being monitored at home and at work via portable devices with wireless transmitters

- Remote monitoring of patients with chronic conditions is standard procedure
- Telephone systems have converted to VoIP to save money

#### *Applications and Services*

- At least 10 percent of providers allow patients to e-mail doctors
- At least 50 percent of providers allow patients to schedule appointments, view records and get advice online
- At least 75 percent of providers store patient records electronically
- At least 95 percent of patient records are stored electronically and routinely sent electronically to distant providers to aid diagnosis and treatment for emergency patients
- At least 25 percent of lab results and images are received electronically
- Telemedicine routinely is used to access specialists
- Wireless feeds in ambulances provide real-time patient assessment to ER staff

#### *Leadership*

- Work is underway by at least 30 percent of providers to begin online exchanging of test results and other medical records with appropriate parties
- Healthcare leaders are talking with the community about enhancing online services and using the network to improve community-wide healthcare
- Healthcare leaders see themselves as a key part of the community's overall economic strategy. Leaders are visible and active in strategy development and implementation
- Executives of the region's hospitals, clinics, insurers, employers and other healthcare providers are meeting regularly to find ways to collaboratively reduce the cost of healthcare without compromising quality of service

#### **K-12 Schools**

For our children to succeed in the new economy, the tools of the information age should be as comfortable to use as pencil and paper. The future health of the nation's economy depends on how broadly and deeply we reach a new level of literacy -- including academic skills, thinking, reasoning, teamwork skills and proficiency in using technology. This section assesses the education sector's understanding and usage of telecommunications services and technologies.

#### *The Network*

- At least 40 percent of personal computers are connected to a one gbps LAN
- At least 40 percent of personal computers are connected to a multigigabit LAN
- At least 50 percent of schools have a 100 mbps connection to the Internet
- At least 50 percent of schools have a one gbps connection to the Internet
- Wireless networks are available in many areas
- Wireless networks are widely available

### *Networked Places*

- Some students bring their own laptop computers to school. Some computer labs have been closed
- Most students bring their own laptop computers to school. Most computer labs have been closed
- 75 percent of classroom teachers have access to digital projection capabilities
- Many classrooms have large, flat-panel displays or projectors for video-based instruction
- Most middle and high schools have video programs that allow students to produce and share shows on a public network
- Some schools use wireless sensors to monitor energy consumption
- Most schools have converted their phone system to VoIP to save money

### *Applications and Services*

- 75 percent of schools have an interactive Web site that offers access to homework assignments and e-mail contact with teachers and administrators
- Schools use the network to connect students, teachers and parents, improve learning via online resources, and manage administrative responsibilities more efficiently
- 100 percent of teachers are trained to use the Internet for instruction
- Schools have ICT literacy requirements in place
- Parents and family members are encouraged to participate in student learning via e-mail and online applications
- Technology training is offered to the community
- At least 10 percent of seniors are taking college-level classes on the Internet
- At least 60 percent of high school students use online teachers and experts to explore subjects and develop learning plans

### *Leadership*

- At least 40 percent of schools have comprehensive plans for learning activities utilizing technology in the classroom
- At least 70 percent of schools have comprehensive plans for learning activities utilizing technology in the classroom
- New hires are required to have experience using new technology in the classroom
- Computer labs are made available to family and community members
- School districts actively promote ICT literacy to drive positive impacts on economic performance, skills and innovation in the classroom
- Schools take responsibility for continuing e-rate and other discounts
- The school system plays a vital role in raising the skill level and awareness of community and family members

## Higher Education

As it has been in the past, the education market will continue to be a hot arena for advanced networking technologies. Higher education led the way in bringing the Internet to life and will continue that tradition as the penetration of high-speed Internet and broadband networking into K-12 and other higher education markets rapidly approaches ubiquity. Communities must understand how to engage higher education in the community's economic success. This section assesses the higher education sector's understanding and usage of telecommunications services and technologies.

### *The Network*

- At least 40 percent of personal computers are connected to a one gbps LAN
- At least 40 percent of personal computers are connected to a multigigabit LAN
- 45 mbps wireless networks are available in most classrooms and in open spaces on campus
- 100 mbps wireless networks are available on 60 percent of campuses
- At least 25 percent of schools have a one gbps symmetrical connection to the Internet
- All schools have at least a one gbps symmetrical connection to the Internet

### *Networked Places*

- At least 25 percent of classrooms have been remodeled to include network connections and power outlets at every seat
- At least 50 percent of classrooms have been remodeled to include network connections and power outlets at every seat
- At least 50 percent of students bring laptop computers or other network-enabled devices to class
- At least 75 percent of students bring laptop computers or other network-enabled devices to class
- At least 30 percent of classrooms have video equipment for recording lectures
- At least 50 percent of classrooms have video equipment for recording lectures

### *Applications and Services*

- At least 75 percent of the faculty is trained to use the Internet for instruction
- 70 percent of classes use digital content and/or Web-based content for instruction
- At least 10 percent of undergraduate students take distance learning classes for specialized subjects and graduate-level research
- At least 30 percent of undergraduate students take distance learning classes for specialized subjects and graduate-level research
- All aspect of higher education are available through the network including instruction and administration

### *Leadership*

- Higher education and local business are working together to raise the skill level of the current workforce
- Community colleges are expanding their capacity by using distance learning technologies to reduce the need for classroom time
- At least 30 percent of colleges and universities are developing online classes to market to students in other parts of the country and the world
- The college/university sees itself as a vital partner in the community's economic development strategy and has formed partnerships with local businesses to provide skilled technology workers and innovative solutions
- Colleges/universities actively promote ICT literacy to drive positive impacts on economic performance, skills and innovation in the classroom

### **Libraries and Community Based Organizations (CBOs)**

Public libraries play a vital role in most communities by providing every resident with the opportunity to receive instruction and use the Internet for free. Nonprofit agencies provide a wide variety of services to the community including technology training, health services, religious services, children's sports and public entertainment. This section assesses the library and CBO sector's understanding and usage of telecommunications services and technologies.

### *The Network*

- At least 50 percent of public libraries and/or CBOs have a 100 mbps symmetrical connection to the Internet
- At least 50 percent of public libraries and/or 20% of CBOs have a one gbps symmetrical connection to the Internet
- At least 75 percent of CBOs use broadband
- Wireless networks are available in many areas
- High-speed wireless is widely available

### *Networked Places*

- Public libraries have added network ports or wireless networks and electrical outlets to carrels
- Most public libraries offer patrons a 100 mbps or faster wireless network
- 50 percent of CBOs with at least 5 employees have direct connections to the Internet
- Every CBO is connected to the Internet. Every computer can access the Internet via a LAN

100 percent of paid staff has e-mail accounts

- At least 20 percent of CBOs use VoIP to save money
- At least 50 percent of CBOs use VoIP
- At least 50 percent of computers have video cameras
- Most CBOs use affordable videoconferencing facilities

### *Applications and Services*

- Library patrons may review their accounts online and pay fines by credit card
- Library patrons can access the library online as a portal for other online information services
- Public libraries allow patrons to borrow e-books over the Internet
- Two-way videoconferencing is available to the general public
- 75 percent of CBOs have an informational website
- A unified CBO portal provides access to a broad range of community information and services
- 75 percent of local chapters are able to share data with the parent organization
- Some CBOs utilize an interactive service to further engage the community and make their services more broadly available
- 75 percent of CBOs accept online donations

### *Leadership*

- Libraries help the community understand copyright issues and how to protect privacy on the Internet
- New hires are required to have experience using new technology
- Libraries take internal responsibility for continuing e-rate and other discounts
- Libraries continue to upgrade their facilities to offer the community the next-generation in technology, services and training
- Libraries actively promote ICT literacy to drive positive impacts on economic performance, skills and innovation in the community
- Some CBO leaders are actively involved in community economic development issues and there are visible leaders taking a significant role in economic development
- CBOs have a defined role in supporting local economic development initiatives
- 75 percent of CBOs plan to use telecommunications services and technologies with the next year
- CBOs collaborate with one another regularly to share resources and provide up-to-date training to their employees and volunteers