



November 30, 2009

The Honorable Lawrence E. Strickling
Assistant Secretary for Communications and
Information
National Telecommunications and
Information Administration (NTIA)
U.S. Department of Commerce
1401 Constitution Ave., NW
Washington, DC 20230

The Honorable Jonathan Adelstein
Administrator
Rural Utilities Service (RUS)
U.S. Department of Agriculture
1400 Independence Ave., SW
Room 5135-S
Washington, DC 20250

RE: Broadband Initiative Program and Broadband Technologies Opportunities Program Joint
Request for Information
Docket Number 097141137-91375-05

Dear Assistant Secretary Strickling and Administrator Adelstein:

Empirix thanks you for the opportunity to respond to the Joint Request for Information (JRFI) issued by NTIA and RUS regarding the Broadband Initiative Program (BIP) and the Broadband Technologies Opportunities Program (BTOP) authorized under the American Reinvestment and Recovery Act (ARRA).

Empirix, a technology company based in Bedford, Massachusetts, helps organizations worldwide to accelerate the development, deployment and operations of new IP communications by validating the quality of user experience and overall performance of complex networks and applications. As deployment and usage of broadband, especially in remote areas, expands as a result of the initiatives funded under BIP and BTOP, it is important that funding recipients/service providers have the ability to ensure the reliability and service quality of broadband services provided through these important programs.

Ever since the growth of Internet access during the 1990s, deployment of Internet access to rural America has faced significant challenges. Those challenges have grown greater as broadband has become more important throughout the country and as part of the global economy. As noted by the United State's Department of Agriculture's Economic Research Service (ERS) in its August 2009 report ""Broadband Internet's Value for Rural America," rural areas having low and spreadout populations and/or demanding terrain have historically had difficulty attracting broadband service providers, and when they do provide service, it suffers significant reliability challenges.

In earlier years when dial-up service was the only option for rural subscribers, reliability challenges were the norm and were largely expected. Today's expectations have changed, however. Rural broadband users demand on the same reliable connections that their urban and suburban peers are able to depend on; unfortunately, that same level of reliability just is not there yet. Decades-old "wet copper" telephone lines and oversubscribed cable connections create mean that much of the part of rural America with broadband service has unreliable broadband service.

Given the mission of ARRA's broadband programs to rebuild and revitalize economic growth in rural America, providers, applicants, and RUS and NTIA must ensure that broadband projects funded and supported through BIP and BTOP address reliability – both by providing more reliable broadband access and planning now to ensure the reliability of that access into the future. The reasons for this are not just spelled out in the legislative text of the ARRA's broadband programs, but are demanded by broadband users in rural America: hospitals and doctors' offices who transmit patient records through telemedicine programs; students and educators who conduct distance education programs for learners of all levels; and rural businesses and farms who depend on connectivity as an important part of their operations. Each of these users, especially when combined with rural residents who depend on broadband access and all that it brings are the drivers of the rural economy and will help lead it to recovery.

Addressing this need for reliability is where tools like those developed by Empirix come in and is an area that both RUS and NTIA should focus on as it develops the funding request for the second round of BIP and BTOP applications.

The Empirix XMS solution allows service providers to monitor every connection across the network, from endpoint to endpoint, twenty-four hours a day, and seven days a week. By looking at every transaction, instead of averages or statistics generated from a network appliance, the service provider is able to address specific issues of a complex network in a timely manner. Such fast-response capabilities are common place in urban and suburban areas where Tier I service providers have made the investment in these tools to ensure high reliability of service for their customers. If rural broadband systems do not have similar reliability tools, many of the same walls to broadband use in rural areas that exist today will remain.

It is important to illustrate how the XMS solution works. As soon as the quality of the connection degrades below a provider's defined threshold, the network operations team is alerted so that they can take action. The XMS Solution not only assures that the end user is receiving quality service, it also provides the "real-time" feedback to the service provider that the network and its components are functioning as designed. Without such a reliability solution, it is up to the end user, the taxpayer, complaining that they are unsatisfied with the service they are receiving before the service provider can address the problem. Not only does this delay add cost to resolving problems, but it will also increase the number of unsatisfied customers. As the ERS report shows, reliability is a major factor determining whether or not rural Internet users subscribe or stay with commercially available broadband service; the stakes get even greater when such a broadband infrastructure is both brand new and funded by the Federal government. Deploying a monitoring solution as part of a new network, expansion of an existing network, or adding new IP based infrastructure to an old circuit switch network, all projects proposed under BIP and BTOP, assures that it is built properly and that it is providing the highest quality service to the end users.

Additionally, the use of a monitoring solution as part of ARRA-funded broadband projects will help RUS, NTIA, the Federal Communications Commission, Congress, and other interested parties make informed decisions about use of ARRA funds and future broadband policies. Monitoring solutions can be used to measure the actual benefit delivered based against what was originally proposed, helping ensure that projects have the broadest benefit. Monitoring Solutions will allow the service provider to accurately "size" the network and help implement changes when they are needed so that additional costs are not incurred unnecessarily and ensure that the benefits of the ARRA funding are being realized. Monitoring solutions allow service providers to keep their costs low in the hope they will pass this savings to the end user; this is an especially important consideration when providing broadband access to last-mile rural service areas.

Important from a cost-effectiveness perspective, monitoring solutions will ensure the highest level of service to the end user and will aid in broadband adoption rates. Monitoring solutions can be rolled out in a network for as little as \$55,000 per service provider, representing a low-cost solution when compared to the millions of dollars proposed under the majority of ARRA broadband projects.

As such, we propose the following changes to BIP and BTOP that would not only improve the reliability and service quality of services funded under the programs, but would enhance the long-term cost effectiveness of broadband projects, an important goal when taxpayer dollars are playing such an important role:

- Under the application's technical description and review portion, equal importance should be given to monitoring solutions as it is for the specific requirements for routers, servers, and switches.
- The selection of a monitoring plan should be considered as part of the agency's consideration of an applicant's organizational readiness to provide broadband service.
- All organizations receiving funds either must allocate a portion of funding for deploying a monitoring solution when rolling out new services or infrastructure or receive a higher score if their application includes and budgets for deployment of a monitoring solution.

Again, we appreciate your consideration of our comments and we are happy to provide additional information to your agencies as necessary. Empirix shares your commitment to improving broadband access to the nation, and we look forward to being partners as this effort moves forward.

Sincerely,



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