

This submission is provided by eCLIC, the Emergency Communications Leadership and Innovation Center, a Special Interest Group of the non-profit Wireless Communications Alliance (WCA). The WCA was created in Silicon Valley, California, in 1993, via an economic development-based collaboration between the Silicon Valley Defense/Space Consortium, the Joint Venture Silicon Valley Network and the City of San Jose, California. Both then, and now, the WCA serves as an open forum for experts and entrepreneurs to discuss and develop innovative wireless technologies. eCLIC is providing this submission because its focus is to collaboratively create “Connected, Protected, Educated Communities”. The key authors of this submission are: Charles Brown, Patrick Lanthier (eCLIC Chair), and Larry Press. These authors have spent decades innovating to connect people around the world. Please direct comments to: eclicsig@wca.org.

eCLIC respectfully suggests that NTIA and RUS focus their programs on strongly supporting proposals that apply Innovation, Collaboration and Leverage to efficiently create and sustain “Connected, Protected, Educated Communities”. An example of such a program is “LINC – the Livermore Info Net Collaborative”, in Livermore, California. LINC is a collaboration between eCLIC/WCA, the school district, police, fire, parks/community center, transportation, the California Emergency Management Agency, Lawrence Livermore National Laboratories, the Naval Postgraduate School, etc., that has completed high-speed wireless and Common Operational Picture (COP) development, deployment, testing, and multi-jurisdictional utilization. LINC uniquely leverages multiple projects and local, state and federal funding to provide both daily educational services and very advanced emergency response/recovery services for the community – including those with special needs (disabled, aged, etc.). See www.wca.org/sig/eclic.

1. COMMUNITY

The programs should focus on the creation of “community centric” projects that will lead to the creation of communications infrastructure and open access for all community organizations. “Community centric” projects are focused on local and regional units like a city, county, a school district, an economic zone, etc., and the un-served or underserved.

2. INNOVATION

At this time, our access networks are beginning a transition from copper to fiber and wireless. Now is the time to experiment with a variety of technologies and business models. Funds should be spent on innovation rather than relatively conventional deployment by incumbents.

3. COLLABORATION

To avoid “silo funding” effects and to leverage project funding, the program should avoid apportioning grants by category and focus on the creation of a horizontal, accessible infrastructure – an Internet or IP infrastructure – where multiple grantees and community organizations may jointly leverage expertise and resources. For example, coordination of projects addressing access, middle-mile and the backbone should be given consideration.

Proprietary technologies should be avoided where possible and used only if they support established Internet Protocol standards. The approach to infrastructure creation should be towards enabling use by all local participants. A project should be technically capable of supporting all current applications and services, and anticipate those yet undeveloped applications.

4. CONNECTIONS & LEVERAGE

Applicant's proposed projects should provide network bandwidth and open access to community infrastructure and services. Projects should be able to accommodate the broadest array of applications and network interconnection, with existing and new programs funded via BTOP, state programs, local programs and other infrastructure projects that will add to the goal of leveraging resources to provide end-to-end, low cost, open access to communications. The programs should leverage all existing infrastructure and programs to provide access to existing facilities, bandwidth and applications: municipal fiber, tunnels, rights-of-way, and light and traffic-signal poles.

5. STATES & LOCAL GOVERNMENTS

Both States and local governments must support broadband-friendly public policy frameworks (e.g.: facilities use, collocation, antennae placement, etc.). While leverage is clearly beneficial in working with the States, the program should avoid adding unnecessary overhead and administrative costs to projects from state authorities. The maximum amount of funds possible should be allocated to the grantees actually doing the work.

The States can play a vital role in providing access to existing facilities, aid and encourage leveraging innovation into the public safety and State communications infrastructure, and encouraging experimentation and risk by providing service contracts to successful projects. The States can also coordinate their various programs for economic growth and commerce by coordinating and cooperating with projects engaged in the implementation of infrastructure. Like the local governments, the States can also become "anchor tenants" of community networks where State operations are present.

Finally, the States can aid and support local training programs. At a minimum, new employment will be generated through the deployment of the infrastructure. Training programs will be required for people to learn to maintain and support the network infrastructure, and certainly to meet the demand of disparate communities to modify the applications environment to their respective needs. State training and educational facilities can be leveraged for these purposes. The States can serve a useful role in coordinating projects that will enable government services, and establish subsequent commercial support for such projects. State IT budgets can benefit from such cooperation.

6. ELIGIBILITY

Prospective grantees should have a solid background and demonstrable experience innovating in the fields of IP-based broadband networking, communications, and community-centric collaboration. For example, a wireless project should include

principals with prior innovation experience in the wireless industry, thereby creating a greater likelihood of scalability and viability. Those with prior startup or entrepreneurial experience in the commercial/community environment should be more eligible than other applicants.

7. SELECTION CRITERIA

Given the implosion of the financial environment for funding innovation and the creation of new companies, special consideration should be given to projects that purport to expand the economic base through technical, business model, and community-centric innovation. Funding for these projects is generally unavailable and BTOP can play a crucial role in “jump starting” this process. With seed-funding grants, experienced entrepreneurs will find paths to commercial viability while adhering to key principles and concepts established by BTOP. BTOP should encourage risk-taking in developing new products and services that will enable the creation of viable, cost-effective, and scalable communications infrastructure for communities, large and small.

Priority should be given to projects that leverage other Recovery Act projects (and, other past, current and future Federal, State, Regional, and Local projects), such as those that enable the distribution of services in healthcare, education, public safety, energy, water, environmental preservation and self-sustaining community broadband infrastructure. Further, each applicant should consider how a community can establish and maintain its own infrastructure while leveraging applications and services from multiple disciplines: telehealth, distance education, training, energy allocation and grid information, etc.

8. MECHANICS

Grants should flow immediately and focus on innovators, experimentation and the real-world deployment of broadband communications infrastructure at the community level. Product development may be best accomplished on the innovator’s home turf and then expanded through trials to unserved and underserved communities. Expertise can then be transferred via training programs. Test-beds and “skunk works” operating in liberalized, regulation-free zones should be given special consideration.

9. EXPANDING PUBLIC COMPUTER CENTER CAPACITY

Each community will require a network and computer applications capability based on network and computing technologies. While these costs may be eventually subcontracted to the “cloud” via cloud computing services, expertise to interface with cloud services and to manage them is required. It is also possible for communities to develop their own expertise to provide information technology services to other communities and create new value propositions through leverage and linking. Each region might have a “learning hub” with distributed learning capability. Each community network proposal should contemplate the establishment of a computing center for training, education, and as the “heartbeat of the digital community.” Training centers can be co-located with community network operations centers, education centers, emergency operations centers and branch locations which encompass wider regional deployments.

10. INNOVATIVE PROGRAMS TO ENCOURAGE SUSTAINABLE ADOPTION

A truly innovative BTOP program can transform a community. In the product innovation area, the criteria should be that the product has been built and deployed in a community network environment, and that it works. A second criteria might be that the product can provide a real-world, existence-proof through deployment to local businesses and generate a revenue stream. A third criteria would be that the community is a major stakeholder and has significant influence over the destiny of the network.¹

While products and programs may be developed and successfully deployed and demonstrated, each should be accompanied by a conceptual plan showing how it will scale and be sustainable without subsidy.

Basic measures of network success that may be used are the following:

- a) broadband network access availability to all community institutions.
- b) broadband network access available to commercial ISP's at appropriate prices for delivering services to the community, in the event the community is unable to develop its own IP services infrastructure.
- c) network infrastructure to existing LANs in libraries and other community service locations via the community digital center, whether virtual or physical, for:
 - i. public safety applications and at a minimum, a link to the Dept. of Homeland Security,
 - ii. all educational institutions,
 - iii. all libraries
 - iv. all critical public services: fire, police, local government.
 - v. local commercial entities

Open access enables the integration of existing community elements and provides an open platform to enable seamless participation from newly connected community elements, and from locations that will vary by community. The members of the community who build and integrate the applications and run the network will all need to be supported and trained.

11. FINANCIAL CONTRIBUTIONS BY GRANT APPLICANTS

Any innovative, startup product development and deployment operation requires the maximum amount of funding available. Any proposal that changes the underlying technologies that will enable new levels of scalability, particularly in the wireless domain, should be given full financial support.

¹ Larry Press, 2009. "Broadband policy: Beyond privatization, competition and independent regulation", *First Monday* Volume 14, Number 4 - 6 April 2009, at <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2374/2159>

12. TIMELY COMPLETION OF PROPOSALS

All proposals should show demonstrable results within two years.

13. REPORTING AND DEOBLIGATION

Grant funds should be deobligated only under fraudulent circumstances. Reports should include plans and projections for scaling and sustainability, and actual achievements.

14. DEFINITIONS

“Unserved” means there is no broadband access, where “broadband” means “better than dial-up or satellite”. “Underserved” would be any area lacking a digital hub and/or broadband infrastructure connecting LANs inside the rooms and grounds of schools, libraries, public safety and governmental institutions. Depending on the size of the community, “underserved” communities would include those with only one service provider or costs above the median for access to similar services in the nearest urban community with one million or more in population. Any community lacking a digital hub would also be classified as “underserved.”

15. SPEEDS AND REACH

BTOP need not establish threshold transmission speeds. However, symmetrical bandwidth at the highest possible data speeds should be encouraged. Communities should be enabled to be responsible for their own networks and services. This will be accomplished through training of people who live in the community, and through the creation of network externalities² once the digital hub and broadband network are established, and openly accessible.

16. MEASURING THE SUCCESS OF BTOP

The success of BTOP should be determined by its end-user impacts and/or end-user transformations. The key BTOP evaluation question is: Is the program enabling democratized innovation as generally proposed by Eric von Hippel³, with a focus on enabling all members of the community to enjoy the benefits of, and be active participants in their own fully “Connected, Protected, Educated Community”.

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² See http://en.wikipedia.org/wiki/Network_effect

³ Eric von Hippel. 2005. “*Democratizing Innovation.*” MIT Press, Massachusetts Institute of Technology, Cambridge, Massachusetts. Downloadable book at <http://web.mit.edu/evhippel/www/democl.htm>