

HOW TO GET A GRANT: Part 1

UNDER THE NTIA BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM (BTOP) AND THE RUS BROADBAND INITIATIVES PROGRAM (BIP)

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Summary

Unserved and Underserved Communities Come First

The long-awaited guidelines for grants provided by the Rural Utilities Service (RUS) and the National Telecommunications and Information Administration (NTIA) were finally released last week in a Notice of Funding Availability posted on the BroadbandUSA.gov website. RUS will run the Broadband Initiatives Program (BIP) and NTIA will run the Broadband Technology Opportunities Program (BTOP).

The focus of this federal largesse is on rural communities, places that are currently “unserved” or “underserved” by broadband providers, but the way those terms have been defined is problematic. For instance, urban and semi-urban areas, regardless of need and affordability of broadband, will probably not qualify for federal grants (except for the very limited public computer center and broadband adoption programs). Neither will a rural community where there is a small number of wealthy holiday home owners but a vast majority of poor households who cannot afford the expensive broadband options. The current rules are a big disappointment for cities, big and small, that were hoping to jump-start broadband access programs that have been put on hold or are suffering because of lack of funding on the local and state level.

On the other hand, because the need for broadband connectivity in small rural communities across the United States is so acute and the funds available are limited (only \$1.2 billion for the NTIA and \$2.4 billion for the RUS, for a country the size of the United States), difficult choices had to be made.

- **Unserved area:** 90 percent of households in one or more contiguous census blocks do not have terrestrial broadband service (fixed or mobile) at speeds of at least 768 Kbps downstream and 200 Kbps upstream
- **Underserved area:** an area in which one or more of the following factors is present -
 - 50 percent or less of the households have access to terrestrial broadband service with speeds of at least 768 Kbps downstream and 200 Kbps upstream;
 - no fixed or mobile provider advertises speeds of at least 3 Mbps downstream;
 - 40 percent or less of households have a broadband subscription.

The bizarre aspect of these rules is that the NTIA has been “ruralized”. You’d think there would be a division of labor: RUS would handle rural areas and the NTIA would focus on non-rural communities. But that’s not the case. The NTIA has only \$50 million and \$150 million for projects that could take place in cities: public computer centers and sustainable broadband adoption. The rest, \$1.2 billion for broadband infrastructure, must be allocated to largely rural areas which is the domain of the RUS.

The good news is there are **three funding rounds**. This is the first and indeed, the NTIA may revise the rules for the second and third rounds if enough people complain and if the NTIA fails to meet the objectives laid out in the American Recovery and

Reinvestment Act of 2009 (ARRA). The second round is scheduled to begin in the autumn of 2009. That's why this guide is Part 1. I will publish Parts 2 and 3, when those rounds begin. I will also publish corrections to this guide, updates and other interesting tidbits on Muniwireless.com so make sure you check the website regularly.

Problems with the grant guidelines and the NTIA's review process

- (1) **The eligibility requirements impose a huge burden on small rural communities and many will not be able to meet them unless they already have a project ready to go and have put together a lot of data and documents:** For example, a legal opinion stating the town or county can deploy their own broadband network, certification by a professional engineer for the system design and project timeline (3 years from date of grant) if requesting more than \$1 million, a detailed business plan, data on whether the census blocks are indeed unserved or underserved (much of this information is in the hands of the telecom operators who have not made it public), pro forma financial analyses related to sustainability of the project and more. In many small towns and rural counties, officials have other jobs and government service is a part-time task. They do not have staff to gather together the data and prepare applications at the level of detail required by the guidelines.
- (2) **The guidelines favor regional and national telecommunications carriers:** because of the onerous application process, only larger organizations that can put together detailed documentation in such a short period of time (or who already have the required data) -- one month to be exact (between 14 July and 14 August 2009) -- will be able to do so. Even community organizations and non-profit entities are at a disadvantage given the nature of existing rules.
- (3) **The definition of underserved will exclude rural areas that have a small wealthy holiday home-owning class, but a sizeable number of poor people who live there year-round.** Think of a resort town by a lake or an ocean, or one in a rural wooded area, where wealthy people have holiday homes. If a mobile operator advertises (but does not really deliver) 3 Mbps downstream broadband service *and* 45 percent of the households have no access to broadband (at the minimum of 768 Kbps down and 200 Kbps UP) *and* only 45 percent have a broadband subscription (fixed or mobile), this is not considered to be an underserved area. There are a lot of communities in the United States that fit this description and the wealthier individuals in these towns don't really care because they can afford mobile/fixed broadband. They certainly don't want to pay more taxes to fund a broadband network because they are not affected and they don't live there year-round anyway. What the rule does is to prevent the public funding of a competitor to the fixed/mobile broadband operator who is already serving the affluent holiday home owners.
- (4) **For projects in urban areas to get funding, they need to fall under either: (a) the Public Computer Center or (b) Sustainable Broadband Adoption.** For both of these categories, the NTIA will not apply the unserved and underserved requirements. They will look at whether "vulnerable populations" are being served by the proposals. Unfortunately, the funding available for these two projects is paltry: \$50 million for public computer centers and \$150 million for sustainable broadband adoption.
- (5) **BTOP applicants with matching funds in excess of 20 percent of their project costs get favorable treatment.** This rule favors projects that already have cash commitments lined up - either from private enterprises, your state or local government, a non-profit institution or your own money. This "favoritism" rule works in favor of those who have lined up partners or people who have deep pockets. On the other hand, the NTIA wants applicants who have some "skin in the game."

(6) **NTIA is not willing to pay people to review grant applications.** For a program of such great importance and complexity, I do not understand why the NTIA refuses to pay highly qualified individuals to review proposals. I have criticized this policy on Muniwireless: <http://www.muniwireless.com/2009/07/08/ntia-seeks-volunteers-for-grant-applications/>. The agency prefers to use patriotism, not cash, to persuade people to help weed out applicants. My fear is that private companies that want their equipment and services to be used in these projects will “volunteer” people they know - not necessarily employees but independent consultants - to be grant reviewers. After all, they’re the only ones who can work for “free” (while being “compensated” on the side), especially at such a time-consuming task. The potential for corruption and abuse is immense.

*** There is one consolation:** RUS and NTIA are required to post a list of everyone who applies for a grant with a description of the application, status, name of entity receiving funds, quarterly reports, etc. That means the public can see who’s getting the money and what they’re using it for. I will monitor the applicants and recipients, and post regular reports on Muniwireless.com. We can discuss whether their projects deserve to get funded.

Now let's get started . . .

How much money is available

Not much given the size of the United States. Ultimately the amount of money being allocated to broadband infrastructure is terribly disappointing and most analysts believe that the net effect of these projects will be minimal. Still, for the places that receive these grants, it could mean the difference between having a sustainable community life or emptying out forever.

TOTAL FUNDS AVAILABLE: \$4 BILLION

BIP: \$2.4 billion

- Last mile deployments: \$1.2 billion (\$400 million in Remote Areas and \$800 million for loans and grants in non-Remote Areas)
- Middle mile deployments: \$800 million in loans or a combination of loans and grants.

BTOP: \$1.6 billion

- Broadband infrastructure: \$1.2 billion
- Public computer centers: \$50 million
- Sustainable broadband adoption projects: \$150 million

Application and Review Process

Go to www.broadbandusa.gov to download the application packages for electronic and paper submissions. If you are asking for more than \$1 million (grants, loans, combination of both), you must file electronically (with exceptions for disabled people and hardship cases). Read the [Notice of Funding Availability](#) (NOFA) which contains all of the rules for BIP and BTOP. It is a 121-page document filled with bureaucracy but you must read it if you are serious about applying.

BIP and BTOP have a two-step review process. In the first step, they review applications for completeness and eligibility. Applicants deemed eligible for the second step will be invited to submit more information. Applications will receive points based on certain criteria (like a beauty contest where contestants are given points for talent, bathing suits and evening gowns).

Important: For the second part of the BTOP application process, the Governor's Office of each state will get a list of the applications in the state and have the opportunity to make recommendations about who gets funded. If you have contacts in the Governor's office of your state, now is the time to cozy up to them.

Deadlines

Date	What's Required
14 July 2009 - 14 August 2009	Applications being accepted, latest at 17:00 Eastern Time.
15 October 2009	Last day for providing information to the NTIA and RUS in the second phase of the application process or 30 days after NTIA/RUS asked you for more information, whichever is later.
7 November 2009	NTIA and RUS to announce the winners.
Within 30 and 60 days	BIP and BTOP award documentation made available to winners within 30 days of award announcement. Award winners expected to comply with documentation within 60 days of award announcement.
2 years of award date	Winners must complete their projects substantially within 2 years from the award date.
3 years of award date	Projects must be fully completed within 3 years from award date.

A few key definitions

Term	Definition	Comment
Broadband	Providing two-way data transmission with advertised speeds of at least 768 Kbps downstream and at least 200 Kbps upstream to end users or providing sufficient capacity in a <i>middle mile project</i> to support the provision of broadband service to end users.	This definition of broadband is utterly ridiculous but if they had defined broadband as a minimum of 3 Mbps up and down (which is what many other developed countries are getting), they'd be inundated with hundreds of thousands of applications. Note also that advertised speeds are rarely the speeds most users actually experience. That's the broadband provider's marketing department hallucinating on the job.
Community anchor institutions	Schools, libraries, healthcare and medical providers, public safety entities, community colleges and other institutions of higher education and other community support organizations and agencies that provide outreach, access, equipment and support services to facilitate greater use of broadband service by vulnerable populations, including low-income, unemployment and the aged.	These institutions got screwed by the NTIA's rules governing broadband infrastructure projects, which require them to provide broadband service to end users, in effect forcing them to act like a telecom operator which they cannot do. May have a chance if they limit their project to a very small area where they can provide end user services. Can still qualify for the public computer center and sustainable broadband adoption project funds.
Last Mile project	Any infrastructure project the predominant purpose of which is to provide broadband service to end users or end-user devices (including households, businesses, community anchor institutions, public safety entities and critical community facilities).	NTIA requires that these projects be located in unserved and underserved areas. Urban areas need not apply.

Term	Definition	Comment
Middle Mile project	A broadband infrastructure project that does not predominantly provide broadband service to end users or to end-user devices, and may include interoffice transport, backhaul, Internet connectivity or special access.	This includes fiber networks and WiMAX backhaul projects but they must also targeted to unserved and underserved areas. If you can show that you already have customers lined up for this type of network, your chances of getting a grant increase dramatically.
Public Computer Center	A place, including but not limited to community colleges, libraries, schools, youth centers, employment service centers, Native American chapter houses, community centers, senior centers, assistive technology centers for people with disabilities, community health centers, and Neighborhood Network Centers in public housing developments, that provide broadband access to the general public or a specific vulnerable population, such as low-income, unemployed, aged, children, minorities and people with disabilities.	Together with Sustainable Broadband Adoption, this is where urban projects can receive BTOP funds. Unfortunately, the amount is quite small.
Rural area	Any area, as confirmed by the latest decennial census of the Bureau of the Census, which is not located within: 1) a city, town, or incorporated area that has a population of greater than 20,000 inhabitants; or 2) an urbanized area contiguous and adjacent to a city or town that has a population of greater than 50,000 inhabitants. For purposes of the definition of rural area, an urbanized area means a densely populated territory as defined in the latest decennial census of the U.S. Census Bureau.	Beware: when we throw around the term “rural area”, it’s not necessarily what BIP and BTOP consider a <i>rural area</i> for the purposes of grant applications. Pay very close attention to these definitions to prevent your applications from being rejected.

Term	Definition	Comment
Underserved area	<p>A proposed funded service area, composed of one or more contiguous census blocks meeting certain criteria that measure the availability of broadband service and the level of advertised broadband speeds. These criteria conform to the two distinct components of the Broadband Infrastructure category of eligible projects—Last Mile and Middle Mile. Specifically, a proposed funded service area may qualify as underserved for last mile projects if at least one of the following factors is met, though the presumption will be that more than one factor is present: 1) no more than 50 percent of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed (set forth in the definition of broadband above); 2) no fixed or mobile broadband service provider advertises broadband transmission speeds of at least three megabits per second (“mbps”) downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed funded service area is 40 percent of households or less. A proposed funded service area may qualify as underserved for Middle Mile projects if one interconnection point terminates in a proposed funded service area that qualifies as unserved or underserved for Last Mile projects.</p>	<p>Excludes a lot of communities in cities or located at the periphery of a city.</p>
Unserved area	<p>A proposed funded service area, composed of one or more contiguous census blocks, where at least 90 percent of households in the proposed funded service area lack access to facilities-based, terrestrial broadband service, either fixed or mobile, at the minimum broadband transmission speed (set forth in the definition of broadband above). A household has access to broadband service if the household can readily subscribe to that service upon request.</p>	<p>Clearly applies to rural communities.</p>

Please read through the complete set of definitions carefully in the NOFA.

“Net neutrality” requirements

BIP and BTOP applicants must follow the Nondiscrimination and Interconnection Obligations (which I loosely call “net neutrality” requirements) as set forth in the FCC’s Internet Policy Statement (FCC 05-151 adopted on 5 August 2005). These obligations **apply for the life of the facilities used in the project and to any contractors or subcontractors** used to operate the network. That means if you get a grant to set up a network and hire a service provider to run it and the service provider does not comply, you will be breaching the loan/grant agreement.

- You must not favor any lawful Internet applications and content over others.
- You must display network management policies prominently on the service provider’s web page, for example, if you block illegal content, put caps on bandwidth usage, allocate capacity, etc.
- You must connect to the public Internet directly or indirectly (the latter referring to middle mile projects): private closed networks will not receive funding.
- You must offer interconnection where technically feasible without exceeding current or reasonably anticipated capacity limitations on reasonable rates and terms. Ah, those floppy terms: “technically feasible”, “reasonably anticipated”, “reasonable rates”, provide the opportunity to be *creative*.

Last Mile coverage obligations: where to get census block information

If you are proposing a “Last Mile” broadband infrastructure project, you must identify the **census blocks** to which you will be delivering broadband service and prove that they are indeed *underserved* or *unserved*. But where do you find this information about your census blocks? Unfortunately, much of that data sits with the carriers who are not about to give it out so freely, especially to someone who will compete with them. Some large cities have done these studies and some states probably have this data, but BTOP and BIP don’t care about cities so that does not help you. In many cases you will have to do your own survey. This takes time, so get started now.

Waivers to the “Buy American” rules

Recognizing that most equipment used in broadband networks are made outside the United States, the NTIA and RUS have granted waivers to the “Buy American” requirements imposed by ARRA. Grant recipients can now buy foreign-made equipment to their hearts’ delight without running afoul of the regulations:

- Broadband Switching Equipment – Equipment necessary to establish a broadband communications path between two points.
- Broadband Routing Equipment – Equipment that routes data packets throughout a broadband network.
- Broadband Transport Equipment – Equipment for providing interconnection within the broadband provider’s network.
- Broadband Access Equipment – Equipment facilitating the last mile connection to a broadband subscriber.
- Broadband Customer Premises Equipment and End-User Devices – End-user equipment that connects to a broadband network.
- Billing/Operations Systems – Equipment that is used to manage and operate a broadband network or offer a broadband service.

This list does not include fiber optic cables, coaxial cables, cell towers, and other facilities that are made in the US and are available from local producers. If you want to use equipment that is not covered by the waiver, you can seek an exemption and the agencies will review your case.

NTIA Waiver:

http://www.ntia.doc.gov/frnotices/2009/FR_BuyAmericanWaiver_090626.09.pdf

RUS Waiver:

<http://www.rurdev.usda.gov/arra/BIPBuyAmerican.pdf>

BIP Cheat Sheet

- Project is eligible if you can show it will be *substantially complete* within 2 years from date of issuance of the grant, loan or loan/grant combination and finished within 3 years of the date of the award. Substantially complete = when you have received 67 percent of the funds.
- If you are asking for more than \$1 million, you must have a **professional engineer** certify your system design and project timeline.
- Meet “net neutrality” and last mile coverage obligations (see discussion above).
- At least 75 percent of service area qualifies as a *rural area* without sufficient access to broadband service (that is 75 percent is unserved or underserved).
- RUS will not fund more than one project in a geographic area; if they get more than one application, they will fund the one that receives the highest score (the *beauty contest points system* explained later in this document).
- Upon approval of the grant, loan or loan/grant combination, your project costs must be fully funded: **you must present evidence of all funding, other than the RUS award**, to support the project.
- Demonstrate your project is financially sustainable:
 - For projects funded by loans and loan/grant combinations: this means you can generate enough revenues to cover your expenses, have enough cash flow to service debts and meet the minimum Times Interest Earned Ratio (TIER) requirement by the end of the forecast period.
 - For projects funded by grants: you can generate a minimum current ratio of one by the end of the forecast period and demonstrate positive cash balance for each year of the forecast period.
- You cannot use your award for: (a) operating expenses of the project (including fixed and recurring costs), (b) costs funded prior to the date on which the application is submitted (with the exception of eligible pre-application expenses), (c) costs of an acquisition, purchase of facilities or equipment of an affiliate, etc., (d) the purchase or lease of a vehicle other than those used in construction or system improvements, (e) funding broadband facilities leased under the terms of an operating lease, (f) a merger or consolidation of entities, (g) costs of acquiring spectrum via an FCC auction or secondary market purchase.
- You must get a DUNS number - this is the Dun and Bradstreet Universal Numbering System at www.dunandbradstreet.com and get a Central Contractor Registration (CAGE) number at www.ccr.gov/StartRegistration.aspx.
- All applications to serve a 75 percent or greater rural area MUST be submitted to RUS if you want to be considered for BIP funding.
- BIP infrastructure categories:
 - Last Mile Remote Area projects: must provide broadband to the end user; BIP will fund up to 100 percent.
 - Last Mile Non-Remote Area projects: provide broadband to the end user; must show you will serve 75 percent or more unserved or underserved rural areas.

- Middle Mile projects: must connect at least two points without predominantly providing broadband to end users **and** must be capable of bringing broadband to eligible service areas; must benefit 75 percent or more unserved or underserved areas.

BTOP Cheat Sheet

- Project is eligible if you can show it will be *substantially complete* within 2 years from date of issuance of the grant, loan or loan/grant combination and finished within 3 years of the date of the award. **Substantially complete = when you have received 67 percent of the funds and met 67 percent of the project milestones.**
- If you are asking for more than \$1 million, you must have a professional engineer certify your system design and project timeline.
- Meet “net neutrality” and last mile coverage obligations (see discussion above).
- Must fulfill at least one of the statutory purposes of BTOP.
- Must provide **matching funds of at least 20 percent** of the total project cost, but you can get a waiver and explain why you need BTOP to fund 100 percent of your project. **Important:** if you can show matching funds, in cash, of more than 20 percent, your application will get more favorable treatment. Federal funds cannot be used as matching funds unless allowed by federal statute.
- Show that your project cannot go forward without federal assistance: this is where you provide evidence of denial of funding requests from public or private institutions, lack of other options, project not feasible without grant financing, etc.
- Your budget is reasonable given your proposed technical solution, scope of service.
- You cannot use your award for: (a) operating expenses of the project (including fixed and recurring costs), (b) costs funded prior to the date on which the application is submitted (with the exception of eligible pre-application expenses), (c) costs of an acquisition, purchase of facilities or equipment of an affiliate, etc., (d) the purchase or lease of a vehicle other than those used in construction or system improvements, (e) funding broadband facilities leased under the terms of an operating lease, (f) a merger or consolidation of entities, (g) costs of acquiring spectrum via an FCC auction or secondary market purchase.
- You must get a DUNS number - this is the Dun and Bradstreet Universal Numbering System at www.dunandbradstreet.com and get a Central Contractor Registration (CAGE) number at www.ccr.gov/StartRegistration.aspx.
- **For Public Computer Centers and Sustainable Broadband Adoption projects:**
 - Show how the grant will provide broadband education, training, support to community anchor institutions (or to agencies that serve vulnerable populations), improve access to broadband by public safety agencies, stimulate broadband demand.
 - For broadband adoption projects, show the barriers to adoption in your area, the demographics of the population you want to serve and an innovative solution.
 - You cannot use your award for purposes not used predominantly in broadband provision, awareness, training, access, equipment and support.
- **BTOP infrastructure categories:**
 - Last Mile projects: must provide broadband to unserved or underserved areas, and to end users. **Note:** you get extra points if you can show your project delivers substantial health care, educational, economic and public safety benefits relative to the cost of providing the service. That means **if your project is multi-use**, your chances of getting an award increase.
 - Middle Mile projects: must be for unserved or underserved areas; predominant purpose is NOT to serve end users but to provide backhaul, special access interoffice transport, etc.

The Beauty Contest Scoring System

As mentioned earlier, the reviewers will score applications based on certain criteria. The more you meet the statutory objectives, the higher you score.

BIP broadband infrastructure projects

- The more people you deliver broadband to in unserved areas, the more points you get. For middle mile projects, if you can show it will result in giving people more broadband options (for example, increasing the number of broadband providers in a region), you get extra points.
- Extra points awarded for cooperation with other governmental development programs and ARRA projects, e.g. Department of Energy Smart Energy Grid, Department of Transportation Capital Assistance for High Speed Rail Corridors and Intercity Passenger Service program, etc.

BTOP infrastructure, public computer center and sustainable broadband adoption projects

- You get more points if:
 - Your project addresses broadband infrastructure + public computer center + sustainable broadband adoption, and/or if your project is multi-use, that is, if it enhances health care, education, and children's needs. Additional points if you can collaborate with other programs such as the DOE Smart Energy Grid, DOT High Speed Rail, HUD Public Capital Housing Fund, etc.
 - You offer much more than the definition of broadband (768 Kbps down, 200 Kbps up). **High latency networks will be disfavored.**
 - The service is affordable and you exceed the non-discrimination/interconnection obligations, and if you allow other service providers to utilize your network, thereby giving end users more choices, even better. This applies to last mile and middle mile projects.
 - The project is sustainable beyond the funding period via a business plan, 3rd party funding commitments, etc.
- For middle mile projects, the more end-points and points of interconnection you have, the better. Network capacity and ability to scale the network are very important.
- For computer center projects: capacity, hours of availability, training programs offered and qualifications of the teaching staff matter.
- For broadband adoption projects: number of new users, cost per new user, innovation.

What happens if you get through to the second stage of the review process?

BIP and BTOP will give points to various aspects of each proposed project and those receiving the highest scores will advance to the second stage. The second stage is the "due diligence" phase where you will be required to submit even more information. That means when you're cobbling together your documentation for stage 1, be as organized as possible and prepare to submit more in stage 2. The second stage will be announced no earlier than **14 September 2009**.

Details of what you need to submit in stage 2 are in the NOFA and include completed environmental questionnaires, as well as environmental authorizations and permits required under the National Historic Preservation Act, the Endangered Species Act, etc. Burdensome? Indeed.

This is the end of Part 1 of the Muniwireless guide. As I mentioned earlier, the NTIA will have two more funding rounds where they may amend the rules to address shortcomings in this first funding round.

In the next section, I provide examples of rural projects that may give you interesting ideas for your own project. You can take elements that work for you, discard the rest. **Please check Muniwireless.com regularly for updates and news about BIP and BTOP.**

Don't forget to download . . .

* Notice of Funding Availability (NOFA)

<http://broadbandusa.sc.egov.usda.gov/files/BB%20NOFA%20FINAL%2007092009.pdf>

* New America Foundation: Summary, Concerns and Strategic Guidance regarding NOFA for BTOP (highly recommended)

<http://www.newamerica.net/files/Summary.%20Concerns.%20and%20Strategic%20Guidance%20regarding%20Notice%20of%20Funds%20Availability%20for%20BTOP.pdf>

A Few Interesting Rural Projects

These are some of the projects selected by the European Commission for their excellence and innovation. They presented at the 2007 "Bridging the Broadband Gap" Conference in Brussels at the European Commission's headquarters. The EU has a program for broadband projects in rural areas and many of the requirements are similar to BIP and BTOP. The criteria for selection: effectiveness in bringing broadband to rural areas at reasonable prices, delivering access to vulnerable populations and innovative services that go beyond providing end-user Internet access, the same goals stated in the NTIA and RUS grant application materials.

I will post other interesting projects on Muniwireless.com. Right now, these are the ones I can think of which stand out and I hope they give you good ideas for your own projects.

(1) Djurslands.net: Rural Internet at 1/3 of City Prices

Djurslands.net is an umbrella organization established in 2001. It covers eight municipalities in the Djursland region of Denmark. The population density in this area is one of the lowest in Denmark with 57 persons per square kilometer. Djurslands.net leases fiber capacity and extends the network via wireless nodes set up mostly by volunteers. A lot of the equipment they use to extend wireless signals is home-made (very cheap, innovative and effective). The network covers an area of almost 10 kilometers in diameter and provides between 4 Mbps to 10 Mbps upstream and downstream broadband speeds to 7000+ households and small enterprises. The cost of providing broadband to this area is one-third of the cost to provide broadband in a city (measured over a 4-year period). They use a lot of local volunteers to set up the network and keep it running.

Details about Djurslands.net:

- They set up the network because 25 percent of Djursland was excluded from commercial providers' broadband plans.
- Costs: 100,000 EUR per year for equipment to the first 4 fiber gateways from Djursland to the Danish Internet Exchange center on Sealand. Because of these yearly costs, they had to get paying subscribers immediately.
- Each new household pays a one time fee of 268 Euros, which can be paid over 24 months (13 EUR per month). Half of the one-time fee is used to buy customer premises equipment (CPE) and the other half is their contribution to buy needed infrastructure equipment to access the fiber backbone and lease fiber capacity.

- They created the Djursland International Institute of Rural Wireless Broadband (DIIRWB) which teaches lessons learned from the deployment (contact them to get the latest data on size of network and number of households served).

For more information go to:

- Djursland International Institute of Rural Wireless Broadband: <http://www.diiirwb.net/>
- Best Practice Paper: Rural Internet at 1/3 of City Prices: many useful links at the end of the document <http://www.scribd.com/doc/17328432/Rural-Internet-Access-at-OneThird-City-Prices>
- Djurslands.Net article in GovTech: <http://www.govtech.com/dc/articles/123811>
- Djursland presentation on Authorstream: <http://bit.ly/YtBho>

(2) Broadband Initiative Carinthia (Austria)

Carinthia is the southernmost province in Austria. It's very mountainous and rural. The area is 9,536 square kilometers (3,682 square miles). The population is 560,000. Population density is approximately 59 persons per square kilometer (152 persons per square mile). The region wanted to bring broadband with speeds up to 10 Mbps and encourage residents, especially the elderly, to subscribe to the service.

Details about the project:

- Broadband Initiative Carinthia (BBK) received €55 million: €7 million from the European Union and €48 million from private investment. The money is used to bring broadband coverage to 98% of the region with backbone connections and backhaul for transmitting data. The network is open to all providers.
- The project leaders want to attract new businesses to Carinthia and bridge the urban-rural digital divide.
- They want to raise awareness and create demand among the residents, and roll out triple play (TV, Internet, voice) services.
- They target the over-50 age group via training activities provided by the Carinthian Development Agency and the education network.

For more information, go to:

- BBK Broadband Initiative Carinthia: www.kaerntenclick.at
- European Commission write-up on the Carinthia project: http://ec.europa.eu/information_society/istevent/broadband_gap_2007/cf/exhib-detail-more.cfm?id=1177

(3) Scottish Outer Hebrides (middle mile) network

The Connected Communities Network operates in the six main islands of the sparsely populated Outer Hebrides of Scotland. The project provides a platform for broadband services to end users and institutions such as hospitals, post offices, remote learning centers and schools.

Details about the project:

- Network consists of an IP backbone network with a 5.8 Ghz wireless LAN capable of delivering up to 54 Mbps to subscribers; masts are shared among providers or built where none exist.
- The project aggregates demand from individual users as well as from public and private institutions.
- Cost: €7.6 million, half of which is funded by the European Regional Development Fund.

For more information, go to:

Connected Communities: <http://www.connectedcommunities.co.uk/>

European Commission write-up on the Outer Hebrides project:

http://ec.europa.eu/information_society/istevent/broadband_gap_2007/cf/exhib-detail.cfm?id=1371

Directory of Vendors and Partners

I would like to thank the following companies for sponsoring this guide. They are also listed in the online Muniwireless Vendor Directory, each with a Company Profile Page. The vendors mentioned in this directory are looking to provide equipment, software and services to people who are embarking on BIP and BTOP projects.

ALVARION

[Alvarion](#) (NASDAQ: ALVR) is the largest WiMAX pure-player with the most extensive WiMAX customer base and over 250 commercial deployments around the globe. Committed to growing the WiMAX market, the company offers solutions for a wide range of frequency bands supporting a variety of business cases. Alvarion equipment is used in many rural and urban wireless network projects around the world.

Company Profile page:

<http://www.muniwireless.com/resources-page/vendor-directory/company-profile-alvarion>

AZALEA NETWORKS

[Azalea Networks](#), headquartered in Silicon Valley, California, is the first company to deliver a truly scalable and intelligent wireless broadband mesh infrastructure through the combination of Layer-3 wireless routing technology and a multi-radio system. Azalea's family of mesh and point-to-multipoint routers provide 2.4 GHz Wi-Fi access, 5 GHz for backhaul connectivity, and 4.9 GHz for public safety use in North America.

Company Profile page:

<http://www.muniwireless.com/2009/04/07/company-profile-azalea-networks/>

BRIDGEWAVE COMMUNICATIONS

Founded in 1999, [BridgeWave Communications, Inc.](#) is the leading supplier of wireless gigabit connectivity solutions. BridgeWave's point-to-point wireless bridges are widely deployed in mainstream enterprise and service provider network applications and are poised to play a key role in the migration to 4G mobile network backhaul.

Company Profile page:

<http://www.muniwireless.com/2009/05/21/company-profile-bridgewave-communications/>

FIRETIDE

[Firetide](#) is the leading provider of multi-service mesh networks for industrial and municipal applications. Firetide provides a secure, high performance wireless mesh infrastructure and access solution for video surveillance, Internet access, public safety networks, and temporary networks wherever rapid deployment, mobility, and ease of installation are required. Designed for seamless indoor and outdoor operation, Firetide mesh networks securely handle concurrent video, voice, and data applications, making it ideal for large scale municipal and enterprise networks.

JOHNSON CONTROLS

[Johnson Controls](#) (NYSE:JCI) is the global leader that brings ingenuity to the places where people live, work and travel. By integrating technologies, products and services, JCI creates a more comfortable, safe and sustainable world through products and services for more than 200 million vehicles, 12 million homes and one million commercial buildings. JCI specializes in helping local government entities around the country develop, fund and implement sustainable practices. JCI helps to show communities how to fund projects out of the savings they generate.

Company Profile page:

<http://www.muniwireless.com/2009/04/21/company-profile-johnson-controls/>

NOVARUM

[Novarum](#) provides strategic consulting and analysis for the wireless broadband data industry. Its focus is on the key technologies of Wi-Fi, WiMAX and 3G cellular data. Novarum's analysis and reports cut through the confusion of this overlapping range of broadband, IP-based, licensed and unlicensed wireless data technologies. Novarum offers a unique insider perspective from pioneers in the wireless networking industry who have practical experience bringing wireless products to market. It provides guidance through the maze of technologies, standards, markets, regulatory and business issues that characterize the wireless industry. Novarum offers consulting services to private and public entities applying for, deploying and managing broadband projects funded by the NTIA and RUS.

Company Profile page:

<http://www.muniwireless.com/2009/04/18/company-profile-novarum/>

PEPWAVE

[Pepwave](#) is a leader in designing, manufacturing and marketing specialized wireless broadband devices and solutions. Pepwave's products have been deployed by service providers, small and medium businesses, and municipalities around the world. Pepwave was established to focus on new product development initiatives and continues to bring innovation to the marketplace. Pepwave's products are used in many municipal wireless broadband networks to extend and enhance the range of wireless signals.

Company Profile page:

<http://www.muniwireless.com/2009/04/20/company-profile-pepwave/>

TROPOS NETWORKS

[Tropos Networks](#) is the worldwide market leader in wireless broadband IP networks used to build greener, safer, smarter communities. Tropos solutions are used as a regional communication network foundation for deploying one or many high-value applications that cost effectively increase mobile worker and operational efficiencies while reducing operating costs. Tropos delivers the highest levels of reliability, scalability and security in the industry and has an installed base of more than 750 customers in over 30 countries.

Company Profile page:

<http://www.muniwireless.com/resources-page/vendor-directory/company-profile-tropos-networks/>

ZHONE TECHNOLOGIES

[Zhone Technologies, Inc.](#) (NASDAQ: ZHNE) is a global leader in multi-service access network solutions, serving more than 700 of the world's most innovative network operators. The company offers the industry's only fully-integrated portfolio of MSAP, FTTx, EFM and metro Wi-Fi access technologies, improving network agility and reducing the costs of delivering the full spectrum of access services, including residential and business broadband, VoIP, and High-Definition IPTV over copper, fiber, and wireless. Zhone is headquartered in California, and its MSAP products are all manufactured in the USA, in a facility that is emission, waste-water, and CFC free.

Company Profile page:

<http://www.muniwireless.com/2009/07/13/company-profile-zhone-technologies/>

****If you want to be included in future editions of this guide and get a Company Profile page on Muniwireless.com, please email esme@muniwireless.com.**

Directory of Consultants

The consultants listed below provide services to public and private entities that are applying for funding under BIP and BTOP.

CRAIG SETTLES (SUCCESSFUL.COM)

[Successful.com](http://www.successful.com) and lead consultant Craig Settles offer three services for organizations seeking to deploy broadband services successfully through grants and other funding sources.

- Business plan/grant proposal review makes sure you've crossed the NOFA t's and dotted the i's.
- Broadband Success Partnership offers you funding, financial services and strategic planning.
- On-site Workshops assist you if you decide to skip ARRA Round 1 funding to revamp your business case and pursue Round 2 funding.

Go to: <http://www.successful.com/services/munibb.html>

BROOKS CONSULTING LLC

Brooks Consulting LLC is a wired and wireless Internet Protocol (IP) consulting firm based in the metro Washington DC area. Our philosophy for designing, deploying, and operating IP networks is simplicity. We advocate IP network simplicity to our clients to enable them to service their portfolio, optimize their network, and reduce CAPEX/OPEX costs associating with the IP network life cycle. We specialize in the design and deployment of WiMAX IP Core and backhaul networks. We also have experience in evaluating WiMAX network components and integrating these elements into the IP Core. Need technical help in the NTIA/RUS grants process? Brooks Consulting LLC can help. We can build a wireless ISP from the ground up using Tier 1 ISP best practices that maximize scalability in processes, systems, and infrastructure.

Go to: <http://brooksc consulting-llc.com>

PROJECT SAFETY BUSINESS AND TECHNOLOGY CLUSTER

ProjectSafety is a St. Petersburg, Florida-based technology and business non-profit organization focused on the deployment and future proof testing of municipal (and community) wireless broadband networks. Its unique broadband wireless Community Network Integration (CNI) model addresses both technology requirements and business needs in offering a single network solution for both the public and private sectors. Larry Karisny, director of ProjectSafety, has extensive experience in municipal broadband deployments.

Contact: Larry Karisny, 727-735-8258 (lkarisny@gmail.com)

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