

BCOE BRIEF

The Road to Ubiquitous Broadband:

**BCoE Brief on Community
Broadband Networks**

The near ubiquitous availability of satellite broadband has been touted by some as a way of providing broadband into unserved or underserved areas. Satellite broadband truly has near universal availability but it also comes with flaws that preclude it from having the universal appeal of wired broadband:

- Performance is limited, especially on the uplink
- High latency limits or prevents certain latency sensitive applications
- Weather interference can make the service unreliable
- Oftentimes higher cost than wired broadband with stricter data cap limits

To bridge the broadband divide that continues to be endemic in many areas of our country **community broadband networks** have been proposed as a solution. A community network is a broadband Internet access service provided either solely by a local government or in partnership with a private entity. Its goal is to provide high performance and affordable broadband Internet access in areas that do not have a private broadband provider or where the incumbent provider is unable or unwilling to provide reasonable levels of reliability, performance and cost.

Access to roadways, water, electricity and sanitation services for many years has been considered a necessity to ensure a basic standard of living in the United States. This acknowledgement has driven the almost ubiquitous availability of these services in our country, provided by both private and public providers. Equivalently our rapidly expanding information-based economy that has become entrenched in our daily lives creates a growing need for access to high performance and affordable broadband. Those voices arguing for broadband to be viewed not as a commodity but as a luxury are increasingly being drowned out by the growing consensus that access to broadband is a necessity that must be available to all our citizens. Though having broadband Internet does not guarantee a community prosperity or well being, the lack of it almost assures that it will be left behind in our future economy.

Community Driven Broadband Networks

The question is how best to achieve ubiquitous broadband; is it something that must be driven by the government, should market forces dictate or must it be a hybrid driven by private market forces but with the government stepping into areas that are falling behind, helping achieve full availability with a specified level of quality and affordability everywhere in our country. Community or municipally driven broadband networks are one way for local governments to assure their citizens access to high performance and affordable broadband, when private market forces have been unable or unwilling to provide it.

Broadband networks deployed and operated by municipalities or communities to address a lack of availability, performance, affordability or reliability have generated much controversy on their feasibility and advisability. Opinions and analysis tend to be polarized, falling on the extreme pro or con side of the discussion. BCoE believes that there are valid viewpoints on both sides of the argument and there is no single “one size fits all” resolution. This paper presents the facts on both sides of the argument in order to facilitate discussion and decision-making on the advisability of deploying a community owned broadband network. The federal government can establish how broadband is defined; however it is up to each community to plan locally and decide what is best for its citizens from both a societal and financial standpoint.

Driven by Societal Benefits — Not Profits

Community owned broadband networks tend to be driven by perceived societal benefits to the community and not profit or return to investors. The majority of those that have been successfully deployed however strive to operate under a financial model that is not a burden on taxpayers or that results in a reduction of other important services provided by the local government. Proponents of these networks list a variety of reasons that support their deployment as a way to provide broadband to their citizens:

- Lack of broadband availability in their community: This can be due to the economics of deploying broadband into sparsely populated rural environments or small and possibly disadvantaged municipalities far from population centers where return on investment is poor for private providers and investors
- Broadband available but with insufficient performance for the needs of the community: This often is brought about by an unwillingness on the part of the incumbent provider to invest in upgrades to their existing network because of a perceived insufficient return on investment, other more pressing areas of required investment or desire to maximize return for their existing investment.
- Broadband available but too expensive for the demographics it serves: Primarily caused by a lack of competition, high cost of deployment or a low population density. The question is whether the price of the service is driven by the desire to maximize profits on the part of the provider or by the cost of providing the service into an area of high deployment cost.

What a community or municipality must quantify is the value of societal benefit that is to replace the profit motivation and validate the financial risk. For private networks, that benefit is the financial return to investors from deploying or upgrading a broadband network. In cases where a private network provider does not exist or an incumbent is not investing on improvements, the municipality must quantify the societal benefit of investing in its own broadband network. This can be in the areas of societal equity, community health, economic wellbeing and growth, education and self-governance; with each community having different needs and aspirations that must be evaluated.

So to recap:

For privately run networks: benefit = financial profit, funded by private investment

For municipal networks: benefit = societal gain, funded by government (or some combination of government / private funding in the case of partnerships)

Community Broadband — Costs & Benefits

As an example: if the cost of deploying a 1 Gbps network reaching 95% of homes and businesses in a community costs X dollars and the cost to reach the remaining 5% is 2X dollars can the community afford the significant increase in cost to reach those remaining 5% of homes or businesses? The societal benefits of ubiquitous high performance broadband are clear; the question is whether a community or municipality can afford to fully provide it, or will it have to compromise the ideal in the name of financial prudence? This analysis is no different than one taken by private providers, just with different ideals in mind.

The question that must be addressed by a community is at what point do the costs of deploying a broadband network — such that it is ubiquitous, enjoys high performance and is reliable — outweigh the social benefits. This requires a community to not only place a value on the societal improvements but also understand the financial impact the deployment brings on the community. Quantifying the societal benefits such that a proper cost-benefit analysis can be accomplished becomes a key metric in the decision-making process. Though a municipal deployment need not normally have a profit motivation, it must provide value in areas like economic stabilization and growth, the health and well being of its citizen population, the education of its younger population or the many other reasons broadband can improve a community.

Broadband service providers, like most companies in private industry, are driven by the return on their financial investment. In general (though there are always exceptions) the reason an area is unserved or underserved by broadband is that private industry has decided that the financial return of deploying or upgrading is not sufficient to satisfy the needs of their investors. A community however can and must look beyond financial return with a vision to improve the long-term economic wellbeing of their community. Communities and municipalities must take the longer view and address the erosion of existing industries, the recruitment of new industries, the improvement of their educational infrastructure and the emotional wellbeing of their citizens. These are topics of longer-term focus and not normally on the radar of private providers that have a shorter-term investment horizon.

Community Broadband for Unserved Areas

The decision for a community to build a broadband network in an area lacking broadband is obvious, often with little or no resistance due to the lack of a private incumbent. A community should however still be prepared for resistance at the state level by large Internet Service Providers (ISP) that feel threatened by communities building their own broadband networks, even if they themselves are unwilling to invest in that area. One possible alternative to a fully public project that should be investigated is a **public-private partnership** with a reputable entity as a means to reduce risk and obtain capital. Multiple models with varying degrees of investment and control have been used with success, ranging from public-led contracting to private-led investment, well described in an **overview** published by the Institute for Local Self-Reliance.

Community Broadband for Underserved Areas

The more controversial decision and one that brings the most heated rhetoric is the deployment of a community network as an overlay into areas already served by a private broadband provider. Situations a community feels might warrant taking such a step include the cost of the service being too high, the level of service poor, areas that lack service or the investment for future by the incumbent minimal. Many times these are the locations that have 1st generation broadband, such as DSL, and now find themselves on the wrong side of the gigabit divide with no foreseeable path for the future, where next generation applications for broadband are no longer sufficiently served by the existing infrastructure.

Community Broadband Networks — One Way to Bridge the Digital Divide

It is important that the municipality or community wishing to deploy a broadband network first understand why the incumbent service provider is not investing in their existing infrastructure. Are they just not paying attention, is the perceived return on required investment not sufficient, are there some local ordinances that discourage investment, are they waiting for a technology that is lower cost than fiber to the home such as 5G or is there a corporate desire for maximization of profit over investment?

Once the reasons are understood attempts should be made to entice or work in partnership with the incumbent to have their broadband service enhanced and/or expanded. Perhaps just the threat of a community deploying a broadband network might be sufficient motivation for an incumbent to invest. A community should view their own investment into an overlay municipal network as a path of last resort after all attempts to work with an incumbent are exhausted as there are multiple ways the construction or operation of a community broadband network can be derailed:

- Incumbent aggressively challenges the planned community network in court thereby delaying its start, sometimes by many years
- Incumbent (usually a large ISP that has corporate pricing flexibility) uses aggressive pricing to reduce the cost of their services, perhaps below breakeven to limit take rates for the community network
- Incumbent reacts to the increase in competitive landscape by upgrading its network, reducing subscriber motivation to cancel their service and thereby limiting the available user base for the community network
- The area of coverage has an insufficient population density to support multiple providers with the community network unable to attract sufficient subscribers to become financially self-sufficient

These points are not meant to dissuade a community from taking proactive steps to provide broadband to their citizens when private providers have failed them, but to illustrate what can happen and to plan for them upfront. Many successful community network providers have faced similar challenges and overcome them.

In Conclusion

Communities and municipalities have invested in broadband networks as a way to connect their citizens to the digital society, many with great success. For communities thinking of doing the same, the key is to research and understand what has worked for those communities and factor those elements into their unique situation of demographics, topology, economy and legacy broadband, then decide what's best for its citizens. BCoE believes that with proper planning, community broadband networks are a viable means to get on the right side of the digital divide, when other paths have proven elusive.

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