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Navigating Partnerships for Rural Broadband:

A Discussion Guide for Municipalities and Rural Providers



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Contents

I.	OVERVIEW.....	1
II.	VALUE PROPOSITION AND BROADBAND GROWTH.....	3
A.	What Will This Community Do With Broadband?	3
B.	How Does the Municipality View Its Role?	4
C.	What Drives Costs in This Community?	5
III.	A PRIMER FOR DISCUSSION	6
A.	Technology	6
B.	Leveraging Each Other's Strengths	7
V.	CONCLUSION.....	9
	Selected Bibliography and Endnotes	10

This “e-paper” explores opportunities for rural communications providers to participate in consultative, managerial or other roles in municipal broadband network initiatives. Many of the considerations highlighted in this article are also applicable to potential partnerships with rural electric cooperatives or other entities that are not traditionally telecommunications service providers.

When published, the article was intended to be an “open source” document to which readers were encouraged to comment and contribute, particularly when they could share impressions from their work in the field. This paper is not intended to be a “how to” guide, per se, but is rather intended to offer examples of approaches that municipal governments and rural communications providers can explore when considering broadband deployment in as-yet unserved areas.

Endnotes (and, in electronic versions of the article, hyperlinks) provide references to supporting resources that may be explored for more detailed information. A list of selected bibliographic references and other source materials is provided at the end of this article, as well.

I. OVERVIEW

Broadband is a growing force for economic development, [education](#),ⁱ [health care](#),ⁱⁱ [services for the elderly](#),ⁱⁱⁱ [agriculture](#),^{iv} public utilities and other vital community functions. Rural areas face special challenges in the prospects of enjoying access to state-of-the-art broadband networks. In most areas, small populations, coupled with low population densities, undermine the typical business model necessary to support capital-intensive infrastructure deployment, and many areas remain unserved. Federal policies require telecommunications services in rural and insular areas that are “reasonably comparable” in both price and quality to those that are available in large urban areas.^v Historically, small locally operated communications providers have seized the opportunity to combine their unique commitment to their communities with public and private capital opportunities to deploy high-tech networks. Many rural areas, however, are served by large telecom providers that do not have the same incentives of locally operated companies. Whereas a small commercial company or cooperative builds

upon its local commitments and its roots in the community, publicly traded firms must ensure sufficient returns on investments satisfy shareholders, and large-scale investment in high-cost, sparsely populated rural areas could be perceived as inconsistent with those goals. Accordingly, a disparity among services that are available to residents of different rural regions, based upon the type of the incumbent provider (*i.e.*, a small provider or large, publicly-traded corporation), has been characterized as a “rural-rural” divide. Although some federal government steps have been taken to address these issues, it is not yet clear that those regulations will result in a robust fiber buildout capable of supporting complementary fixed and mobile broadband services in many rural regions. Quoting a Pew Research Center study, the FCC reported that two-thirds of Americans believe that the lack of a high-speed internet connection at home would be a “major disadvantage to finding a job, getting health information or accessing other key information.” The FCC concluded that consumers require access to both services.^{vi} However, even where a predominantly wireless solution may be a preferred solution due to terrain or other factors, wireless networks at their core require a wired infrastructure^{vii} to convey traffic.)

Noting these disparities and the potential hazards of being “left behind” as technological capabilities and consumer expectations grow, many municipalities are investigating the prospect of a network that would be owned or operated, or both, by a municipality; similar ventures have been explored by electric cooperatives. Intense debate surrounds such projects, and several years ago the FCC stepped into the fray, issuing [landmark rulings](#)^{viii} to strike down state laws that limited some municipal broadband networks. Those decisions were eventually [overturned in court](#),^{ix} enabling state governance of municipal broadband network development.

The path toward municipal-owned broadband is neither easy nor clear. This paper is intended to assist rural local exchange carriers (RLECs) as they explore the feasibility of working with municipalities to deploy and operate networks capable of offering high-quality voice and broadband services. Many of the considerations highlighted in this article are also relevant to discussions among RLECs and rural

electric cooperatives or other entities not traditionally in the business of providing telecom services. Typically, and ideally, these conversations would occur in areas in which incumbent communications providers are not offering broadband, in lieu of “overbuilding” networks that are already delivering voice and broadband services to users. This paper is not intended to provide either legal or business counsel, nor does it presume to present all scenarios that might arise as private and public interests examine opportunities. Rather, this paper will identify potential issues and provide a baseline analytical framework that rural interests can use to inform best practices and case-by-case decisions.

II. VALUE PROPOSITION AND BROADBAND GROWTH

Although it might be presumed that municipalities considering the deployment of a municipal network understand the value of broadband, government representatives may benefit from an overview of technologies and projected uses. Rural network operators are uniquely suited to explain the differences between fiber, [fixed wireless](#), [mobile wireless](#),^x coax and [satellite](#),^{xi} and the benefits and drawbacks of each technology for a particular rural deployment. For example, 5G wireless has recently attracted great attention. However, its [usefulness in rural areas is diminished](#)^{xii} by the need for dense deployment of antennas, which in urban settings may be installed at buildings or other existing facilities that are close to each other, and sufficient “backhaul” network assets (*e.g.*, fiber) to handle the data loads that such services enable. The competing characteristics of any technology warrant exploration as a municipality explores how to best leverage broadband to stimulate local economic activity, or to improve education, health care, public safety or other core functions.

A. What Will This Community Do With Broadband?

The growing use of broadband in agriculture, [education](#)^{xiii} [economic development](#),^{xiv} [health care](#),^{xv} public safety and other applications including [smart home](#), [public safety](#), and [smart grid technology](#),^{xvi} can “self-promote” the benefits of broadband availability. Nevertheless, a proper assessment of a potential municipal network should contemplate demand-related data, *i.e.*, “What will

this community do with broadband?" The answer to this question may be gathered through formal or informal community surveys, which should offer respondents an opportunity to comment on their (a) predicted uses of broadband and (b) their sensitivities to price. Predicted demand may also be obtained through specific outreach to local business or commercial interests, which might (1) identify specific applications they would implement if broadband were available, and (2) reveal a concentrated market for multiple account sales. These are important considerations, because "take-rates" (subscription levels) will drive profitability or, in the case of a not-for-profit deployment, simple viability. Unlike electricity, which enjoys a nearly 100% take-rate, broadband is yet to achieve universal adoption, in part because potential users do not perceive [personal relevance or usefulness of the product](#).^{xvii} Accordingly, a planning survey can incorporate information that illustrates how users can take most advantage of the service. Demographic data, as well, can inform a municipality as it addresses age and income distributions across the local population and assesses how promotion of broadband for education, health care or other applications may have specific relevance to various demographic sectors. A municipality would be advised, therefore, to ensure that its survey efforts reach those who stand to benefit from increased broadband capabilities, including local schools, hospitals, businesses, community organizations, industrial and manufacturing centers, and local and state government representatives.

B. How Does the Municipality View Its Role?

It is possible, if not likely, that a municipality considering a broadband network might not be fully familiar with both the costs and benefits of building and maintaining a broadband network, including day-to-day operations. Accordingly, it is critical that a municipality identify its needs and abilities. A 2014 [New York Law School paper](#)^{xviii} provides a "policymaker toolkit" that identifies numerous issues. The following questions are drawn from that article:

Is the municipality interested in a network that will service government facilities only, or is the municipality interested in providing service to end-user (residential and business) locations? (This question should be addressed with the understanding that this discussion paper is intended to guide efforts where the incumbent is not providing broadband service, and is not intended to

recommend the creation of a secondary "overbuild" network that would draw away large government accounts and thereby potentially undermine the viability of existing network assets that serve the rest of the community.)

Is the municipality interested in creating a wireless network for access and use by only municipal employees and officials?

Is the municipality exploring a public wireless network that would serve a discrete segment of the city (i.e., a downtown Wi-Fi network)?

Is a co-owned or co-operated network that features shared risk preferable, i.e., a network that is owned and operated by the municipality, but which relies upon a rural broadband provider for installation, maintenance and internet connectivity?

What is the current financial state of the municipality? Can it afford to invest? How will costs and liabilities be allocated among the municipality and other parties?

What financing plans does the municipality consider? Is there existing municipal capital?

Will public bonds be sold? Will private capital be obtained? Will state or federal funding be accessed?

Will the facility rely upon existing infrastructure?

Will operation rely upon acceptable levels of financial loss or cross-subsidization among other municipal services?

Can the municipality survive the investment cycle of the network, including initial recovery of costs, ongoing maintenance and future upgrades?

How does the municipality plan to address operation functions and costs, including staff necessary to coordinate fiber repairs or other network maintenance; management of the access network; maintenance of network security; administration of ISP functions; end-user technical support; and marketing?

C. What Drives Costs in This Community?

Municipal officials contemplating broadband deployments may be aware that extensive costs are part of the process, but might be unfamiliar with the specific factors involved in those issues. RLECs are uniquely suited to explain factors that affect the costs of deploying and operating a network. These may include, but are not limited to:

Population density of customers to be served by the facility.

Distribution of facilities across the network, including buried and aerial.

Environmental or historic factors affecting the siting of facilities or components.

Local, state or federal parkland or other sites.

Soil conditions and terrain.

Existing utilities and facilities.

Rights of way.

Weather patterns affecting construction schedules.

Ability to obtain contractors and other construction personnel.

Prevailing labor rates for construction and operation, as compared against local cost of living.

III. A PRIMER FOR DISCUSSION

A. Technology

Municipal officials may benefit from an introduction to the various types of infrastructure and their relative benefits. In any prospective network design, the rural broadband provider is best positioned to identify the cost factors and assist in estimating the outcomes for the proposed deployment. This discussion would include not only a discussion weighing the relative costs and benefits of using wired or wireless technology, but also rights-of-way issues, siting of facilities, local terrain and environment, and other factors that may inform decisions regarding the best technology for the community. The material below can be used to develop talking points for discussion.

Fiber is viewed as a “future proof” technology because its capacities are virtually limitless and can be exploited chiefly by the addition of new electronics to the network. Although it requires the relatively extensive installation of infrastructure, it promises scalability and long-term durability. A major cost component of a fiber network build is labor; as a raw material, fiber is less expensive than the copper wires it would replace. Fiber can be installed below ground in conduit, or strung aerially across existing poles. Like the installation of nearly any broadband or other communications facility, access to rights of way and other permitting issues will require attention and resolution.

Although FTTN deployments provide the maximum broadband potential and capabilities, municipalities might focus their attention on fixed or mobile wireless solutions. Municipalities lacking access to sufficient commercial mobile wireless services can consider the deployment of a wireless network (cellular, Wi-Fi or WiMAX). In addition to consumer use, these can be used to assist city employees in tasks such as waste collection; code enforcement; traffic monitoring; parks departments; and policing. The use of licensed versus unlicensed spectrum must be considered. Unlicensed spectrum may be used by anyone, but under federal regulations, unlicensed spectrum must not interfere with licensed spectrum, and must also accept interference from other devices. Nevertheless, for noncritical functions, its ubiquity in the marketplace and ready availability of off-the-shelf components can make it an attractive complement or entry point for municipalities.

B. Leveraging Each Other's Strengths

The municipality and communications provider can each bring value-added attributes to the project. Although certain of these skills could be acquired and/or executed by the other, in most instances the efficiencies realized by utilizing *existing* expertise would be lost if either party was compelled to master or otherwise obtain the ability to contribute these benefits.

Municipalities may be able to navigate certain permitting, easement and other aspects that may affect construction; these might also include obtaining access to government property for the installation of wireless facilities. Municipalities might also possess goodwill within the community, which could also encourage subscription to new services if the municipality is viewed as a trusted party. At the same time, the RLEC has the potential, from its position and experience, to provide crucial insight into broadband-specific issues, serving as a counselor to offer contextual information to help inform the municipality's decision. For example, inasmuch as the deployment would be anticipated as a capital-intensive effort, is a municipal network a "last resort" alternative to identifying a private provider that might be recruited with the proper incentives? Are any incentives suitable to encourage the incumbent

telephone or another communications provider to increase its respective capabilities and offerings? Can the municipality identify and implement incentives to attract the entry of a competitive firm that would offer enhanced services?

A rural provider can also provide insight into legal requirements that may attend the deployment and operation of a communications infrastructure, including local or federal regulations that may govern issues as disparate as access to 911 emergency services to periodic reporting obligations that may be required under applicable laws. The RLEC can also develop template RFPs for municipalities, regardless of whether the rural provider builds the plant. Even if the municipality does not adopt the template RFP, the process can assist local understanding of various issues that would be implicated by a deployment. The RLEC may also be positioned suitably, if not with substantial advantage, to negotiate purchasing and installation of vital network components based upon its experience or volume dealings. The rural provider can also consider different roles of participation and, incorporating experience from its incumbent territory, demonstrate how it can create social connections in the community that encourage participation and adoption among prospective subscribers (these can augment the existing goodwill that the municipality might already enjoy). The provider can consider acting as a consultant for network design and construction; manager of network operation and customer-facing relationships; and/or contractor for construction and operation. Local providers might also be familiar with federal programs that support broadband-related initiatives.

Municipalities considering an open network model can also benefit from RLEC involvement. In an open network, the municipality deploys fundamental infrastructure and makes key decisions about the architecture. Then, unaffiliated third parties can use that network to provide retail broadband internet access service. In this approach, the RLEC can play an ongoing consultative role for infrastructure maintenance and deployment in this model. Sophisticated communications networks require diligent support ("feeding and care") for general maintenance, software upgrades,

cybersecurity, changes in technical standards and evolving industry. And, in some instances, a municipal operator and rural provider might be able to share hardware, switches, routers or other network facilities. This can reduce total project costs for the municipal government.

Customer-facing interactions can also benefit from RLEC involvement. Billing systems, tech support and customer interactions can be managed or guided by the RLEC. The RLEC might assist in responding to not only periodic inquiries, but also in assisting customers to identify solutions and new technology to ensure the best fit and service for a range of their needs. The service can be branded as the municipality's offer, with the RLEC assistance running in the background.

Finally, an accurate economic assessment must underlie the decision to move forward. Rural providers can assist with projecting adoption and “take rates” for various services. Whereas water and sewer systems may be projected to a near 100% take rate, broadband is yet ascending to universal adoption, and financial and other predictive modeling must consider and then account for reasonable expectations. Considerations with respect to take rates provide another reason that such efforts should be focused on unserved markets where adoption for a new provider can be maximized.

V. CONCLUSION

This e-paper is intended to serve as a conversation starter and a portal to which reader comments and experience can be directed. Each community and prospective provider will confront the unique challenges that have discouraged a network build thus far. However, the rapidly increasing role of broadband in so many facets of daily life compels communities and experienced providers to explore opportunities for collaborative efforts aimed at increasing broadband infrastructure and use.

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^v Federal law directs the Federal Communications Commission (FCC) to create policies to ensure that residents of rural and insular areas have access to communications services that are reasonably comparable in both quality and price to those that are available to users in urban areas. This policy is expressed in the Telecommunications Act of 1996, and rules based upon it are implemented by the FCC.

^{vi} The FCC published these findings in an annual report released in January 2016. The FCC is required by Congress to issue a report each year describing the state of broadband deployment in the United States. *See, Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act: 2016 Broadband Progress Report*, FCC Docket No. 15-191, FCC 16-6, at para. 40 (2016) (available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf).

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^{xv} See note 2, above.

^{xvi} Ward, Jesse, "The Smart Rural Community," NTCA—The Rural Broadband Association, Arlington, VA (2012) (available at <http://www.ntca.org/images/stories/Documents/Advocacy/Issues/Broadband/TheSmartRuralCommunity.pdf>).

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