

# Strategic Planning for Telecommunications in Rural Communities

*The high-speed, broadband infrastructure needed to take advantage of telecommunications opportunities is not available in many rural communities. To overcome this problem, some local leaders are using a planning process that helps identify which strategies are most likely to meet top-priority goals and attract new telecommunications investments. The most effective strategic planning processes involve broad-based input from businesses, public agencies, and households.*

Public officials herald the potential of telecommunications to spark a rural renaissance. As evidence, they point to electronic commerce, distance learning, and telemedicine opportunities that were unimaginable even a decade ago. Unfortunately, the high-speed broadband infrastructure necessary to realize these opportunities often bypasses rural areas, which may lack the market to attract such investment or may fail to capitalize on local resources. Consequently, rural communities must develop a plan that identifies strategies with the most potential for taking advantage of telecommunications.

A generation ago, the economic well-being of rural communities often depended on how close they were to an interstate highway. In the next century, their vitality may depend more on the sophistication of their communication services. High-speed, broadband networks can reduce the disadvantages that come with low population density and remoteness from cities, without rural areas becoming more urban. Telecommunications can benefit rural firms by giving them direct access to customers and linking them to breaking news about markets, suppliers, technology, and government regulations. Such networks can also make it less expensive and more efficient for firms to locate in rural places. And small towns can import services like health care through telemedicine

technology and education through distance learning facilities, enhancing quality of life.

Unfortunately, long distances from cities and low population densities delay deployment of advanced telecommunications in rural areas. Telecommunications providers realize a higher return on their investment in urban areas where fixed costs are spread over a larger number of customers and volume is greater. In addition to incurring long-distance charges for routine calls (because of geographically small local calling areas), many rural customers lack even the basics: local access to single-party, touch-tone service with digital switching, or line quality adequate for voice, data, and fax transmission at 28,800 bits per second (Parker).

The Telecommunications Act of 1996 was intended to promote competition that would in turn lower prices and improve services. However, as many rural analysts have argued, competition among service providers will not come quickly to rural areas, largely for the reasons mentioned above (Stenberg and others). Because it is harder to attract providers to rural areas, rural residents who want advanced telecommunications services must be more proactive than their urban counterparts to attract new investments. Strategic planning can help achieve this goal by evaluating the local market, community leadership, existing opportunities, and potential technology applications.

Strategic planning also examines industry trends and can indicate the feasibility of new technologies, such as cable modems and Asymmetric Digital Subscriber Lines (ADSL). Cable modems let users send and receive data

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through their cable television systems. Users can download data at speeds up to 10Mbps (200 times the speed of a 56k modem). Although the cable company must make potentially costly upgrades to the existing systems, some rural communities have been successful in obtaining this service, which offers an affordable Internet option for small businesses and residents. ADSL, introduced in the last year, converts twisted-pair telephone lines into a high-speed channel with speeds ranging from 1.5 to 6.1 Mbps. To date, this service is available primarily in urban areas.

### Strategic Planning: An Effective Response

Strategic planning for telecommunications offers many benefits to communities:

- Identifying gaps in existing telecommunications infrastructure by pinpointing problems that limit economic development, service delivery, or quality of life.
- Helping people decide which problems are most important to address first.
- Creating opportunities for partnerships by identifying common interests.
- Building more broad-based support for new telecommunications applications.
- Providing a mechanism to coordinate multiple strategies.

A complete strategic planning process for telecommunications involves assessing needs, identifying goals for addressing the most critical issues, and crafting an appropriate action plan.

The **needs assessment** is intended to gather and analyze information about the local telecommunications environment from both a demand and supply perspective (see “Elements of a Telecommunications Needs Assessment”). It documents:

- Existing telecommunications infrastructure and services (see “Basic Telecommunications Infrastructure”).
- Business, public agency, and household use of (and satisfaction with) existing infrastructure and services.
- Potential demand for expanded infrastructure and service.
- Financial resources and potential partnerships for implementing strategies to address telecommunications needs.

With this information, a community can identify trends, make projections, and evaluate the feasibility of specific alternatives.

The second step in strategic planning for telecommunications is to identify **top priority goals** based on the findings of the needs assessment. This process helps people work toward a common end. To be successful, the goals should reflect a consensus from the community about the general course of action. Establishing these goals can convince telecommunications firms of a community’s focus, effort, and ability to measure progress.

The third step is to develop an **action plan** that lays the framework for implementing community goals. It identifies specific strategies, funding resources, organizational issues, staffing needs, and a timeframe for implementing each strategy. The action plan should contain strategies that complement one another and should present a realistic framework for accomplishing top priority goals. Like the first two stages in strategic planning, the action plan should be evaluated and adjusted to reflect changes in the local telecommunications environment.

Strategies that may be included in the action plan fall into two general categories. The first involves efforts to attract outside investment for the benefit of the entire community. For example, demand aggregation is a strategy to combine the buying power of local telecommunications users to build a business case that will attract investment in telecommunications infrastructure. Another strategy is to find an anchor tenant or single telecommunications user that generates enough volume of business to justify a provider’s cost of upgrading the local infrastructure. A third strategy is to cultivate demand for telecommunications by providing training opportunities, public-access terminals, and demonstrations. The more people know what they can do with telecommunications, the more service and capacity they will want, and the more lucrative the market will be for potential investors. Working with businesses and public agencies to develop technology plans is another strategy that encourages people to articulate and learn what they want in the future.

The second category of strategies involves bringing local public and private resources together to invest in meeting one particular need, for example, that of health care providers. These strategies rely on investment from the community through public-private partnerships to build networks. The networks are limited in scope and generally have a defined set of users, such as hospitals in a telemedicine network or schools in a distance-learning network. While these networks bring valuable services to the community, they may not link to one another and usually are not available to the general business community. Building these networks may, however, provide the critical mass necessary to attract additional investment from the telecommunications provider.

The following two case studies demonstrate how strategic planning has been used by rural communities where low volume and long distances have discouraged investment by service providers. Each region determined what strategies would work best by looking at their local resources and priorities.

### **Northeast Wyoming Economic Development Coalition**

The Northeast Wyoming Economic Development Coalition (NWEDC) is a five-county organization that has been engaged in a variety of economic and community activities since 1994. The region is sparsely populated, with an average density of 3.4 people per square mile (as opposed to 28.1 people per square mile for Wyoming's most populous county, Laramie). Its largest community is Gillette, with a population of about 22,000.

In 1997, the NWEDC was awarded a grant from the U.S. Department of Commerce to identify telecommunications needs and examine potential technology applications. NWEDC members applied for the grant to address a perceived lack of coordination between businesses and community organizations about telecommunications needs. They recognized that they needed to build support for action by educating consumers and increasing awareness among public officials about the need for better infrastructure and services.

NWEDC's technology committee hired a consultant to work with officials representing businesses (including the telecom providers), government, education, and health services to prepare a strategic plan. The planning process included an inventory of the existing telecommunications infrastructure and services, a community survey to assess demand, goal setting, and an action plan. Early in the project, the technology committee held public meetings throughout the five-county area to review the planning process, solicit volunteers for the survey, and increase awareness about technology issues. After the meetings, volunteers distributed the surveys to businesses and community organizations.

After survey results were compiled and the telecommunications inventory completed, a second round of meetings addressed the adequacy of existing resources and problems identified by the survey. Meeting participants also agreed on goals for improving telecommunications in the region.

The process identified different priorities for each of the counties in the project. For example, in Campbell County, relatively large telecommunications users like the coal companies, hospital, and schools had the potential to coordinate their demand and attract better services. In Niobrara County, the largest town had invested funds in a citywide fiber network for the municipal utility but

wanted to recapture some of its investment by leasing excess capacity. Crook and Weston Counties had unreliable phone lines that needed upgrading. And in Converse County, local leaders wanted to negotiate with the cable company to get high-speed data services.

The community meetings yielded a number of strategies that were reflected in the NWEDC action plan. One strategy was to capitalize on existing telecommunications capacity by promoting technology projects that use the infrastructure already in place. The Converse County Hospital, for example, was linked through a leased digital T-1 phone line to a larger hospital in Casper, but was not using the video-conference capability due to reimbursement issues. Another strategy was to seek outside funding, such as grants, for new project startup costs, while relying on local contributions for current project costs. A fiber-optic network in Lusk was constructed primarily with grant funds, with the intent that revenue from leases support upgrades to the network. High-cost projects were to be phased in over time, with some of the cost being incorporated into a community's capital improvement plan.

Since the NWEDC adopted its strategic plan in February 1998, the region has undertaken a number of initiatives to address its telecommunications needs. Leaders in Gillette are meeting with Sprint Communications to establish a point of presence (POP) at the U.S. West central office switch within the city (see box, "Basic Telecommunication Infrastructure"). Powder River Energy, an electric cooperative in the northeast corner of the region, is using the study findings to investigate the feasibility of offering telecommunications services locally.

Lusk, one of the smallest towns in the region, has been featured in nationally televised Microsoft commercials that herald the town's use of the Internet for ranching and commercial activities. Nearby Douglas has made recommendations from the action plan the focal point of their economic development efforts. They have successfully recruited the regional cable company, CommuniComm Services, to relocate their headquarters. As a result, the cable company has wired the town with fiber optics and is in the process of deploying cable modems. The economic development agency in Douglas is also obtaining private-public funding for a technology training center. Among the activities planned for the center is the use of virtual reality technology to train workers for area companies.

### **Morgan County, Colorado**

Morgan County is located on the plains of northeastern Colorado approximately 80 miles from Denver. Out of a total population of 25,000, some 9,100 live in Ft. Morgan, the county seat and largest community. Most of the county's land is used by ranchers and farmers, while

## Elements of a Telecommunications Needs Assessment

### *An inventory of existing infrastructure and services:*

- Local exchange carrier characteristics: service area, central offices and equipment, costs of service.
- Telecommunications network characteristics: interoffice backbones, wide-area networks, and local-area networks.
- Long-distance services (depending on boundaries of the local access and transport area and the existence of extended-area service).
- Wireless (including cellular, personal communication services or digital wireless, satellite).
- Internet service provider characteristics: local dial-up access, number of modem lines and their speed, dedicated lines, connection to backbone, variety and cost of services.
- Television/video (including both public and private cable, satellite downlinks and uplinks, and interactive video).
- Government networks operated by public schools, libraries, and other public agencies.

### *Current use of and satisfaction with services on the part of businesses and public agencies:*

- General characteristics: type of organization, number of employees, whether main or branch office.
- Telecommunications services: number of lines, calling services, extensions, computers.
- Local-area networks (including number and location of connections, number of computers on network, architecture).
- Wide-area networks (WAN remote locations, leased lines).
- Internet access (dial-up connections and speeds, direct connections and speeds).
- Technology assessment (applications and future plans for expansion).
- Technology support (staff, training, contracted services, technology plan).
- Service providers (telephone, long distance, Internet, cellular).
- Cost data (estimated monthly cost associated with each service).
- Partnerships (funding partners, shared services).

### *Current use of and satisfaction with services on the part of households:*

- General characteristics: household size, location, income.
- Telecommunications services (number of lines, various calling services such as call waiting and caller ID).
- Internet access and use (dial-up connections, whether local or long-distance, cost).
- Service providers (local, long-distance, Internet, cellular).
- Cost data (estimated monthly cost associated with each service).
- Interest in Internet training.
- Existence of home-based business.
- Experience with and interest in distance learning.

agriculturally related industries, such as beef processing, employ the most people.

As in northeastern Wyoming, local leaders in Morgan County have been concerned about inadequate telecommunications services, which they perceived as a constraint on recruiting new businesses. In addition, the high cost of leasing a line for existing businesses diverted investment from other needs, such as workforce training. Finally, the county's small population made it difficult to attract investment from the Local Exchange Carrier (LEC), which is U.S. West.

In 1998, the Colorado Rural Technology Project (CRTP) awarded a grant to the Morgan County Telecommunications Coalition to prepare a business plan that would

analyze the county's market position in attracting telecommunications investment. The coalition consists of community representatives from the Chamber of Commerce, Economic Development Corporation, local government, community college, public schools, health services community, and a number of business and community organizations.

Unlike the NWEDC, which conducted a survey and inventory, the Morgan County Coalition first established its goals—primarily diversifying the economy and strengthening local business through telecommunications infrastructure—and then conducted a process to identify strategies that would achieve these goals (Morgan County Telecommunications Consortium). A telecommunications inventory found several special-purpose telecommunica-

## Basic Telecommunications Infrastructure

The local telephone network has two parts. The first consists of central offices or locations where the telephone company houses switching devices to open and close circuits and to change operating parameters. The second part consists of telephone lines that connect customers to the switching facilities. Companies that own and operate local telephone networks are called Local Exchange Carriers (LEC's). LEC's sell "access" to their local networks to long-distance companies, which in turn originate and complete long-distance phone calls. The central office where local calls connect to the long-distance network is referred to as the "point of presence" (POP). The POP is generally located in the largest city of a local access and transport area (LATA), which is an area designated by the FCC for providing and administering telephone services.

Local calls connect to the POP either through the switched network or, for high-volume customers, through a private leased line directly to the POP. Even if a long-distance company has a fiber-optic line running through the area, the connection to the long-distance network can only be made at the POP. The cost of a leased line depends both on the distance between the two points and the speed of the line.

LEC's may or may not offer advanced telecommunications services. Among the services proposed as possible solutions to rural bandwidth problems are ISDN (a network that allows simultaneous, digital transmission of voice, data, fax, and video over copper wires); ADSL (special equipment that connects to an existing phone line and separates voice signals from high-speed data while providing a direct, permanent connection to the Internet); and ATM (a switching technology to break information into very small pieces that can be transmitted and re-assembled quickly). If the central office for a particular service area does not have the capability for these services, customers may lease a line to the nearest central office that does have the capability. The longer the distance between the customer and the central office, the more costly it is to lease a dedicated line to access these services.

tions networks in the area. For example, the High Plains Rural Health Network provides two-way interactive video communication for clinical consultation, health training, and administrative conferences. It serves 17 rural sites in Colorado, Kansas, and Nebraska, but only hospitals can use the network. And Morgan County Community College, as part of Colorado's two-way, interactive video network, maintains three separate networks to provide classes to remote sites in eastern Colorado. Like the health network, the educational network delivers a specific service and is not publicly available to other organizations or businesses. Therefore, businesses and other users must incur the cost of a leased line to Denver if they want to access advanced telecommunications services.

The coalition then solicited public input to gauge current and potential demand. It conducted a survey of business and community organizations, as well as focus group meetings with (1) business stakeholders including financial institutions and economic development interests; (2) telecom providers and educational institutions; (3) the general public, including senior citizens, farmers, and civic groups; and (4) government and health care providers.

Three important problems emerged from the public input phase. First was the high expense incurred by businesses for the leased line to Denver. Second was the separate video networks operated by the community college, which were perceived as allowing only limited programming options and inefficient delivery. And third was the lack of resources at the Morgan County School District, where limited online and networking facilities hindered communications, and an understaffed technology group meant that the district was missing opportunities to receive educational discounts for Internet access.

To reduce the cost of the leased line, the study recommended that the coalition work with neighboring counties to find a centralized switch that could be upgraded for the benefit of the larger region. It also recommended that the Ft. Morgan School District and Town of Morgan cooperate on constructing a citywide network that would aggregate their demand and provide more leverage for negotiating upgrades. The State of Colorado is also considering a similar strategy to aggregate demand in order to establish access points for Asynchronous Transfer Mode (ATM; see "Basic Telecommunications Infrastructure") in all counties (Colorado Commission on Information Management).

The Morgan County telecommunications business plan was completed in July 1998, and generated coverage from the *Denver Post*, *Christian Science Monitor*, and CBS News "Eye on America." As part of the strategy to build the market for telecommunications, technology training will be part of a chamber of commerce business symposium in spring 1999 and at a Y2K workshop later in the year. Following completion of the plan, the coalition met with U.S. West to discuss the recommended strategies for infrastructure upgrades. Although a followup meeting was to be scheduled, the Telecommunications Coalition, largely a volunteer group, was relatively inactive in the latter part of 1998. With funds recently made available by the State legislature to upgrade infrastructure in rural areas, the group is reconvening to raise matching funds and to find a telecommunications provider to bid on the project.

## Conclusions

Strategic planning for telecommunications can be a time-consuming process, even in small towns. Communities should allow 3 to 6 months to complete the process, depending on the level and method of public input. Dividing the strategic plan into phases or smaller tasks may allow the community to contract out for the more technical services while completing some work inhouse. This approach also allows the community to select a contractor with expertise specific to that particular phase of the project. An engineering firm, for example, would be an excellent choice for system design but may not have the expertise to assess the market or facilitate the sort of consensus building that is required for strategic planning.

If a survey is used for gathering information during the needs assessment phase, it will take several months to design the questionnaire, select a sample, administer the survey, and evaluate the results. Obtaining information through focus groups or public meetings can be done more quickly, but does not offer the comprehensive information about telecommunications use that can be obtained by conducting a representative sample survey.

For two reasons, we recommend that the needs assessment include a survey of households, as well as the more obvious and larger telecom users such as businesses and public agencies. First, home-based businesses that rely on telecommunications need reliable and affordable broadband access to the Internet. They tend to be higher income and offer good economic development potential (Salant and others). Only by including a household component to the needs assessment can this source of demand be measured. Second, by involving households in the needs assessment process, it is easier to build broad-based support for improved telecommunications. Especially in small towns where resources are scarce, strategic planning processes need to draw on as broad a segment of the community as possible and demonstrate a consumer demand for broadband Internet service.

Gathering data about the existing telecommunications infrastructure is another time-consuming task. Most of the information is already published in other sources, but finding and analyzing the data takes time. Often the available information is incomplete and needs to be supplemented with interviews and additional research. One of the best sources of information on telecommunications infrastructure is the State public service regulatory agency. Many States also have an office of technology or information management that maintains data about State networks.

Local telecommunications providers can provide information about the location of central offices, switching features, trunk lines, and service cost. Sometimes this information is available from company web sites, but because these are private corporations, much information is con-

sidered proprietary and may require great persistence to obtain. National agencies, such as the Federal Communications Commission (FCC), National Telecommunication Infrastructure Administration, National Exchange Carrier Association (NECA), and National Telephone Cooperative Association, provide information on industry trends and issues.

If strategies are to be well-suited to the local situation, several criteria should be considered.

- Can the project be sustained beyond the startup phase?
- Does the strategy serve the most people or create the most jobs relative to the amount of resources required?
- Can sponsors leverage funds from multiple sources through partnerships?

The success of a planning effort depends on the commitment of public officials to follow through with the plan's recommendations. If the process is too long, staff and elected officials may not stay committed. Sometimes, a single champion can move a project forward, but buy-in from the entire community is always necessary if public funds are to be invested in the project. The most effective strategic planning process builds broad public support by involving multiple stakeholders, increasing community awareness, and reflecting the needs of the entire community.

### For Further Reading . . .

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