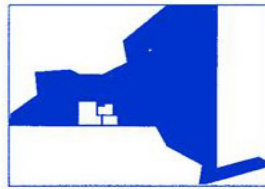


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Marcia D. Weber
Executive Director

Southern Tier Central Regional Planning and Development Board has completed the first part of a very important regional telecommunications infrastructure project.

Funded by the Appalachian Regional Commission and New York State, a study was recently completed by ECC Technologies, a consultant with a great deal of experience in the telecommunications field. The study includes a survey of telecommunications infrastructure and information gathered from focus group meetings held throughout the three counties. It also provides recommendations for options and opportunities for the development of telecommunications in the region.

An immediately usable product resulting from the grant is a series of maps that focus on sites selected by the economic developers in each county. The maps show the infrastructure, including all the available telecommunications bandwidth services, to each site.

The executive summary of the report follows.

Telecommunication Study



Southern Tier Central

REGIONAL PLANNING & DEVELOPMENT BOARD

Prepared by:



2005 Executive Summary
Released February 7, 2006

Statement of Confidentiality

All information included in this report and subsequent GIS mapping program is considered confidential. The information in this report was gathered for the exclusive use of STC and its component Counties for planning and economic development; any other use of this information is strictly prohibited. This information is not "FOIL-able" (freedom of information act) and is not to be reproduced in any form without the express written consent of STC and ECC Technologies.

SECTION 1

EXECUTIVE SUMMARY

1.1 Introduction

Telecommunications can be defined as the science and technology of communicating at a distance by use of an electronic device. Since its inception in the late 19th century, telecommunications has brought both innovation and efficiencies to users all over the world. For the first time, people had the ability to verbally communicate without actually being in the same place at the same time. As the years have passed, telecommunications has grown to be much more than just local communications service, though. Today it encompasses, among other things, long distance phone service, Internet access, point to point business connectivity, educational distance learning networks and emergency management service broadcast systems. All of these services rely on broadband infrastructure to distribute their messages.

As communities around the United States become more technologically modernized and strive to compete in the global economy, the need for effective, reliable and advanced telecommunications has become a critical concern. Over the last two (2) decades telecommunications has become a major component for economic growth, public safety, educational and medical advancements. When considering this point, it is disturbing to note that the United States is currently behind a large number of countries in the world in terms of broadband penetration. In excess of a dozen countries, such as South Korea, Canada and Iceland, have adopted aggressive municipal sponsored broadband programs. It has become widely accepted that in the race to become the world leader in the global marketplace the U.S. is at a technical disadvantage. This dilemma has become a national issue, but because of basic economics, one that needs to be addressed at the local level.

As counties and regions across the U.S. realize the importance of telecommunications, they must also recognize and understand the current and future state of their own telecommunications industry. This is typically done by the development and implementation of a detailed telecommunications study. The completion of this type of study provides a foundation on which municipal leaders can develop a plan for the communities. The community-based plan needs to take advantage of the telecommunication resources that are currently in place and make provisions for areas of weakness. In many cases, the majority of the infrastructure resources are already available; these resources include fiber optic cable, coaxial cable, wireless technologies, and the ubiquitous telecommunication industry standard, copper wire. The next logical step is to understand what currently exists and to use that information to a community's advantage. The most effective way to increase the availability of broadband access in a particular region is to understand the needs and availability and then develop proven initiatives to fill any telecommunication gaps.

ECC Technologies was retained on behalf of the Southern Tier Central Regional Planning and Development Board (STCRPDB) to perform a detailed telecommunications study in Chemung, Schuyler and Steuben Counties of New York State. The main objective of this study was to look at the region comprehensively and develop tools to help market the telecommunication strengths while developing recommendations to improve the weaknesses.

The STCRPDB contracted with ECC Technologies, Inc., as its consultant, to inventory, assess, and make recommendations regarding the region's current telecommunications infrastructure and services.

The objectives of the STC Telecommunications Study were:

1. Inventory telecommunications infrastructures and services.
2. Assess the telecommunication needs of municipal, educational, healthcare, and business organizations.
3. Evaluate the economic opportunities and benefits of various telecommunication infrastructure investments.
4. Provide regional improvement recommendations.

The information that is presented in this study was compiled by ECC Technologies over a five (5) month period in the spring and summer of 2005. To collect the information, ECC Technologies contacted each of the major telecommunication service providers in the region to request detailed company information. In addition, ECC Technologies conducted field work to document and confirm study information. To supplement these study research methods, a review of industry data publicly available through various federal and state agencies was researched.

The information compiled by ECC Technologies is presented in the following pages of this report. This information has also been placed into an electronic geographic information system (GIS) database by the Regional Planning Board and will be shared with each of the counties involved. This database (tool) consists of interactive mapping elements that can be used to identify and locate the major telecommunication resources within the region for economic development and regional planning purposes.

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1.2 Telecommunications Infrastructure

Telecommunication services in the Southern Tier Central (STC) region are delivered by a number of competing telecommunication organizations which include the incumbent telephone company providers (Verizon Communications, Frontier Telephone, Armstrong Telephone, Empire Telephone, and Trumansburg Telephone), competitive CLEC organizations, cable television industry, and wireless providers. Each company uses a variety of different technologies and infrastructures to support their areas. The primary infrastructures in use by the telecommunications industry today consists of copper cable, coaxial cable, fiber optic cable and wireless transmitters/receivers. This study has found that each of these technologies is in use throughout the STC region.

Wire Line Infrastructure

Telephone and cable TV cables constitute the majority of wire line infrastructure and can either be buried in the ground or fastened aurally to utility poles. The cables consist of fiber optic, coaxial, or twisted pairs of copper wire. The above mentioned incumbent telephone carriers (ILECs) and three (3) cable TV companies primarily own and manage the wire line infrastructure for the region.

Copper Telephone Infrastructure

The predominant infrastructure that serves the homes and businesses in the STC region is the traditional incumbent telephone (ILEC) copper cable. The limitations of copper cable - capacity, quality, and speed - are most often the restrictive component in the development and expansion of telecommunication services.

In the STC region, a single telephone line consisting of a pair of unconditioned copper telephone wires (plain old telephone service – POTS line) is what provides telephone service to the majority of the residences and small businesses. Besides being used to support a single phone call, this service is capable of providing up to a 56 Kbps dial-up connection for Internet service.

Many businesses and organizations, however, often require telecommunication services with a higher capacity and speed than what is supplied by the typical telephone line. These types of services are supplied primarily through digital equipment over higher bandwidth circuits. For the most part, the towns and cities in the STC region have these high speed and high capacity digital services available to them, but in many instances the rural areas in the region do not.

In order to offer more competitive service, the telephone carriers have developed higher bandwidth digital services that use the same copper cable (POTS). The signal carried over the line is produced with Digital Subscriber Line (DSL) technology. This form of “broadband” service is available in many parts of the STC region. However in order for DSL technology to work, the customers must generally be within a two (2) to three (3) mile radius of the DSL equipment or Central Office (CO) location. Consequently, any potential user located outside the three (3) mile ring would probably not have access to this service. It should be noted that older copper infrastructure, such as that found in this region, often reduces the distance of DSL technologies. It is likely that in some areas of the region, users within two (2) miles of the Central Office would not be able to receive DSL service.

Coaxial Cable TV Infrastructure

Another major infrastructure provider that competes with the telephone carriers for local telephone and Internet services are the cable television providers. CATV infrastructure in the three (3) counties is primarily a hybrid fiber-to-coaxial cable (HFC) infrastructure from the CATV provider’s head-end or point of equipment to the end user’s location.

Cable modem technology utilizes a single coaxial cable TV connection to the customer's site to maintain the simultaneous transmission of telephone, video, and data. Time Warner Communications (TWC) is the largest provider of cable TV service within the region and has a significant amount of fiber optic and coaxial infrastructure installed throughout the region. Time Warner Communications' primary head-end locations are in Corning and Hornell and are networked via fiber optics throughout the region. Adelphia Cable and Haefele Cable are two (2) other cable providers in the area, and they have fiber and coaxial cable infrastructure located in their territories within the region.

Fiber Optic Infrastructure

For long haul (considerable distance) communications between cities, telecommunication companies primarily use fiber optic cable. This infrastructure is also used for interconnecting central office locations and aggregating copper lines (termed by the industry as pair gain); in some cases they offer fiber to the end-user, commonly referred to as subscriber fiber. Subscriber fiber is fiber optic cabling installed at the customer's location to provide high capacity and high bandwidth telecommunication circuits (the services that will not operate over copper lines).

The Southern Tier Central region is supported by a number of fiber optic providers. Verizon, Frontier, Armstrong Telephone, Empire Telephone and Time Warner Communications each has extensive fiber optic networks installed within the region, resulting in the availability of high speed and high capacity broadband solutions in the developed areas. The majority of fiber in the region is installed along major transportation corridors and is used to link the developed population centers.

Additionally, the two BOCES organizations in the region, SCT and SA BOCES, have developed wide area networks (WANs) through the use of the provider's infrastructure. These networks are built on a fiber based system and deliver a gigabit service to the educational systems in the counties. SCT and SA BOCES have contracted through Verizon and Adelphia / Time Warner Cable respectively for these advanced bandwidth networks. This fiber infrastructure has been installed throughout the three (3) County area and in many cases represents the most technologically advanced infrastructure in that area. The network is being used by the BOCES to provide connectivity to their component school districts for business programs, student management services and distant learning. There are also a number of school districts in the region that have district-owned private fiber infrastructure between their buildings.

Typically speaking, there are only a few areas in the region that are further than three (3) miles from the nearest fiber optic cable. However most of the fiber in the STC region is being used by the carriers and cable providers to interconnect points of equipment in central offices (telecom) and other head-end (CATV) locations and is not available to the communities in between.

Wireless Infrastructure

Within the telecommunication industry, the wireless technologies are the fastest growing segment. Cellular phones, pagers, personal digital assistants (PDAs) and notebook computers for telephone, messaging, and Internet services are supported by this infrastructure. The wireless infrastructure installed throughout the STC region offers connectivity to the mobile user, remote user and organizations within and outside the land based infrastructure. With that said however, due to the size and rural nature of the STC region there are large areas with no coverage throughout.

Wireless Towers and Coverage

There are currently 81 FCC-registered wireless towers, not including the emergency management systems within each county, constructed and operating in the STC region. Much like the fiber optic cable described earlier, the majority of these towers are located on major roadways and in the population

centers. The service coverage of a single cellular tower is up to a ten (10) mile radius but is typically two (2) to five (5) miles at best. Therefore the position of these towers and how they are connected is critical to the availability of service.

There is fairly good service availability in major metropolitan areas and relatively poor reception or no service in many of the remote areas. Throughout the region each of the major wireless providers, Cellular One, Cingular, Verizon Wireless, and Sprint/Nextel, continues to expand its networks and coverage areas. The wireless providers in the region are in the process of upgrading or have already upgraded their infrastructure to support third generation or 3G wireless services. 3G wireless services will provide broadband bandwidth of up to 1 Mbps (megabits per second) to mobile users of phones, PDAs, and computers.

Satellite Communications

For areas within the region with limited or no landline or cellular infrastructure, satellite service is being used to deploy telephone, data, and Internet services by the satellite broadband providers. Satellite dish technology consists of an orbiting satellite transmitter and receiver communicating with land-based receiving dishes. With the new dishes, both TV and Internet communications can be supported simultaneously. Satellite can also support telephone service, but it can be very expensive and have limited capacity. Within the region there are many areas that do not have access to ILEC or cable TV broadband services; in those areas satellite service is a viable solution.

Central Offices

The region's five (5) ILECs - Verizon, Frontier, Armstrong, Empire and Trumansburg - have installed and operate thirty-three (33) central offices (COs) within the region. The core of telecommunication services for this region is represented by equipment located in these central offices. The services available at any given central office determine the level and availability of services within that area. Since there are five (5) independent ILEC companies operating in the region, the consistency of offered services differs from area to area and is a direct result of investments made by each ILEC. The ILEC's investment in central office equipment in the populated areas of the region is not unlike similar areas around the state. The areas with the most revenue opportunity or return on investment (ROI) potential have the greatest resources. Consistent to this model we find that more advanced and higher bandwidth services are readily available in the populated areas, while many of the more remote areas are lagging behind. Refer to the information below and section 3 for central office details.

1.3 Telecommunications Service Providers

Incumbent Local Exchange Carriers (ILEC)

The region is divided into three (3) Local Access & Transport Areas (LATAs) - the Binghamton, Rochester and Syracuse LATAs and two (2) separate area codes, (607) and (585). There are five (5) local telephone companies or Incumbent Local Exchange Carriers (ILECs) that provide service in the region. The ILECs are responsible for the development and maintenance of the cabling and switching infrastructure necessary to deliver local telephone services to the communities they serve. The five (5) ILECs in the region are Verizon, Frontier (Citizens and Rochester), Armstrong Telephone, Empire Telephone and Trumansburg Telephone. Listed below is a summary of information for each ILEC. The information includes, among other things, where they are located, the number of central offices they operate in the area, their level of technical support, the type of network redundancy and future plans they have for the region.

Summary of Providers

Verizon Communications, Inc.

For the STC region, Verizon has their main business offices in Syracuse and Binghamton and a service and engineering office in Horseheads. They offer a fairly comprehensive list of higher bandwidth services to the area. Their breadth of services range s from DSL to Gigabit Ethernet (Gig-E) in COs located in many of the population centers and a more limited number of services in outlying areas. Verizon has fourteen (14) central offices in the region and has connected the majority of COs in a fiber-based SONET ring topology to promote redundancy and improve reliability of service. They have COs in all three (3) counties and did not comment on plans for upgrades.

Frontier – Citizens Telephone Company (Rochester & Norwich)

The Citizens Communication Company owns both Frontier Citizens Communications (sales office in Norwich) and Frontier Telephone of Rochester (sales office in Rochester). The company offers many of the same services as Verizon with the exception of ISDN and Ethernet, which could be offered on an individual case basis (ICB). Frontier has eleven (11) COs in the region, three (3) of which are maintained and operated out of their Rochester office, with the other eight (8) handled by the Norwich location. They have COs in all three (3) counties and will upgrade as customer demands.

Armstrong Telephone

The Armstrong Telephone Company is locally based in the town of Addison, NY and provides sales and maintenance operations from this location. The company provides DSL (2 Mbps) service to the majority of its territory and can also offer T1, T3 and ISDN service if a customer requires it. Armstrong operates four (4) COs in the southwest area of Steuben County and does not have a presence in the other counties. They are currently increasing their levels of DSL penetration.

Empire Telephone Company

The Empire Telephone Company is located in Prattsburgh, NY. Empire offers services of dial-up, DSL, T1, T3, ATM and Gig-E from its four (4) central office locations in Schuyler and Steuben Counties. Empire will build to meet customer needs and plans to provide voice over IP (VOIP) in the near future.

Trumansburg Telephone Company

The Trumansburg Telephone Company located in Trumansburg, NY offers many of the same services as Verizon. Although this organization does not have a central office in the region, it does service a small area in the northeast corner of Schuyler County from its nearby Trumansburg location.

Competitive Local Exchange Carriers (CLEC)

The 1996 Telecommunications Act allowed for the first time the formation of Competitive Local Exchange Carriers, or CLECs as they are more commonly called. These organizations were given the right by the Federal Communications Commission (FCC) to compete against the ILEC in the ILEC's own territory. In addition, the Telecommunications Act gave CLECs the right to use ILEC infrastructure to deliver their competing services at below market prices. The larger CLECs in the region are AT&T, CTC, Paetec, and Choice One.

There are two types of CLECs operating in the region, resell based and switched based. The presence of switched (or equipment) based CLECs offers the community several advantages including reduced pricing, diversity and in some cases redundancy over ILEC services. Currently there are very few switched based CLEC companies co-located in the region; they are primarily AT&T, CTC, Paetec, and Choice One. These CLEC companies are providing their own service in the three (3) County areas as opposed to reselling ILEC services. They accomplish this through the use of switched based extended

links. Extended link service is made possible by equipment located outside of the region that is extended into the service area. This type of service results in higher costs to the customer when compared to a locally based switched provider. In this regard, the STC region is at a disadvantage compared to similar counties in the state such as Broome and Cortland, which have a number of local switched based CLECs.

Cable TV Provider

Time Warner Cable (TWC) offers the most comprehensive coverage for Internet access service in the region and has service territories in all three (3) counties. Time Warner has a service originating office in Binghamton that covers 90% of the TWC territory in the STC region. Their Rochester, NY office covers the remaining 10%. Due to its overwhelming coverage area, the most widely used cable modem service in the STC region is Time Warner's Road Runner service. Inherent to the technology, Time Warner provides Internet service to all the areas that have access to their CATV service. Therefore TWC has Internet networking equipment installed in most of the towns where they provide cable TV service.

A new marketing program to government, education, and other not-for-profit organizations has been rolled out by Time Warner Communications. This program offers high speed and high capacity broadband network connections to customers by utilizing existing TWC fiber optic infrastructure. Service is developed on an individual basis and ranges from 10 Mbps (million bytes per second) to 3000 Mbps or 3 gigabits per second of bandwidth. This program is of particular interest to educational and healthcare organizations due to its potential to provide regional solutions to their network applications needs.

As stated previously, Time Warner is by far the largest provider of cable TV access in the region; however, there are areas within the region that lie outside their territory. In those areas either Adelphia Cable or Haefele Cable provides service or there is no cable TV access available. Adelphia Cable has infrastructure and offers services in parts of Steuben and Schuyler Counties, and Haefele Cable offers services in the easternmost part of Schuyler County. Much like TWC, these organizations provide basic cable TV and Internet access to their customers.

Inter-Exchange Carriers (IXC)

Inter-Exchange Carriers are more commonly known as long distance service providers. Much of the telecommunications infrastructure and services between cities, states, and countries is provided by the IXC. The larger carriers in the STC region include AT&T, MCI, Sprint, and Verizon. These companies use their own infrastructure or the ILEC's infrastructure to deliver service to their clients, resulting in a coverage area encompassing the entire region.

Cellular Service Providers

In the STC region, cellular telephone service is largely provided by Cellular One, Cingular, Nextel, Sprint PCS, and Verizon Wireless. The study has found that the majority of investment in cellular technologies is located in close proximity to population centers and major transportation corridors throughout the region. These companies have a network of wireless tower locations that provide coverage in a three to five mile radius from each tower. Areas outside the towers' reach have no coverage at all. Due to the large geographic size and mountainous terrain, there are many areas in the three (3) County region that do not have access to cellular coverage.

Satellite Communications

Hughes Network Systems and Ground Control Inc. offer satellite Internet access, as well as high performance broadband delivery of broadcast television channels and audio communications. Dish TV service is supported by a number of vendors in the area and supports both satellite television and broadband Internet access.

Internet Service Providers (ISP)

Internet Service Providers (ISP) are dependent for the most part on the ILECs, IXC's, and cable TV infrastructures to transport their Internet communications. The number of Internet providers has steadily grown over the years from small local providers such as Online Image and Information Boulevard to the national service providers. The larger ISPs are typically owned by cable TV, ILEC, or IXC companies (e.g. Road Runner, AT&T, and Verizon).

1.4 Additional Infrastructure

In addition to the service provider infrastructure, some of the county organizations and school districts in the area have fiber optic cable and wireless infrastructure installed. Schuyler and Steuben Counties have County-owned fiber cable in use today for internal government programs. The Emergency 911 Systems in each county consist of county-owned wireless infrastructure and equipment. The following school districts have district-owned fiber connecting buildings together: Corning-Painted Post School District, Hornell CSD, Odessa Montour CSD and Watkins Glen CSD.

1.5 Assessment

A major component of this study's overall objective was to assess the telecommunications culture within the region. ECC Technologies, along with the STC Executive Director, met with four (4) focus groups from each county that represent the different sectors of the community at large. The objectives of these meetings included a discussion on telecommunications issues and concerns that affect these group's respective areas. The focus groups were:

- Business / Economic Development Agencies (EDA)
- Education
- Government
- Health Care

After meeting with these four (4) focus groups, it was apparent that the groups shared many of the same concerns. The common concerns were lack of competition, price of service, and the lack of service and reliability in remote areas (both cellular phone service and broadband). The groups also felt the area was not considered globally competitive with the infrastructure in place today.

The STC Business Groups

Members of the STC business groups that represented businesses in the more rural areas of the region had concerns with the lack of competition and their higher price for service. Conversely, companies in the larger metropolitan areas were more satisfied with their levels of competition and service prices. In addition, the rural businesses felt that the current state of telecommunications was affecting their respective county's ability to compete on a global stage; however, this was not a concern shared by the metro based businesses. In regard to wireless coverage, members of one county (Chemung) reported

relatively good cellular phone coverage while the other two (2) expressed concerns over lack of coverage or “dead spots” throughout their counties.

The STC Educational Groups

For the most part, the K-12 school districts in the region are very satisfied with their wide area network services. This group rated the reliability and cost of the BOCES contracted gigabit network as being very good. However, some of the more traditional services provided by the ILECs have been less reliable, including voice services and local connections. Many members of this group would like to see the gigabit network made available to the private sector. In addition many felt there was a general lack of competition in their respective area. Some group members felt that there was poor broadband and cellular coverage in many of the more rural areas. Members of the BOCES desire a local point of presence for Internet 2.

The STC Government Groups

The major concerns of the government group was the education of the general public on telecommunications issues, the region’s ability to be globally competitive and the communities at large being able to share existing telecommunication resources. Many participants in the government groups felt that the lack of infrastructure, competition and advanced services was putting rural areas at a technological disadvantage. Cellular coverage was described as sporadic throughout the region. Finally, this group would like to see organizations within their counties band together to aggregate demand, share resources and work cooperatively together.

The STC Healthcare Group

A major telecommunications concern of the healthcare group is the availability of service, especially in times of emergency. Some hospitals in the region reported service as being very reliable while others did not. Levels of competitive choice were also listed as a major concern. As with the other groups, cellular phone coverage was described as being inconsistent across the region. One of the hospitals in the region had considered fiber to their location but could not justify the costs of installation. As an overall strategic direction, the hospitals expressed a need for consistent high speed connections to doctors and other healthcare providers in remote locations.

1.6 Development Sites

Ten (10) Development Sites were identified by each of the three (3) County’s EDA / IDA agencies, for a total of 30 sites. These sites were selected based on their economic development attractiveness to new business opportunities. The sites varied in terms of availability and choice of broadband services as well as the number of competing service providers. Predictably, the sites located in or in close proximity to the population centers had better access to high capacity telecommunications infrastructure and services than the more remote locations. In addition to available service, the level of competition was higher in the populated areas.

1.7 Conclusion

Over the past 140 years the telecommunications industry has become an intrinsic public service to modern-day society. Throughout the world, in one form or another, communication devices are being

used by all members of communities, which include business, industry, public safety, government, healthcare and education.

This study has found that the developed areas of the Southern Tier Central region, namely Bath, Corning, Elmira, Hornell and Watkins Glen, are better served by the telecommunication industry than the more rural areas. These major towns, villages and cities have limited competition as compared to larger metropolitan areas in upstate NY; however they do have access to many of the desirable advanced technologies such as ATM and gigabyte Ethernet. Additionally, there are issues of service reliability and competition throughout the region.

Currently there are five (5) major ILECs operating within two (2) LATAs that divide the region. For a region this size this is not an unusual number of ILECs, which leads to consistency of service offerings and support in the population centers, but, due to the large footprint of the area, a large inconsistency in rural parts. On the whole there is a limited number of extended link switched based CLECs operating in the region, all of which are located in the larger population areas. Similar regions, such as the Binghamton area, have a significantly larger number of switched based CLECs. This issue is having a negative impact on the region's competitive advantage relative to telecommunications resources, especially in the rural communities.

The region has a considerable amount of fiber infrastructure, installed by the ILECs and the cable TV companies. This infrastructure is primarily used to connect and serve the population areas. Fiber is installed along major roads to connect central offices and cable TV head ends between villages and cities. For the most part this fiber is not used to provide bandwidth services to the potential customers located along these routes.

The ILECs with central offices in the STC region have developed a network of central offices connected via fiber optic cable. There are only a few Central Offices in Steuben County that do not have the technological advantages that fiber connectivity brings, which includes capacity and signal continuity.

Within the more developed areas of the region, ILECs offer many of the advanced telecommunications services that are desirable to today's economically developing communities. However, many of the remote areas in the region do not have access to these technologies, which creates a gap in equitable economic strategies. Verizon operates the central offices in all of the major population centers in the region, and in those communities consumers have a good range of broadband services available to them. Outside of these population areas the availability of some broadband services is non-existent. Verizon has stated they will extend advanced services to these outlying areas if sufficient customer demand is demonstrated. Frontier offers a consistent level of advanced broadband services across their territory from their rural COs. Located in the southwest area of Steuben County, Armstrong Telephone has a limited number of broadband services including DSL, T1 and T3. The Empire Telephone Company in Schuyler and Steuben Counties has many of the desirable higher bandwidth services including gigabit Ethernet. Although not actually located in the region the Trumansburg Telephone Company offers a wide variety of high bandwidth services available to the northeast corner of Schuyler County. The rural nature of the region and the existence of five (5) different incumbents have led to a wide but consistent range of available services. For areas in the region that do not have access to ILEC broadband services the presence of cable TV and satellite companies are a welcome alternative to dial-up service.

Wireless services can be cellular, satellite or microwave. The cellular telephone service providers are Cellular One, Cingular, Sprint PCS/Nextel and Verizon Wireless. The study has discovered that there are many areas in the region that have poor or no cellular service. As with most cellular phone territories the coverage area has been laid out to provide service to the areas that have the greatest population or

the most traveled routes (roadways). Satellite service and private microwave systems are available and in use throughout the region.

The business, education, municipal and healthcare groups interviewed for this study have defined issues of low competition, high price for service, and lack of broadband and cellular service, especially in rural areas. These factors are impacting the region's ability to be competitive in the global economy.

Recommendations

The Southern Tier Central RPDB can employ a number of strategies to assist in the development of telecommunications throughout the region:

- Keep the GIS mapping program current and use it for EDA marketing and regional / county planning.
- Develop a regional telecommunications steering committee to provide vision and direction and initiate telecommunication improvement programs.
- Aggregate town, village and city franchise agreements and negotiate at a county level.
- Identify opportunities and potential grant programs to assist the telecommunication carriers with the expansion of broadband and desired solutions within the region.
- Develop a telecommunications champion.
- Conduct Aggregation of Demand initiatives to entice provider investment and create competition.
- Support expansion of the Steuben County 911 EMS wireless plan into the remaining STCRPDB counties.
- Explore bringing the available excess capacity on the BOCES SA and BOCES SCT educational network to the communities at large.
- Consider community owned fiber infrastructure initiatives for county and regional purposes and economic development at focus sites.