Link Michigan Telecommunications Plan:

Bay, Midland & Saginaw Counties

Presented to:
Link MBS Taskforce

Date:
October 9, 2003

Executive Summary

Link Michigan Project Description

This study is part of an overall comprehensive statewide look at Michigan's broadband availability and strategy. It is part of the LinkMichigan initiative, which was launched in May of 2001 by the Michigan Economic Development Corporation (MEDC). The initiative recognized that a high-speed telecommunications infrastructure was vital to the goal of building a robust environment that would make Michigan attractive to high technology companies, thus creating high paying and quality jobs. Indeed, one MEDC study suggested that as many as 497,000 new jobs could be created over a decade if an accelerated broadband deployment plan was realized (see http://medc.michigan.org/news Dec 3, 2001). The MEDC developed a "Smart Tech Agenda" for the entire state. This effort focused on planning, removing impediments to deployment, facilitating access to capital, and aggregating telecommunications demand. All of these efforts were designed to build a critical mass of high-tech companies. The planning process, as defined in the LinkMichigan initiative was an integral part of this effort. It contributed to Michigan receiving the top ranking among all states according to TechNet, a nationwide organization based in Silicon Valley (www.technet.org). This group of 150 top Internet CEO's is dedicated to the advancement of broadband and technology. In July 2003, TechNet issued

its findings that ranked Michigan well ahead of any other state because it was taking bold action to achieve its goals. The LinkMichigan Initiative was applauded for the importance it gave to strategic planning within the state. Over 20 regions received planning grants to begin to develop their own broadband deployment plans.

Legislative action to remove duplicative and inconsistent local regulations was also an important step in the process. "Broadband is the foundation for our nation's continued technological and economic leadership," said Rick White, President and CEO of TechNet. "The states at the top of the Broadband Index have shown leadership in clearing roadblocks to broadband deployment and adopting innovative policies that foster demand for the benefit of their citizens and industry."

The Michigan Economic Development Corporation's Link Michigan Initiative encouraged counties to group together and apply for grants to help study the telecommunication infrastructure and make recommendations for future growth. The local Vision Tri-County group recommended that a tri-county task force be formed. The LinkMBS Task Force was formed consisting of economic development representatives from the Midland Economic Development Council, Saginaw Future Inc (SFI) and Bay County. SFI was the group that spearheaded the grant application to the MEDC on behalf of all three counties and the LinkMBS Task Force. The counties of

Midland, Bay and Saginaw along with the Vision Tri-County group and the LinkMBS Task Force should all be commended for contributing to this planning process, a process that may yield substantial economic growth for years to come.

The scope of this project is as follows:

1. **To take a snapshot of the level of telecommunications service available in the tri-county area and identify underserved areas;**
2. **To identify any barriers that may inhibit telecommunications companies from investing in the tri-county area, and**
3. **To make recommendations on what tri-county governments can do to best position the region for economic growth.**
4. **To assess stakeholder demand and to recommend last mile solutions for the tri-county area.**

Long Term Vision

The regional planning grants awarded by the MEDC were just one part of a four-part plan to increase broadband deployment. These grants were made available to regions throughout the state to enable local communities to develop their own inventory and strategy. The grant made available to the LinkMBS Team offered an opportunity to work proactively to improve the infrastructure and economies in the tri-county region.

This report outlines the telecommunications infrastructure in the region. It documents the telecommuting needs of the region's residents and businesses. It suggests ways to stimulate demand and proposes policy and technology solutions that can improve and augment the region's telecommunications infrastructure, and by proxy, future economic development. A long-term vision must be adopted which keeps the region focused on attracting high-tech companies to locate within the region. The recommendations contained in this report have been developed after many town hall meetings, conducting residential and business surveys, inventorying existing broadband availability, studying industry trends and related high tech economic studies. The long-term vision for the Midland, Bay & Saginaw counties must prepare the region for the evolving New Economy, an economy that is based on knowledge not natural resources. The MBS region has a head start in this new global Knowledge Economy due

to its knowledgeable and skilled workforce. Now it must focus on its telecommunications or “broadband” infrastructure because the new economy has as one of its core ingredients, the ability to transfer data at very high rates of speed.

The fundamental purpose of the Link Michigan Initiative and indeed this report is to prepare the state and this region for global competition in this New Knowledge Economy. Therefore, the long-term vision is to make sure this region is primed and ready for the Knowledge Economy. It is the goal of this report to make recommendations that enhance the region’s Broadband readiness. Improving access to utility poles and conduits, including broadband in new developments, expanding e-government “best practices,” developing creative demand side broadband deployment incentives, and focusing on the telecommunications needs of telecommuters, students and residents of low-income housing are all ways to realize the **Long Term Vision** of making the MBS Region one of the most competitive and tech-friendly region’s in the world.

Background

What is broadband?

Data networking has its roots in the mid 1800's with Morse code and the Western Union network. Today, data networking is a vast complex system operating with telephone lines, cable lines and wireless technology. All of these networks are tied together into a public Internet. Many users use the telephone network to connect to the Internet by connecting their computer(s) to the Internet with a traditional telephone connection and a modem. These connections are measured in speeds that calculate how much data is transferred on a per second basis. Typical dial up connections are at rates of 56,000 bits of data per second, or referred to as 56 kilobits per second (kbps). This refers to how much data can be transmitted over a particular connection on a per second basis. Fifty-six (56) kbps level of service is often referred to as "Narrowband". The Federal Communications Commission (FCC) uses the term "high-speed" for those services with over 200 kbps capability in at least one direction. "High-speed" service as defined by the FCC and "Broadband" are often interchanged and we will discuss these terms interchangeably in this report.

Broadband usually requires having access to a cable modem, a high-speed telephone line referred to as DSL (digital subscriber line) or a high-speed wireless connection. There are also business level broadband services referred to as T-1, DS3 or OCn (fiber-optic) networks. These services offer

greater speeds and capacities. Small and medium size businesses are more likely to avail themselves of T–1 lines which can transfer data up to 1.5 megabits per second (Mbps). The largest businesses use direct fiber optic connections or OCn services. The FCC refers to these high end users as "Enterprise Class" users. All classes of broadband consumers are increasing their demand for high-speed access to the Internet at record rates.

Tri-County Region Overview

According to research conducted by the MEDC and the Technology Policy Group (TPG) in early 2002, the MBS region was *underserved* by broadband Internet providers when compared to other Michigan communities of similar size. This study also documented that average Internet dial-up speeds in the region ranked among the lowest in the state (TPG Study, February 13, 2002). However, it appears that the MBS region has closed any gap that may have existed. Both DSL and cable modem coverage have expanded in the last year. Competition has produced lower prices and faster speeds. Nevertheless, there is still a perceived lack of broadband access by many. There is a diverse blend of telecommunications carriers and services in the region. The dominant local telephone companies like SBC-Ameritech and Verizon are often referred to as the Incumbent Local Exchange Carriers or "ILEC's". These entities are referred to as "incumbents" because they own the local telephone network, which originally

served the areas prior to any competition as the result of changes in laws and regulations. In other words, the old Michigan Bell network is now owned and operated by the "incumbent provider", SBC. In addition to the infrastructure of SBC and Verizon, the region is home to many other advanced telecommunications providers. These providers manage both private fiber and wireless Internet services. The region's cable companies, led by industry leader, Charter Communications, also offers broadband Internet service to nearly all of the residences in its service area.

Research conducted to assess residential and business consumers' attitudes reveals that there is significant demand for high-speed Internet access in the MBS territory. Our survey shows that over 60% of residential users use the Internet on a daily basis and over 65% of businesses have a high-speed connection. Many broadband services are available in the majority of the three counties. This data is confirmed by our mapping effort. Nevertheless, there are still pockets of underserved areas.

Just as important, Charter Communications has created a broadband business unit, "Charter Pipeline" which is actively seeking business customers. Additionally, Saginaw Valley State University (SVSU) is now the site of a GigaPOP operated by MERIT Networks. A GigaPOP is a connection point that transmits data at one billion bits per second. The GigaPOP located at SVSU allows approved members to participate on the new and evolving

Internet 2. Internet 2 is viewed as the Next Generation Internet (NGI) and is attractive to high tech research based companies. A more complete review of the economic potential of Internet 2 is discussed later in this report.

Where Are We Now?

This section documents CRT's findings and recommendations for moving forward. All of the recommendations listed in this section are based on the research performed to date and CRT's expertise in handling telecommunication recommendations and infrastructure issues.

Existing Telecommunications Infrastructure

The MBS region is served by a variety of telecommunications providers. In addition to the Incumbent Local Exchange Carriers (ILECs), SBC and Verizon, there are several companies that offer broadband service. Charter Communications is perhaps the largest provider of broadband service in the MBS region. Other providers include Century Tel, Air Advantage, and Speednet. In addition to traditional broadband services like cable modems and DSL, the following advanced telecommunications services, typically reserved for high-end business use, are also available in the tri-county region. Examples include: Managed Fiber, Dedicated Circuits, Point-to-Multipoint circuits, Point-to-Point circuits and Fixed Wireless Circuits.

In addition to the facilities based providers mentioned herein, there are an additional 58 Competitive Local Exchange Carriers (CLECs) with tariffs filed with the Michigan Public Service Commission (MPSC) to operate in Midland county, 59 in Saginaw county and 44 in Bay county, respectively.

Some of these CLECs are actively conducting business in this region, such as Qwest, and some are no longer operating in the tri-county region, including those that have filed for bankruptcy protection or simply ceased operations in this region. This study lists those firms that actually own, lease or operate in the tri-county region.

Residential Connectivity

Internet access for residents in each of the three counties is available via the following methods of connectivity:

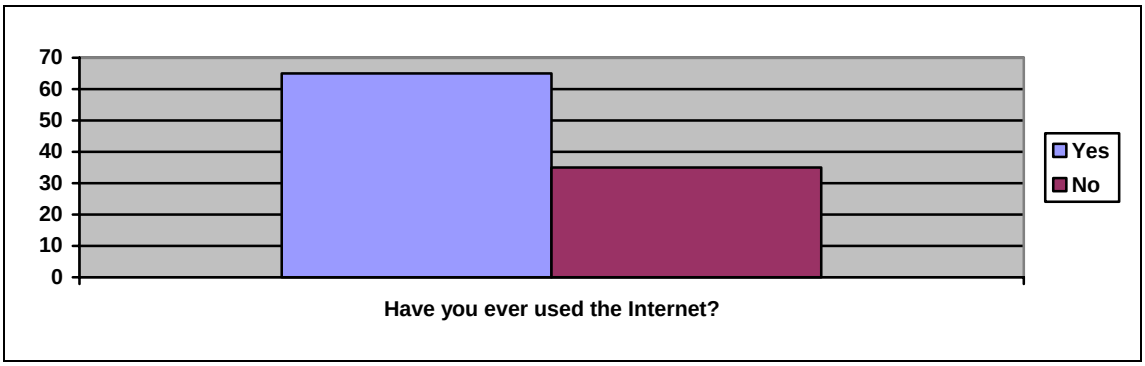
- Dial-up Modem
- Cable Modem
- Digital Subscriber Line (xDSL)
- Fixed Wireless
- Other – including Satellite, ISDN, T1, Fiber (These methods are rarely used in residential settings).

Cable modem access and DSL access are available across a large section of the three counties. In addition, at least two fixed wireless carriers offer broadband Internet service to outlying areas of the region. Only 13.5% of home Internet users stated they do not have access to high-speed Internet service where they live. This means that broadband is more available in the MBS region than the national average. The carriers assert that the availability of broadband Internet access in the region is adequate. This correlates with the results of our residential mapping effort available elsewhere in the report.

Do our residents use the Internet?

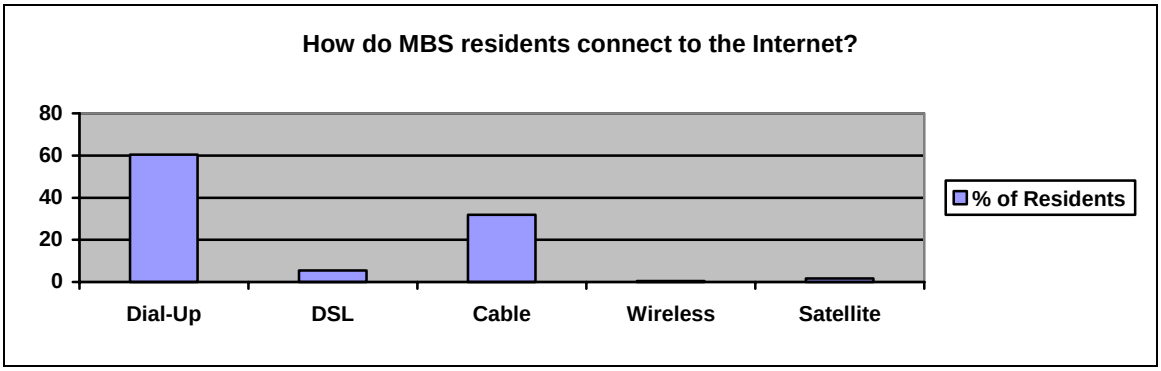
According to a survey of four hundred area residents conducted in June 2003, overall usage of the Internet in the MBS region was high. Nearly

65% of respondents affirmed that they have used the Internet. Of those respondents, 60% reported that they use the Internet at least once per day.



Approximately 40% of home users in Midland, Bay and Saginaw Counties use some form of high-speed or broadband connection to the Internet. In what is to be described as good news for the region, this number exceeds the national average, which is approximately 31%[1].

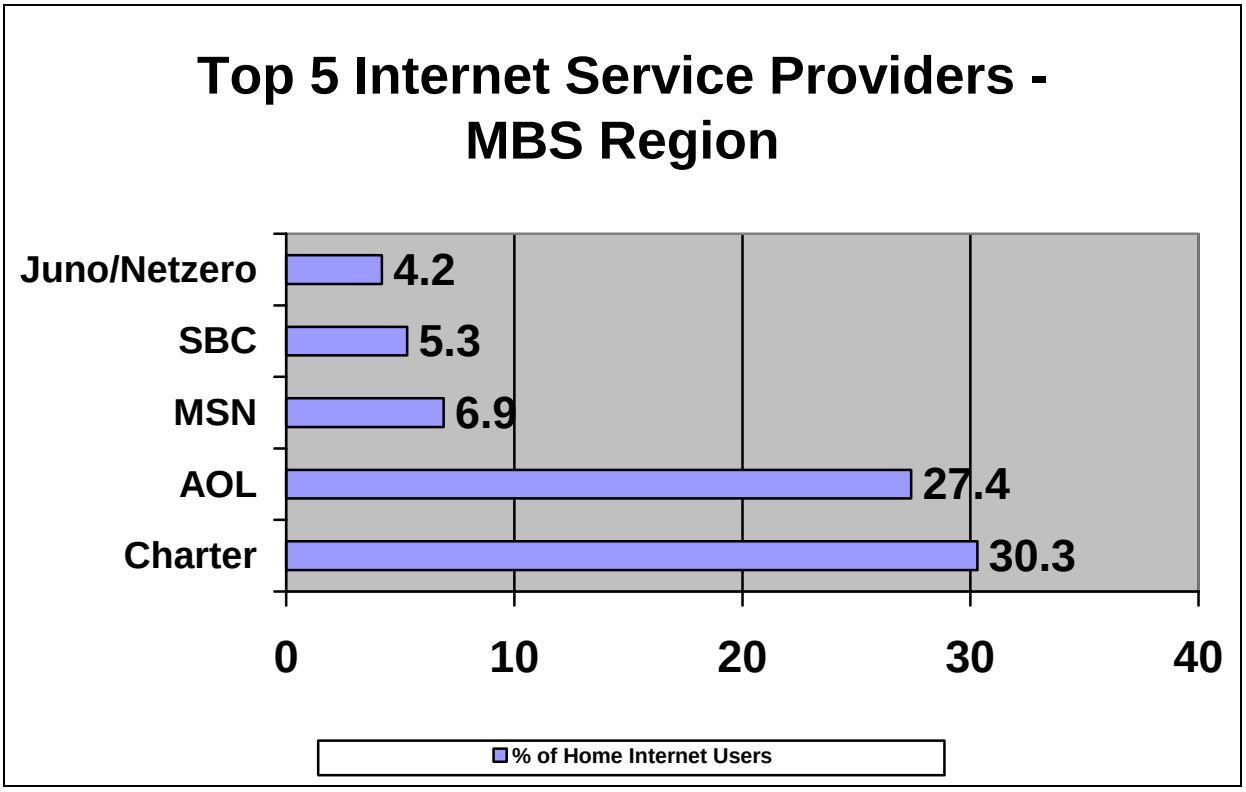
Midland, Bay and Saginaw residents are connected:



[1] Source: Pew Internet & American Life Project, The Ever-Shifting Internet Population: A new look at Internet access and the digital divide (April 16, 2003)

How do our residents connect to the Internet?

The survey reveals that the most common source of residential Internet access is still dial-up access through an Internet service provider (ISP). Sixty percent (60%) use dial up as their primary access to the Internet. Charter Communications, however is the largest ISP in the MBS region with 30% of those respondents utilizing their high-speed cable modem service. Next in line is America OnLine (AOL) as approximately 27% of the respondents get their access through AOL. MSN, SBC and Juno/NetZero round out the top five ISPs in the region. It is quite unusual for a high-speed provider such as Charter to have more subscribers than AOL. This statistic reflects positively on the MBS region and its high-speed broadband connectivity.



What do our residents use the Internet for?

MBS residents appear to use the Internet for recreation as well as for work:

- 48 percent of home Internet users stated that the primary reason that they use the Internet is for recreation.
- 44 percent said that the primary reason was equally split between work/school and recreation.
- 60 percent report that they have purchased something over the Internet.

- 36 percent use the Internet for stock trading, bill paying or online banking.
- 44 percent of home users said that they regularly use the Internet from somewhere other than their homes.
- 50 percent of MBS residents have one computer in their home.
- 12 percent have at two computers.
- 6 percent have more than two computers in their home
- 30 percent do not have any computers in their home.

Approximately 56% of households across the nation have a computer at home. In the MBS region the number is 70%.

Are MBS residents satisfied?

MBS residents are satisfied when it comes to accessing the Internet:

- 72 percent of respondents with Internet access at home responded that they were at least "*somewhat satisfied"* with their choice of Internet providers.
- 69 percent said they were at least *"somewhat satisfied"* with their connection speed.
- 73 percent of residents were satisfied with the monthly fee they pay for their Internet connection.
- 85 percent of MBS residents were satisfied with the quality of their Internet service.

Residential Demand for Broadband Services

As previously mentioned, 60% of respondents who connect to the Internet at home revealed that their primary method of connectivity is still a dial-up a connection. Fees for dial-up users are typically from $10.00 to $25.00 per month. Factoring in the expense of an additional phone line to allow for frequent uninterrupted use of dial-up Internet Access, this monthly fee can quickly escalate to $30.00 to $55.00 per month.

For residents that use broadband Internet access, cable modems were the most frequent method of connection. Thirty-two percent (32%) of the region's respondents use a cable modem, and the most common price range was $35.01-$50. However, 30% of respondents stated that their rate was between $20.01 and $35.00 per month. Of respondents whose primary Internet connection was through dial-up access, 46% said they felt that the reason they did not subscribe to some form of high-speed Internet access was that it is too expensive. SBC and Charter have responded to this marketplace opportunity. SBC has partnered with Yahoo and announced a 12-month trial offer of $29.95. Charter is also responding. Marketplace forces are at work.

Business Connectivity

Internet access for businesses in each of the three counties is available via the following methods of connectivity:

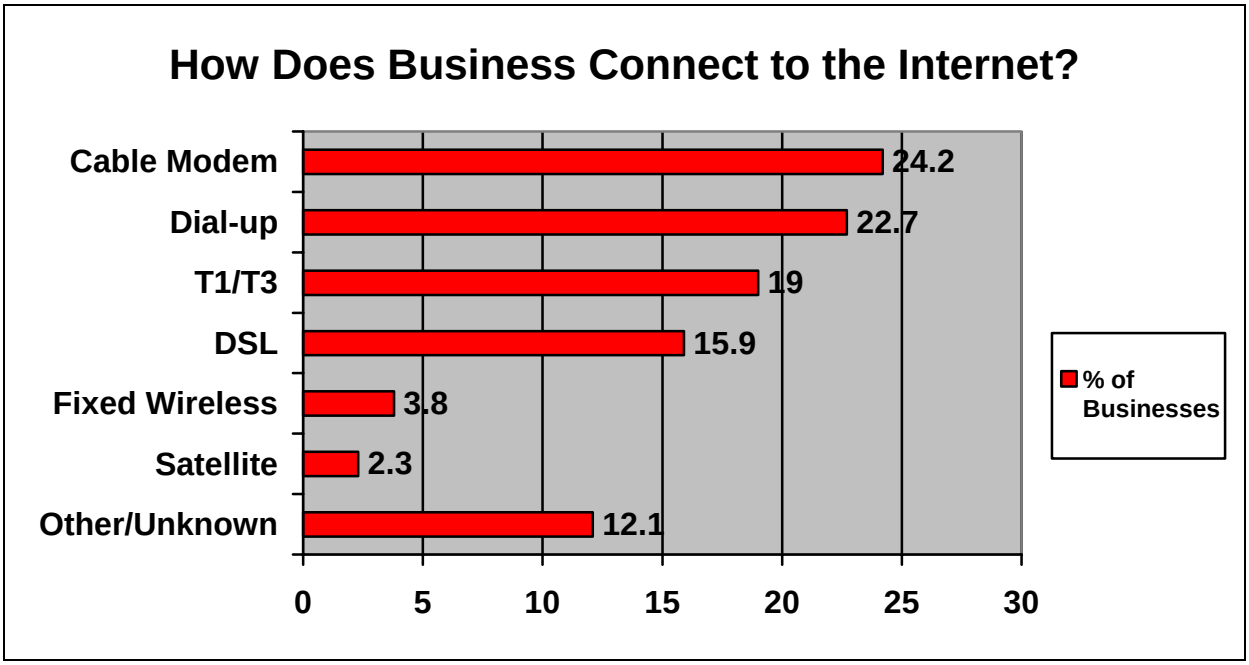
- Dial-up Modem
- Cable Modem
- Digital Subscriber Line (xDSL)
- Fixed Wireless
- Satellite,
- ISDN
- T1/DS3
- Optical Fiber

Do our businesses use the Internet?

Overwhelmingly, the answer is yes. Survey results from 124 businesses and institutions conducted in June/July of 2003 indicate that nearly every business that responded has a least one computer connected to the Internet. While we know that not every business is, in fact, connected to the Internet, it is likely that the region's businesses are more connected than other regions. In fact, 52.9% replied that ALL of their computers were connected to the Internet.

How do our businesses connect to the Internet?

The survey reveals that the most common source of business Internet access is cable modem access. This is a tribute to Charter Communications' aggressive marketing to the business community. Elsewhere DSL usually outpaces cable modems by a wide margin.



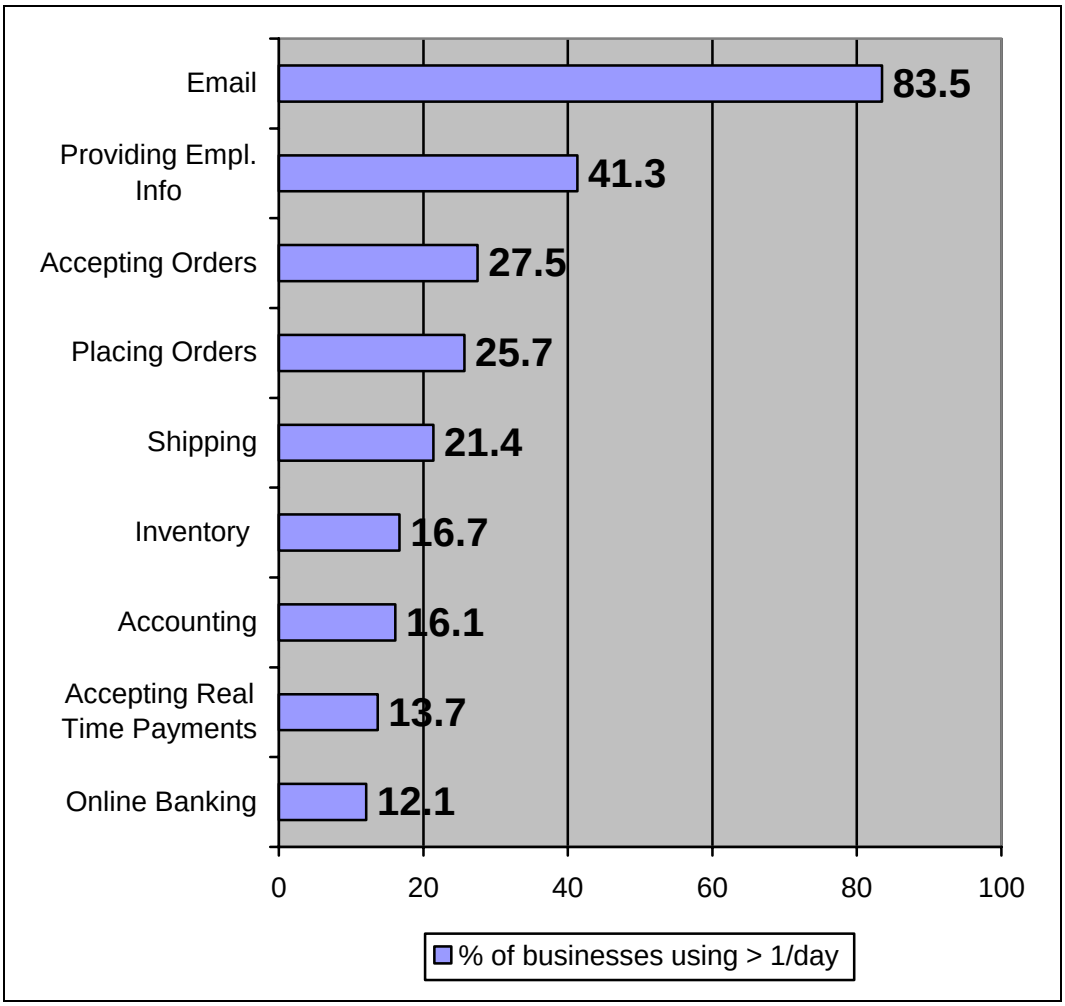
- 24 percent of the business respondents get their Internet access via cable modem.
- 19 percent use T1 or T3 lines to connect to the Internet.
- 15.9 percent use DSL technology.
- 65 percent of businesses in the MBS region use some form of broadband connection to reach the Internet.

- 32 percent of these broadband connections were installed within the last twelve months.
- 49 percent of businesses with broadband Internet connections have been connected for one to three years.
- Sixty-two percent (62%) of businesses report that no upgrade in Internet service is currently planned.

The results show that ten percent (10%) reported that they plan to upgrade their Internet connections within the next twelve months. However, 46 percent (46%) stated that they would not upgrade their network even if there were additional services, faster connections, or additional choices in providers.

What do our businesses use the Internet for?

Email is by far the most widely used Internet application used by our businesses and employers. Nearly every business surveyed responded that they use email in the normal course of operations. The survey results also indicated that eighty-one percent (81%) of these respondents have a website up and running. The following chart illustrates what regional businesses use the Internet for "more than once a day".



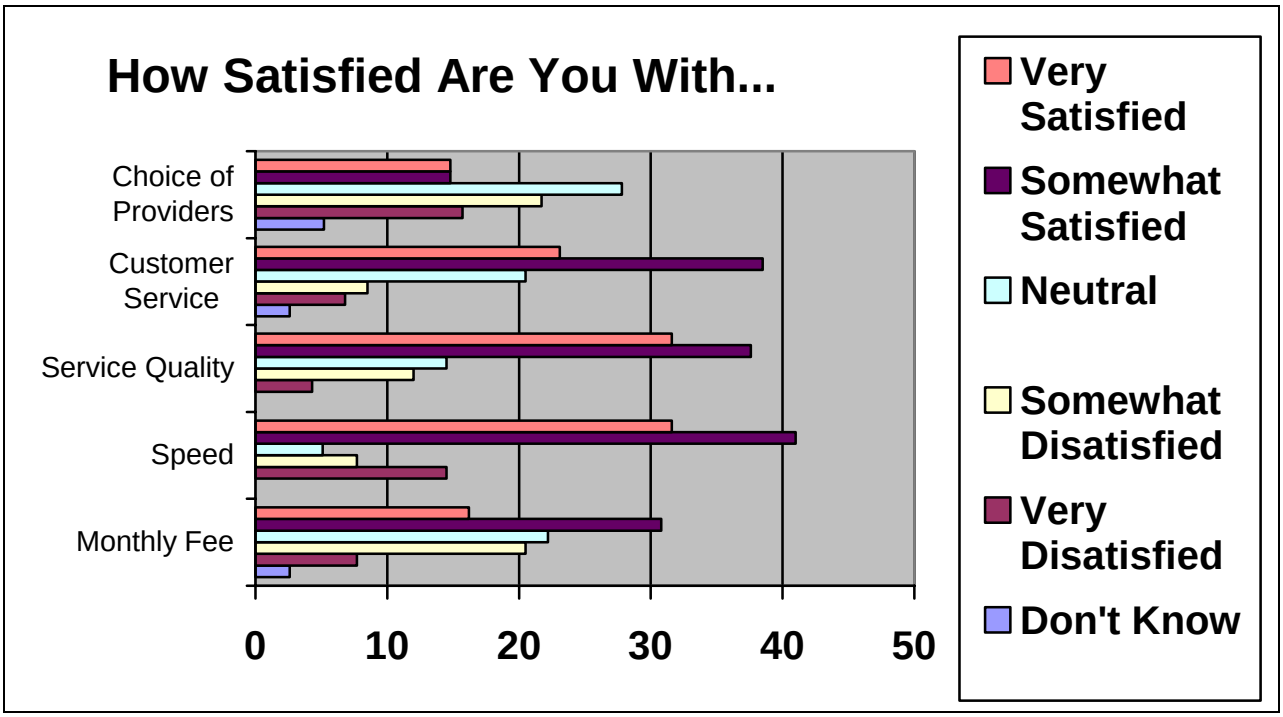
Advanced communications like videoconferencing represented an uncertain response in the business community. Over 50 percent are unsure whether or not they would use such technologies on a regular basis if they were available at their location. Approximately fourteen percent (14%) said that they would use this technology at least once a month, while twelve percent (12%) said they would only use such technology about once a year, if at all.

Are regional businesses satisfied?

Regional businesses are satisfied with most aspects of their Internet service, from price to quality. The following highlights support this statement:

- 47 percent of respondents said that they were at least "somewhat satisfied" with the monthly fee for their business Internet connection.
- 72 percent are at least "somewhat satisfied" with the speed of their connection.
- 69 percent are at least "somewhat satisfied" with their Internet service quality and
- 61 percent are at least "somewhat satisfied" with the customer service they receive from their service provider, respectively.

Area businesses however, seem to want more choices for Internet Service Providers, with nearly 37% expressing that they are “somewhat” or “very” dissatisfied with their current choices.



The Internet is clearly a tool for most businesses in the tri-cities region.

Barriers to Market Entry

According to the Lansing, Michigan based law firm of Loomis, Ewert, Parsley, Davis & Gotting, there are few, if any, local regulatory barriers for new providers to enter the market. Previously, telecommunication providers cited a myriad of different local regulations as a barrier to entry. This was true because of the ability of municipalities to directly regulate and impose fees on providers because their facilities were located in public rights-of-way. As a result, there was much inconsistency among local policies.

However, legislation enacted by the Michigan Legislature in 2002, created some statewide uniformity and removed this barrier.[2] This made it easier for new providers to enter the local market, and for existing providers to expand. It was actions like this that helped earn Michigan the number one ranking for Broadband Planning and Strategy by TechNet. Michigan out distanced its nearest rival (Florida) by almost a two to one margin.

[2] Loomis Law Memorandum -10/2002: Telecomm Investment Barriers: Telecommunication Regulation

Pole Attachments and Conduit

Although it is not necessarily regulatory in nature, a considerable barrier to entry for any "wired" telecommunications provider involves access to utility poles and conduit. For example, if an existing pole is at its weight load or space capacity, a taller replacement pole or an additional pole will have to be installed with costs being charged to the new installing party[3]. This can prohibit growth or expansion, particularly in commercial corridors, or along major roadways, where providers typically wish to locate. Not only must a new entrant subsidize the cost of a taller pole, but they must also bear any costs related to moving existing providers to the new pole. These additional costs are often so substantial that they become prohibitive for any provider.

[3] Ibid.

This crowded pole illustrates multiple fiber providers competing for the same real estate.

State and Federal Issues

At the state and federal level, there is a heated debate regarding regulatory barriers to broadband deployment. This debate has been raging for years. Congress passed the Telecommunications Act of 1996, which required the dominant local telephone companies to open up their networks to competitors. The concept was that by opening up this network to other companies, prices would drop and service would improve. These dominant

local telephone companies as previously defined are also referred to as the "Incumbent Local Exchange Carrier" or "ILEC's." Incumbents, like SBC and Verizon assert that sharing their network is a disincentive for investment. Current regulations, they argue, prohibit them from recouping their costs for further broadband deployment. They are simply unwilling to make these investments to expand broadband service if they are required to make these services available to their competitors at, according to them, artificially low wholesale rates.

The new competitors, like Century Tel, are referred to as Competitive Local Exchange Carriers or "CLEC's." CLEC's refute the ILEC position and claim that ILEC's will raise wholesale rates and other charges in an attempt to gain competitive advantage. Meanwhile both are engaged in marketplace campaigns for the consumer. Recently SBC was permitted to start selling long distance service within the state. This action granted by the Federal Communications Commission (FCC) with the approval of the Michigan Public Service Commission was support for the fact that SBC had successfully and fairly opened up its telephone network to competitors. Nevertheless, the debate continues. The FCC was given the responsibility by Congress to make sure this transition to a competitive telecommunications marketplace was achieved. The FCC has conducted numerous proceedings to insure this goal is reached. They analyze the marketplace on a constant basis.

Recently, the FCC tackled this issue in their Triennial Review Order issued August 21, 2003 (see www.fcc.org). In this Order, ILECs were **not** required to unbundle the next-generation network capabilities of their fiber-based lines. As one can imagine CLEC's were not happy with this aspect of the Order. There were also parts of the Order that were favorable to CLEC's. For example, certain existing contract provisions were grandfathered for three years. So, neither side is happy with this Order in its entirety and both sides are appealing. A complete and thorough analysis is available from the non-profit association of state utility regulators known as the National Association of Utility Regulatory Commissions or "NARUC". The full report is available online at http://www.naruc.org/programs/trip/tro_summary.pdf.

The reason that these issues are important to the MBS region is because continued marketplace competition is good for consumers and businesses alike. Prices tend to drop and service tends to improve when there is robust competition. The tri-county region has benefited from this competition. However, when one looks at some of the outlying communities and takes note of the lack of DSL service for businesses in those areas, the ILEC position becomes appealing. Many of SBC's Central Offices do not have DSL capability. It is quite possible that government officials in the rural areas of the tri-county region would support the ILEC position to adopt any

policy that would encourage SBC to expand broadband service into those communities. On the other hand, it wouldn't be surprising to see policymakers in the urban core of the tri-county area support the CLEC position on these complex issues. Given the likelihood of varying interests of the respective communities within the tri-county region, **it is CRT's position not to make any recommendations** in this area, but simply provide information in this Plan to allow each community to discuss and decide the best course of action for themselves. Both sides of these issues are more fully explored at the following websites; www.usta.org; www.telecommich.org; www.cleca.org; www.voicesforchoices.org and www.naruc.org.

There are, however, practical policies that local units of government can adopt to encourage broadband deployment in their respective communities. It is these practical and local "demand side" solutions that this report will focus its recommendations on.

The Plan & Last Mile Solutions

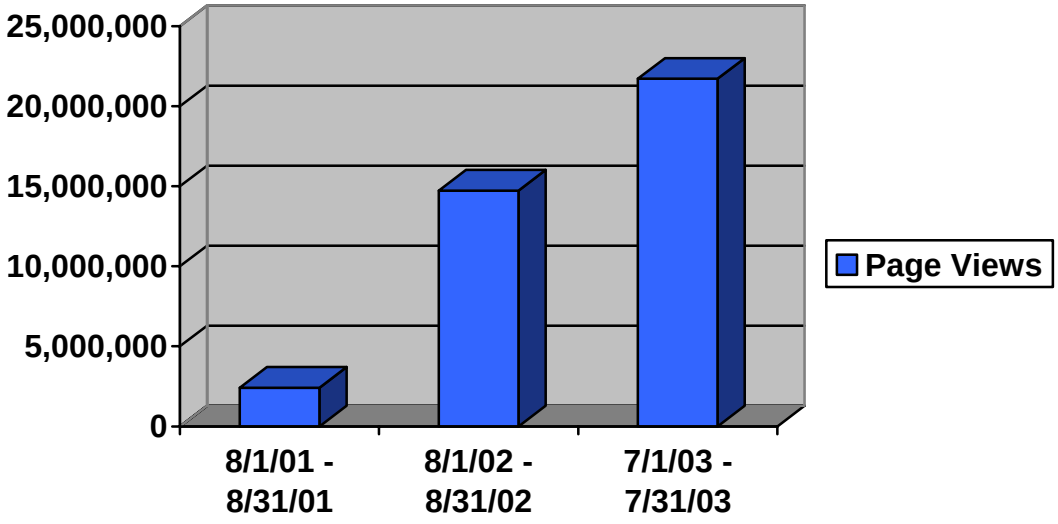
Recommendations for Telecommunications Policy

There are many policy recommendations offered within this telecommunications plan.

1. Aggressively make government services available online. While the MBS region appears to have closed any gap in terms of residential broadband availability, there are still several pockets of underserved areas. The best way to assure that these areas will soon have residential broadband is to demonstrate to area providers that there is sufficient demand for that level of broadband service. One way to accomplish this would be for local governments to stimulate that demand by providing important information online as well as allowing constituents to conduct government related business online (electronic permit applications, tax payments, etc). It is well documented that both state and federal governments have done a remarkable job of making much needed information available online. Even during the great blackout of 2003, residents that had electricity could renew their automobile license plates online even if the nearby Secretary of State's office was closed due to the power outage. The online state park reservation system is perhaps the best example of how online use has been widely used by state residents. The online hunting and fishing license application process has been widely

acclaimed. Use of Michigan.org website has skyrocketed. In July of 2001 there were approximately 2,000,000 page views to the Michigan.org website. By July of 2003, the number of page views was estimated to be approximately 20,000,000, a ten-fold increase in two years.

Monthly Page Views For Michigan.gov



At the federal level, the best example is the growing percentage of taxpayers that now file their tax returns online. Over 47 million Americans now file their tax returns online. Congress has set a goal that 80% of all Internal Revenue tax returns will be filed electronically by 2007. E-filed tax returns have a much lower rate of mathematical errors. E-filed tax returns generate quicker returns thereby benefiting both the government and the taxpayer.

Local governments can have the same success. Over 5,000 local government websites can be found by performing a search across the Internet using the *Google* search engine. Governments in the MBS region are ahead of the curve in this area. Both Saginaw and Midland County rank in the top ten statewide for their websites according to the local government website assessments conducted by Cyber-state.org. This organization utilizes the Website Attribute Evaluation System (WAES) that was developed by the Cyberspace Policy Research Group (see www.cyber-state.org for further information). Saginawcounty.com is rated the third best site for its ease of use, overall organization and the amount of information offered. This site provides multiple ways to access information, via a drop down menu, a text menu at the bottom of the page, and the graphic-text navigation located in the left hand column of the page. Deployment of these "best practices" to all local governments would help further increase demand for broadband services.

Additionally, local governments should look for specific information that would be in high demand if it were offered on its government website. One example of such an application would be to post all county Register of Deeds and local units of government property tax systems online. Existing county websites already post much of this information, however, specific townships in areas without broadband should be targeted next. Rural

property owners, farmers and homeowners alike, would find it of interest to follow neighboring property sales and values online. Their farm or rural home is oftentimes the most important economic asset that they own. Having consumer friendly online access to comparable home and farmland sales would likely be an application that would drive broadband demand in the rural underserved areas of the region. As previously mentioned, the MBS region has extensive examples of outstanding online services to draw from.

2. Incorporate broadband incentives within development plans and building codes. Too often office parks or industrial parks are built without any plans for high-speed telecommunications. This needs to change. Broadband providers should be at the table when developers are making their initial plans. Planning and zoning commissions should ask about broadband plans. An example of an innovative approach to bringing broadband service to an underserved area is evident with the recent practice of the Williamston, MI Economic Development Corporation (EDC). In this example, it was cost-prohibitive to bring wired telecommunications services to a new office park. The Williamston EDC issued a request for broadband implementation plans from Internet providers. A provider was selected to establish a high-speed fixed wireless implementation for the office park and surrounding area. Because the Williamston EDC had already established a

Tax Increment Financing Authority (TIFA), this project was funded with money from this Authority. This illustrates the success that local governments can have when they pursue funding sources such as, Federal, State, Economic Development Corporation (EDC) Downtown Development Authority (DDA) or Tax Increment Financing Authority (TIFA) monies to build out additional broadband infrastructure. Money from these types of sources should be used to encourage infrastructure investment in outlying regions with inadequate access or with smaller market sizes. In this example, the Williamston EDC provided a $25,000 grant to a fixed wireless provider to bring their broadband offerings to an office park without broadband service.

Local ordinances and building codes can also be used to encourage developers of low-income housing to include broadband in their plans. Some states and communities are requiring that broadband be installed in multiple dwellings, especially in low-income housing developments. Public housing authorities in Nebraska, Oregon and Wisconsin have pushed developers to wire for broadband by giving them preferential access to low-income housing tax credits. Kentucky was the first state to actually require the practice[4]. Members of Congress also see the rational of this effort. Senate Resolution 305, introduced by Senators Kerry and Hatch would "… amend the Internal

[4] *Wired Magazine* – "A Broadband Hookup in Every Home" Goot, Dustin – 2/11/03

Revenue Code… to include criteria which created low-income housing credits if the project had a high-speed Internet infrastructure.[5]"

According to One Economy, the nationwide nonprofit organization dedicated to bringing computers and Internet into the homes of low-income people through partnerships with the private sector, less than 30 percent of the lowest income households have Internet access (see www.one-economy.com). One Economy has developed a policy that promotes state and local governments to encourage developers of low cost housing to include broadband in their plans. Local tri-county communities should consider this as well. There are six states that currently have some form of encouragement built into their regulations requiring projects that receive any monies or matching funds to have adequate access to high-speed Internet services. These proposed One-Economy recommendations provide an excellent model for local units of government to craft their respective ordinances and codes after.

3. Develop innovative practices and incentives to increase the attractiveness of broadband investment. Encourage partnerships between governments and the private sector. A good model to follow is the partnership between Charter Communications, MERIT and the Michigan Broadband Authority announced in December 2002. This partnership would

[5] Proposed Senate Legislation February 5th, 2003 (108th CONGRESS, 1st Session) - S. 305 Kerry

connect the MERIT network in the Lower Peninsula with Sault Ste. Marie, Munising, Marquette, Escanaba, Iron Mountain, and Houghton in the Upper Peninsula. This partnership was created to bring an $8 million high capacity fiber optic connection to the Upper Peninsula. It is this type of effort that the Tri-Counties should seek to duplicate.

Another example of innovation at the local level is evident in the Portland, MI. community. In this example, the city partnered with the school district. As the city was engaged in a beautification effort to move its overhead utilities to underground, the city installed spare conduit for future fiber optics to serve the school district. It is this kind of foresight that should be applauded.

4. Publicize broadband availability. One of the major findings of this report is the frustration people have not knowing what is available and where. Indeed, attempting to find out all of this information was extremely difficult and still incomplete as providers were reluctant to share their information publicly fearing that a competitor would gain some advantage. Therefore local governments should try and encourage providers to publicize information. Use the carrot not the stick; give them free publicity on community websites or cable channels. Publicity should not be limited to the local area. Indeed, one of the 5 key benchmarks of an “Intelligent Community” as defined by Intelligent Community Forum of the World

Teleport Association is the ability of a community or region to market itself worldwide. Businesses have never been more mobile or international and efforts to highlight broadband infrastructure are an essential ingredient to the relocation equation.

5. Mirror local telecommunications policy and strategy with the state focus on K–12 educational needs. The state focus on K – 12 educations provides an opportunity for synergy. The recently announced "Freedom to Learn" plan would put a laptop in the hands of every sixth grade student in the state. These students will need Internet connectivity both at school and at home. This will increase demand for broadband service. This dynamic offers an opportunity for local telecommunications policy to support the effort to give our students the technology advantage they will need to compete in the world economy. Special attention and effort should be made for students living in low-income housing. These students need access to computers and high-speed connections in their neighborhoods. To address this need, the Michigan State Housing Development Authority is contemplating a requirement that high-speed broadband be built into future housing developments. Similar action could be taken at the local level.

In Lansing, MI. the Mayor's IT Council is attempting to come up with creative solutions to make broadband more available in low-income areas.

Recently they awarded a subsidy to an Internet Service Provider (ISP) to make service available at below standard market rates.

Special attention should be given to any school and its surrounding neighborhood that is classified as “under performing” by the federal “No Child Left Behind Act.” Under this Act, schools were given certain parameters to achieve. Those that did not achieve these goals were subjected to being listed as an “under performing school.” Of the 216 under performing primary schools in the state of Michigan, many of these schools were located in low-income areas. Local units of government should identify low to moderate income housing units that are within the territories that contain under performing schools or schools that are in danger of joining this list. Creative measures should be taken to provide low-income families advanced telecommunications services in these neighborhoods. Implementing this policy would dovetail nicely with state policies described herein. This is a huge opportunity for local communities to work hand in hand with these enunciated state policies and establish local policies that mirror these same goals. Focusing on broadband availability in low-income housing would accomplish this objective. Public libraries, churches, community centers and area schools are all ripe for broadband deployment where it doesn’t already exist. A list of state subsidized low-income housing in the tri-county region

is available in this report to allow communities to begin an inventory of broadband capabilities within these facilities.

6. Consider seeking state legislation to create a "Smartzone" or similar status in the tri-county area to encourage major research facilities to locate within the region.

Attracting high tech research facilities to locate within the region will require bold and aggressive action. These leading institutions often referred to as "Enterprise Class" businesses will only locate in a region if there is very high capacity broadband service. Local governments should seek creative ways to encourage local providers to provide this level of service. Through innovative and cooperative public/private partnerships, it is possible to expand broadband and fiber availability to meet the needs of this Enterprise Level business customer. Any such efforts often require full utilization of all possible funding sources. Whether it is a federal Community Block Grant or a low interest loan from the Michigan Broadband Authority, these kinds of approaches are tools that can be combined to put together an attractive package. Sources such as the Michigan Economic Development Corporation, the Michigan Broadband Authority, Downtown Development Authorities, Tax Increment Financing Authorities and the USDA Rural Utilities Service (RUS) are all sources of funding that can be used for providing creative ways to expand broadband infrastructure and demand. For example, the RUS

recently awarded over $11 million in grants for broadband Internet providers to serve communities in rural America.

It also may be worth the effort for the tri-county area to be declared as a “Smartzone” by the MEDC. There are currently 10 such sites in Michigan and they offer a brand of Tax Increment Financing for specific areas intended to attract companies that are part of the emerging Life Sciences industry. Previously, when the MEDC selected these sites statewide, there were 11 sites originally selected. However, one site has lost its designation for failure to comply with a section of state law requiring certain provisions be met by December 31, 2002 [see MCLA 125.2162a, section 12a (6)]. A bill to amend this section is currently under consideration by one state legislator. This may present an opportunity for the MBS region to seek such designation now that Saginaw Valley State University has a GigaPOP connection point on its campus. This GigaPOP is operated by the MERIT Network and is part of the Next Generation Internet (NGI) or Internet 2. This new Internet is limited to Universities and research facilities that require distributed resources such as Supercomputers, very large databases or very high-speed processors. In any event, other Tax Increment Financing options may be available with or without the MEDC “Smartzone” status. MEDC designation, however, would put the MBS region

on the state list of high-tech corridors and therefore be included in the state marketing campaigns to attract the Life Sciences Industry.

Recommendations for Technology Solutions

The following technology recommendations represent the greatest likelihood for increased access to last-mile solutions:

1. Use Wireless Technology to reach unserved areas quickly.

Oftentimes, it is cost prohibitive to expand cable or fiber optic lines to remote areas. Costs can easily exceed $50,000 per mile. However, there is a technology that has become perfect for reaching these remote areas in a cost effective manner; it is Wireless technology. Broadband Wireless is a tried and proven technology developed by the military over 30 years ago. It has surged in use in recent years due to last mile demand for broadband. The FCC recently reclassified certain frequencies to allow greater public use of this technology. This “unlicensed” wireless spectrum is a technology that allows the most efficient way to quickly reach unserved geographic regions.

The FCC action, coupled with this last mile demand, has unleashed incredible advancements in technology. For example, two years ago the maximum line of sight of this technology was approximately 1 mile with a 10 Megabits (Mbps) per second capacity. With the rapid advancements in this unlicensed technology, it is now possible to achieve a 6-mile, non-line of site, radius at rates up to 54 Mbps. These advancements offer creative solutions to underserved office parks, industrial parks and unserved outlying residential subdivisions. Wireless Technology offers the fastest and most cost effective means to meet this unmet demand.

An example of an innovative approach to deploying wireless Internet service is found by looking at the Williamston, Michigan experience. As previously discussed, this example, offered a $25,000 grant to a broadband provider to serve a new Office Park. After reviewing proposals, the Williamston EDC selected a wireless provider as the grant recipient. This grant provided the necessary financial incentive for the Wireless Provider to expand their footprint and provide broadband to this Office Park. Without this financial incentive, the project was not financially feasible. This Wireless solution proved to be the quickest and most economical "last-mile" solution for this community. MBS communities should look for similar creative solutions to bring broadband to unserved areas.

2. Deploy Wi-Fi technology in large traffic areas.

Wi-Fi is an acronym for "Wireless Fidelity." It refers to high–speed wireless Internet connectivity. This service is targeted in small compact areas like hotel lobbies, coffee shops or a business lounge at an airport. It is also called a "HotSpot." The technology allows users with laptops or other Wi-Fi handheld enabled devices to access the Internet without wires. It operates much like a low power radio station's signal, the laptop has a small card/antenna that slides into the Ethernet slot and receive and send signals are transmitted in each direction to an Access Point that is connected to the Internet through a high speed connection. Indeed, many new computers

have Wi-Fi technology already built-in to take advantage of HotSpots without any additional hardware. Intel has launched a $300 million advertising campaign, the biggest since the “Intel Inside” campaign to announce the arrival of its new Wi-Fi technology referred to as the Centrino chip.

Generally speaking, Wi-Fi Hotspots are limited to a 300’ radius. Some communities are partnering with Wi-Fi providers to install them in public places to encourage broadband Internet use. An ambitious example of this is evident in Paris, France. Wi-Fi enthusiasts are trying to turn that entire cosmopolitan city into a HotSpot. Wi-Fi antennas are being placed outside subway stations and along a major north-south bus route. Initially the service is offered free of charge. If all goes well, the developers will install Wi-Fi antennas at all 372 Metro transit stations throughout the city and link them via fiber optics. That would create one continuous network and would allow people to roam seamlessly throughout the city while they were connected to the Internet. The deployment of so many widespread Wi-Fi HotSpots would enhance a community’s technological image. Therefore, we recommend that the Plan encourage communities to co-sponsor Wi-Fi HotSpots with area businesses to enhance their technology image and provide a service to the Knowledge Workforce, which is necessary to attract high-tech companies. At the very minimum, the regional airport should be equipped with a Wi-Fi HotSpot to assist travelers. Rapid deployment of

HotSpots would likely increase demand for broadband Internet service throughout the region as more and more people become accustomed to the fast speeds that are inherent in this technology.

Finally, Wi-Fi HotSpots are a relatively inexpensive technology. Generally speaking, a Wi-Fi HotSpot can be installed for under $10,000 with a monthly cost dependent on the backhaul arrangement.

3. Take advantage of the existing GigaPOP located at SVSU.

As previously explained, a GigaPOP is a very high speed Point of Presence with connections to other networks. This connection can transfer data at speeds of over one billion bits per second. Such transfer rates are especially important to the high-tech industry that is depending on distributed information resources. Large remote data banks, very high-speed processors and SuperComputing are all functions that are made possible with a GigaPOP connection. One of the requirements of Internet 2 or the Next Generation Internet is that connections be at least at one Gigabit speeds and capacity. This is the future for the Knowledge Economy. The MBS region needs to make plans to facilitate connections to the Internet 2 available at the GigaPOP located at SVSU. It would be most efficient to partner with a provider like Charter Communications because they already have fiber optics at this location. Fiber optic construction can be very expensive. Costs can range in excess of $50,000 per mile depending on

several factors within the urban environment. As previously stated, the partnership between Charter, MERIT and the Michigan Broadband Authority serves as a practical model, which MBS communities can follow. This leveraging of existing high tech facilities with existing providers and opportunities is a cost effective and cooperative approach that would greatly increase the attractiveness of the entire region.

4. Connect regional educational networks.

Another benchmark of the attractiveness of a region for the high tech industry is the skill level of its workforce. The MBS region already has a head start. For example, the MiTECHplus.com website is a great example of career training available for the emerging Information Technology workforce. Interconnecting existing educational networks opens up learning opportunities that may not otherwise be available. The Saginaw Intermediate School District has “Saginet”, which is also connected to Internet 2.

Other exciting learning opportunities involve the real time observations of the ocean’s floor as part of the Jason Project. Bay County has the 93-mile Bay-Arenac Intermediate School District Fiber network. Midland County has the McoNet. The Saginaw Intermediate School District has “Saginet” which, as previously described, is connected to Internet 2. Interconnecting these existing educational networks in the tri-county region would expand these

opportunities to the entire MBS region. Both legal and technical issues need to be addressed when considering interconnecting networks. Nevertheless, it may be well worth the effort. Another opportunity that exists is the result of "private peering" relationship between Charter and SVSU. This relationship allows both students and faculty to connect to SVSU from their homes using Charter's cable modem service. The data, however, that is directed to SVSU is handed off to the SVSU network without going on the Charter network. This peering relationship allows for faster service as large files can be downloaded more quickly from campus databases to faculty homes. This is a very attractive feature to telecommuters and the emerging Knowledge Workforce of the 21st century.

Conclusion

We are in the middle of a huge transformation from a natural resource based labor-intensive economy to a New Economy often referred to as the "Knowledge Economy." Instead of ports at sea or access to Interstate highways, the Knowledge Economy needs Very High-Speed Access to data networks. This is not new. Perhaps one of the most overused terms of the last few years was the term, "Information Highway." While the term is indeed overused, the phenomenon is real. And it is a worldwide phenomenon. MBS is not the only region studying how to improve their high tech attractiveness. A few hundred miles to the northeast, Toronto is doing the same thing. The Office of the Greater Toronto Area funded an excellent Study on comparing and benchmarking "Intelligent Communities." According to this study there are **five key Intelligent Community Indicators:**

- Broadband Infrastructure,
- Availability of a skilled Knowledge Workforce,
- Availability of Venture Capital,
- Addressing Digital Divide issues,
- Ability to creatively market itself to the Global economy.

In each of these key areas, the MBS region has the ability to shine. This report has focused on the Broadband Infrastructure issues, however,

one needs to see the total picture as represented by the above list to fully understand the comprehensive task at hand. To succeed, the MBS region must excel in all five areas. The World Teleport Association has an Intelligent Community Forum, which annually recognize cities that are leaders in this effort. The MBS region should focus its efforts to become ranked among world-class cities like Singapore, Seoul, and Calgary.

A great example also exists in the Central Florida High Tech Corridor stretching from Tampa through Orlando to the Kennedy Space Center in Cape Canaveral (see.www.floridahightech.com). One can easily imagine a high tech zone in the MBS region connecting the existing high tech skilled workforces of Dow Chemical, GM Delphi regional General Motor's facilities and health care providers to the Internet 2 hub at Saginaw Valley State University. The MBS region has all of the ingredients, it simply needs to make this a **Priority and Focus** to earn its place among the world's most technological advanced communities and thereby secure its economic future.

Survey Results – Public Sector Consultants

Overview

Public Sector Consultants Inc. was hired by Control Room Technologies (CRT) to implement a series of surveys as part of the LinkMichigan initiative. Surveys were conducted in order to research and offer strategic planning surrounding high-speed and "next generation" communications infrastructure in the tri-county region. Two surveys were conducted in Bay, Midland, and Saginaw—a survey of businesses and a survey of residences. This section contains the findings as reported by Public Sector Consultants Inc.

Where appropriate, the survey results were weighted using information from the 2000 United States Census to reflect the population of these counties as accurately as possible.

Business Survey Introduction

An Internet-based survey of businesses in the three counties was conducted between June 18 and July 22, 2003. To conduct the Internet survey, invitations were mailed to 3,000 randomly selected businesses in the three counties.[6] The invitation, printed on LinkMBS letterhead, included background information about the project, as well as a URL and passcode that users would need in order to take the survey. In the event that a business did not have Internet access, a phone number was given for respondents to request a paper copy of the survey. Paper copies of surveys were mailed with the cover letter, survey instrument, and a postage-paid, business reply envelope addressed to return the completed survey to PSC. In the tri-county region, only three surveys were requested by mail.

Ten days after the invitation was mailed, a reminder postcard was mailed to all businesses that did not respond. Approximately three weeks later, when the overall response rate was still below what PSC expected, a second reminder postcard was mailed to all non-responding businesses by PSC itself.

In all, 124 business surveys were returned, or 41 percent of the expected response (see Exhibit 1). Upon closer analysis, while responses were below expectation for employers by county, by number of employees,

[6] PSC expected a business response of 10 percent, or 300 completed surveys from a mailing of 3,000 randomly selected businesses. This response rate was based on prior PSC experience with business surveys and surveys of high-tech/Internet issues using the Internet.

and by major SIC code, they were below expectation by reasonably equal shares. In other words, the results from 124 businesses were not missing any single group of businesses in comparison to other groups.[7] PSC used a statistical technique called "weighting" to correct for these over/under-representations.

EXHIBIT 1
Businesses, by County

County	Total Business with 5 or more Employees[8]	Percentage of Regional Total	Expected Responses	Actual Responses
Bay	1,362	26.8%	80	40
Midland	947	18.6%	56	30
Saginaw	2,770	54.5%	164	54
Totals	**5,079**	**100.0%[9]**	**300**	**124**

SOURCE: Public Sector Consultants Inc.

The lower than expected response rate, however, did increase the margin of error to ± 8.7 percent with 95 percent confidence, as well as render meaningful comparisons between the businesses in each county extremely difficult.

Business Usage of the Internet

Annual utilization of the Internet by respondent companies for the activities listed in Exhibit 2 below ranges from 40.0 percent to 100.0

[7] As a concrete example, these 124 responses *under*represent by approximately 10 percent the smallest employers (5–9 employees) and *over*represent by approximately 10 percent the largest employers (20 or more employees).
[8] PSC believes that most business surveys should exclude businesses with fewer than 5 employees. In most cases, these businesses are sole proprietorships or other limited arrangements.
[9] Percentages may not = 100% due to rounding.

percent. Companies with broadband service show more frequent utilization of most activities.

The four most frequently used Internet activities over a year are e-mail; placing orders for products and services; downloading or sending large documents; and providing information to employees.

The three least common activities (over a year) are using the Internet for internal control and auditing; accepting payments; and inventory tracking and control. Again, broadband respondents typically utilize these activities more frequently than do dial-up users.

EXHIBIT 2
Frequency of Business Internet Use (Q29)

	Once a week or more frequently		Total participating in this activity in a year	
Internet used for…	**Dial-up**	**Broadband**	**Dial-up**	**Broadband**
…selling or accepting orders products and services	23.8%	50.7%	71.4%	78.7%
…placing orders for products and services	50.0%	69.4%	90.0%	92.9%
…e-mail (internal and external)	100.0%	96.3%	100.0%	98.8%
…providing information to employees	45.0%	75.0%	85.0%	85.0%
…accepting real time payments such as credit card payments	10.0%	30.4%	45.0%	55.1%
…financial transactions with banks	30.0%	52.8%	50.0%	68.1%
…performing billing or bill payments	25.0%	42.5%	40.0%	67.1%
…accounting and internal auditing	5.0%	35.3%	40.0%	55.9%
…inventory tracking and control	22.2%	32.8%	50.0%	50.7%
…shipment tracking and control	31.6%	63.0%	57.9%	76.7%
…downloading or sending large documents	45.5%	77.1%	86.4%	91.6%

SOURCE: Public Sector Consultants Inc.

Cost of Internet Connection

As shown in Exhibit 3, the average monthly cost of Internet connection varies widely, ranging from $30.89 (Dial-up) to $727.04 (Broadband T1/T3).

EXHIBIT 3
Average Cost of Internet Connection (Q21)

Variable	Dial-up	Broadband (DSL/Cable/ISDN)	Broadband (T1/T3)
Monthly Cost of Internet Connection			
Mean Cost	$30.89	$163.34	$727.04
N[10]	21	52	15
Distribution of Monthly Cost of Internet Connection			
$0.01 through $14.99	0.0%	0.0%	0.0%
$15.00 through $19.99	9.5%	0.0%	0.0%
$20.00 through $34.99	57.1%	5.8%	0.0%
$35.00 through $49.99	14.3%	11.5%	0.0%
$50.00 through $99.99	19.0%	17.3%	0.0%
$100.00 through $249.99	0.0%	50.0%	6.7%
$250.00 through $499.99	0.0%	7.7%	26.7%
$500.00+	0.0%[11]	7.7%	66.7%

SOURCE: Public Sector Consultants Inc.

Demographic Description

Broadband is the most popular type of access. It is also the access of choice for the largest companies. Among companies with more than 20 employees, 82.8 percent use broadband.

Companies using dial-up service have the fewest employees: none had more than 100 employees.

As shown in Exhibit 4 below, the average number of locations within the tri-county area for dial-up companies is smaller than for broadband

[10] N = Number of respondents.
[11] Percentages may not = 100 % due to rounding.

users (1.2 compared to 1.7). This pattern is even more pronounced when comparing the average number of total locations, with dial-up companies averaging 1.5 total locations, compared to 2.7 locations for companies using broadband.

EXHIBIT 4

Business Characteristics, by Type of Internet Connection (Q1, 2, 4, 5, 31)

Variable	Dial-up	Broadband
N	23	86
Total Locations		
Mean	1.5	2.7
Tri County Locations		
Mean	1.2	1.7
Total Employees		
Mean	13.9	71.6
Employees in Tri County		
Mean	12.0	39.7
Year Company Founded		
Before 1900	0.0%	3.8%
1901 to 1920	10.4%	4.6%
1921 to 1940	8.1%	4.8%
1941 to 1960	8.0%	19.3%
1961 to 1980	33.8%	33.5%
1981 to 2003	39.7%	34.0%

SOURCE: Public Sector Consultants Inc.

Is An Upgrade Intended?

Only 19.8 percent of companies participating in the survey are planning an upgrade in service. There are distinct differences between companies with dial-up access and those with broadband. More than one-third (36.6 percent) of dial-up companies plan an upgrade within a year, while only 17.0 percent of broadband companies say they are planning an upgrade (see Exhibit 5).

EXHIBIT 5
Plans to Upgrade Internet Connection (Q17)

Is your company planning on upgrading its current Internet connection at this location with a faster level of service …	Dial-up		Broadband	
	N	%	N	%
…within 3 months?	1	3.3%	6	6.8%
…within 6 months?	0	0.0%	5	5.7%
…within the next year?	10	33.3%	4	4.5%
No upgrade planned	10	33.3%	64	72.7%
Don't know	9	30.0%	9	10.2%
Total	**30**	**100.0%**	**88**	**100.0%**

SOURCE: Public Sector Consultants Inc.

Would Additional Service Change Your Mind on Upgrading?

Of those who are not planning an upgrade, nearly equal shares of respondents say that additional service and/or providers *would* change their decision about whether to implement an upgrade (45.7 percent), as would not (46.7 percent). Fifty percent of dial-up users *would not* change their decision not to upgrade, regardless of service improvement or different providers, compared to 42.2 percent of companies with broadband access (see Exhibit 6.).

EXHIBIT 6
Factors Influencing Upgrading Connections (Q18)

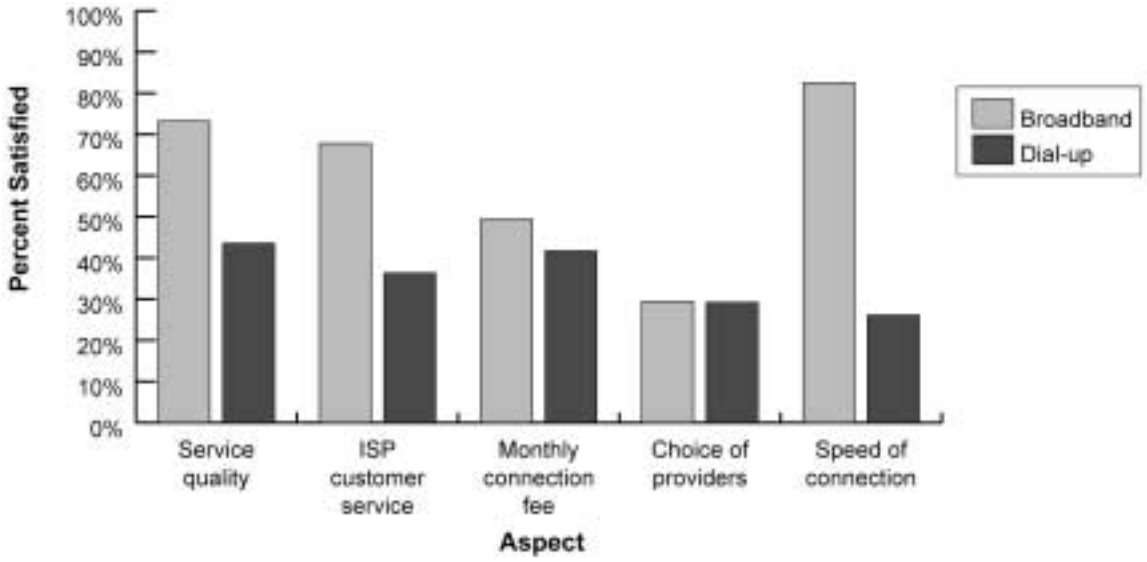
Would additional services make you change your mind about an upgrade?	Dial-up		Broadband	
	N	%	N	%
Yes additional services would change my answer	0	0.0%	6	9.4%
Yes additional providers (competition) would change my answer	0	0.0%	11	17.2%
Both additional services and providers would change my answer	5	50.0%	15	23.4%
Neither additional services and providers would change my answer	5	50.0%	27	42.2%
Don't know	0	0.0%	5	7.8%
Total	**10**	**100.0%**	**64**	**100.0%**

SOURCE: Public Sector Consultants Inc.

Satisfaction with Internet Service

Overall, broadband business users are much more satisfied with each aspect of their Internet connection than are dial-up users (see Exhibit 7). The exception is choice of providers, where nearly equal shares of both dial-up and broadband users are satisfied (29.2 and 29.4 percent, respectively).

EXHIBIT 7
Satisfaction with Internet Service (Q15)



SOURCE: Public Sector Consultants Inc.

Why Do You Not Use Broadband?

Among dial-up companies not planning to upgrade, the most significant reason (given by 68.2 percent of respondents) is that broadband is not worth the price (see Exhibit 8). Lack of availability and sufficiency were also cited (13.6 percent and 18.2 percent, respectively).

EXHIBIT 8
Reason for Not Using Broadband Connections (Q19)

Why do you not connect via a broadband connection? (Asked of companies with dial-up access)	N	Percent
Broadband access is not available to this location	3	13.6%
Broadband not worth the price	15	68.2%
The broadband that is available is not sufficient	4	18.2%
The company does not need broadband to conduct business	0	0.0%
Total	**22**	**100.0%**

SOURCE: Public Sector Consultants Inc.

Residential Survey Introduction

In addition to the Internet survey of businesses, the residential survey was conducted by telephone between June 5, 2003, and June 8, 2003, with a total of 400 households surveyed in these counties. Exhibit 1 shows the population of these counties, along with the total responses by county.

EXHIBIT 1
Residential Respondents, by County

Location	Adults (age 18 and older)	Percentage of Region's Population	Survey Respondents	Margin of Error
Bay County	83,278	28.0%	116	9.1%
Midland County	60,580	20.3%	73	11.5%
Saginaw County	153,958	52.0%	211	6.7%
Total	**297,816**	**100.0%**	**400**	**4.9%**

SOURCE: Public Sector Consultants Inc.

As Exhibit 1 shows, a survey of 400 adults in this region yields a margin of error of ± 4.9 percent with 95 percent confidence. In other words, if the entire population of these three counties were surveyed, the answer would fall within ± 4.9 percent of the answer shown on this survey instrument in 95 of 100 administrations. Readers should also note that margin of error is only one type of error associated with surveys in general and telephone surveys in particular.

Since 52 percent of the population in this region lives in Saginaw County, just over half of the survey respondents reside in Saginaw County, with the remainder residing in Bay and Midland Counties. Based on this distribution, these surveys of 400 adults will also yields cross-tabulations

- in Bay County with a margin of error of ± 9.1 percent,
- in Midland County with a margin of error of ± 11.5 percent, and
- in Saginaw County with a margin of error of ± 6.7 percent.

Usage of the Internet

As shown in Exhibit 2, daily use of the Internet is the most common use pattern regardless of the type of access.

The most frequently reported activity on the Internet for residential users is purchasing items online. Broadband users generally are more frequent Internet users regardless of type of activity.

Connecting to the Internet without using a personal computer (e.g., cellular phone or PDA) is relatively infrequent for all types of access.

EXHIBIT 2
Usage of the Internet (Q4–8)

Variable	Dial-up	Broad-band
Do you usually use the Internet …		
At least once a year but less than weekly	17.7%	5.0%
Once a week but less than once a day	17.6%	10.0%
At least once a day	64.7%	85.0%
Do you regularly use the Internet from somewhere other than your home?		
Yes	37.3%	39.0%
No	62.7%	61.0%
Have you ever purchased anything over the Internet?		
Yes	67.8%	75.6%
No	32.2%	24.4%
Have you ever used the Internet to trade a stock, pay a bill, or conduct online banking?		
Yes	42.9%	47.6%
No	57.1%	52.4%
Have you ever connected to the Internet without using a personal computer?		
Yes	7.6%	11.0%
No	92.4%	89.0%

SOURCE: Public Sector Consultants Inc.

Monthly Cost of the Internet

Average monthly costs for broadband service are $39.15, or more than twice as high as dial-up monthly costs (see Exhibit 3). About one-half of respondents with dial-up service pay less than $20 per month (47.2 percent). The comparable figure for broadband is only 7.1 percent.

About two-thirds of monthly broadband service fees (63.1 percent) are more than $35. Only 2.0 percent of dial-up users pay that much.

EXHIBIT 3
Cost of Internet Service (Q20)

Variable	Dial-up	Broadband	Total
Monthly Cost of Internet Connection			
Mean Cost	$17.39	$39.15	$25.06
N	103	56	159
Distribution of Monthly Cost of Internet Connection			
$0.01 through $14.99	33.7%	1.8%	23.0%
$15.00 through $19.99	13.5%	5.3%	10.3%
$20.00 through $34.99	51.0%	29.8%	43.6%
$35.00 through $49.99	1.0%	45.6%	16.5%
$50.00 through highest	1.0%	17.5%	6.5%
	100.0%	100.0%	100.0%

SOURCE: Public Sector Consultants Inc.

Demographic Description

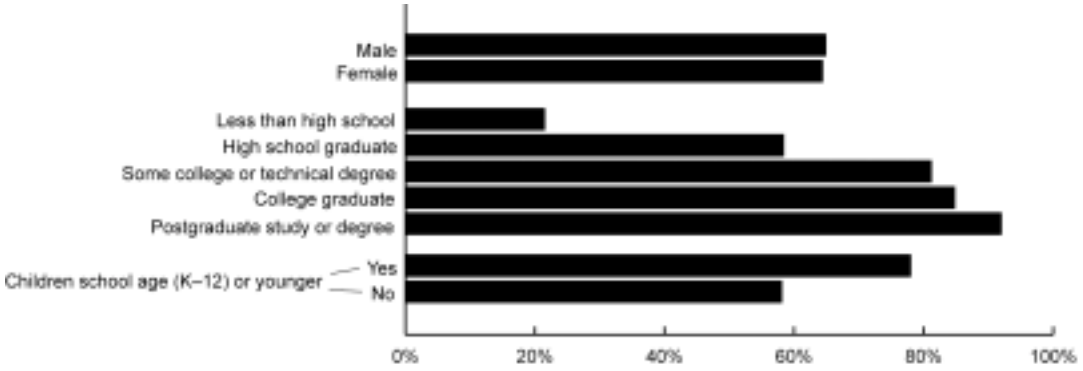
Exhibits 4 and 5 illustrate the demographic characteristics of Internet users.

EXHIBIT 4
Demographics of Internet Users (Q1, 10, 25, 27, 28)

Variable	Dial-up	Broadband
Gender		
Male	48.4%	51.2%
Female	51.6%	48.8%
Highest level of education completed		
Less than high school	7.1%	2.6%
High school graduate	29.1%	29.9%
Some college or technical degree	37.8%	41.6%
College graduate	18.1%	14.3%
Postgraduate study or degree	7.9%	11.7%
Do you currently have children of school age (K–12) or younger?		
Yes	39.0%	36.0%
No	61.0%	64.0%
Mean number of telephones	1.5	1.8
Mean number of computers currently in use in household	1.4	1.7

SOURCE: Public Sector Consultants Inc.

EXHIBIT 5
Internet Usage by Demographic Characteristic (Q25, 27, 28)



SOURCE: Public Sector Consultants Inc.

The residential survey results by county can be found in Appendix A of this document.

Business Survey Instrument & Compiled Results

Introduction

Thank you for responding.

Public Sector Consultants, a think-tank located in Lansing, Michigan, is conducting a survey about how businesses in Midland, Bay, and Saginaw Counties (the "tri-county" area) use information technology. Part of the survey includes questions on what your business uses the Internet for, as well as how your business connects to the Internet. The survey is being conducted for the Regional Economic Development Team, a nonprofit organization that promotes economic development in Midland, Bay, and Saginaw Counties.

Completing this survey is completely voluntary. If you come to any question that you do not want to answer, just skip to the next question. Your individual responses will remain confidential. PSC will only release aggregate and anonymous data to LinkMBS.

Background Information

1. How many total locations does your company have in **Michigan**? Please type a **number** below.

	Frequency	Percent[12]
1	83	68.0%
2	15	12.3%
3	8	6.6%
4	5	4.1%
5	1	0.8%
6	4	3.3%
7	1	0.8%
8+	5	4.1%

2. How many employees does your company have in **Michigan**? Please type a **number** below.

Average = 119.4 Max = 5,000 Std. Dev. = 491.0

Median = 16.0

[12] Percentages may not = 100% due to rounding.

Internet Connectivity

3. If your company has more than one location in Michigan, how many of these locations are connected to the Internet? Please type a number below.

	Frequency	Percent
1	6	15.8%
2	14	36.8%
3	6	15.8%
4	5	13.2%
5	2	5.3%
6	1	2.6%
7	0	0.0%
8+	4	10.5%

Background Information

4. How many total locations does your company have in **the tri-county area** (Midland, Bay, and Saginaw Counties)? Please type a **number** below.

	Frequency	Percent
1	94	76.4%
2	12	9.8%
3	9	7.3%
4	2	1.6%
5	2	1.6%
6+	3	2.4%

5. How many of your company's employees are located in **the tri-county area**? Please type a **number** below.

Average = 45.4 Max = 500 Std. Dev. = 87.7

Median = 13.0

Internet Connectivity

6. If your company has more than one location in **the tri-county area**, how many of these locations are connected to the Internet? Please type a **number** below.

	Frequency	Percent
1	4	14.8%
2	13	48.1%
3	6	22.2%
4	2	7.4%
5	1	3.7%
6+	1	3.7%

Background Information

7. Is your company's **primary** location in the City of Saginaw, City of Midland, or Bay City?

	Frequency	Percent
Yes, **primary** location is in Saginaw, Midland, or Bay City	102	82.3%
No, primary location is somewhere else	20	16.1%
Don't know	2	1.6%

8. How many computers are currently in use at your location? Please type a **number** below. If you are not sure of the exact number, please use your best estimate to the nearest 10 computers.

Average = 36.6	Max = 1,500	Std. Dev. = 143.9
Median = 10.0		

If there are no computers at your location, skip to the "Internet Usage" section.

9. Does your company have a network that connects your computers?

	Frequency	Percent
Yes	99	83.2%
No	19	16.0%
Don't know	1	0.8%

10. If yes, is any part of your company's computer network a wireless network? (e.g., Wi-Fi, 802.11b, or Bluetooth)

	Frequency	Percent
Yes	21	21.2%
No	77	77.8%
Don't know	1	1.0%

11. Do any of your employees connect to your corporate network while they are outside the office using a PDA (e.g., PalmPilot), cellular telephone, or any other handheld device?

	Frequency	Percent
Yes	23	19.3%
No	95	79.8%
Don't know	1	0.8%

Internet Connectivity

12. How many computers in your company are connected to the Internet?

	Frequency	Percent
All of them	63	52.9%
Most of them (i.e., more than half, less than all)	35	29.4%
Half of them	7	5.9%
A few of them (less than half, more than zero)	14	11.8%
None of them	0	0.0%
Don't know	0	0.0%

13. If "None of them," which of the following reasons best describes why your company's computers are **not** connected to the Internet?

    NOTE: Since all companies eligible to answer questions in the "Internet Connectivity" section had Internet-connected computers, no company was eligible to answer this question.[13]

	Frequency	Percent
Our current computers or programs (hardware/software) cannot connect		
Not sure how to use the Internet for the company		
Using the Internet is not worth the price or is too expensive for the company		
Internet access is not available for my company		
The company does not need to use the Internet to do business		
Some other reason		

14. If "Internet access is not available for my company," do you plan on purchasing Internet access for your company when it becomes available?

    See previous note.

	Frequency	Percent
Yes		
No		
Don't know		

[13] Questions 13 and 14 were targeted towards any company where Internet access was provided through a home computer (e.g., owner's home computer).

15. Overall, thinking of all your company's locations in the tri-county area, how satisfied are you with …

	Very Satisfied		Somewhat Satisfied		Neutral		Somewhat Dissatisfied		Very Dissatisfied		Don't Know / Unsure	
	N	%	N	%	N	%	N	%	N	%	N	%
…the monthly fee for your Internet connection?	19	16.2%	36	30.8%	26	22.2%	24	20.5%	9	7.7%	3	2.6%
…the speed of your Internet connection?	37	31.6%	48	41.0%	6	5.1%	9	7.7%	17	14.5%	0	0.0%
…the service quality of your Internet connection?	37	31.6%	44	37.6%	17	14.5%	14	12.0%	5	4.3%	0	0.0%
…the customer service from your Internet Service Provider?	27	23.1%	45	38.5%	24	20.5%	10	8.5%	8	6.8%	3	2.6%
…the choice of providers (competition)?	17	14.8%	17	14.8%	32	27.8%	25	21.7%	18	15.7%	6	5.2%

Location Information

We would like to ask you a series of questions about how each location is connected to the Internet. If you have more than one location, please answer the next series for the five largest locations in the tri-county area. "Largest" can mean the largest facility, largest number of employees, or the locations you consider to be "most important" to your business.

16. Which method below best describes your company's connection to the Internet at this location?

	Frequency	Percent
Dial-up modem	30	22.7%
T-1 line (or fractional T-1 line)	24	18.2%
T-3 (or faster) line	1	0.8%
DSL	21	15.9%
Cable modem	32	24.2%
Fixed wireless connection	5	3.8%
Satellite connection	3	2.3%
Some other connection	12	9.1%
Don't know	4	3.0%

17. Is your company planning on upgrading its current Internet connection at this location with a faster level of service …

	Frequency	Percent
…within the next 3 months?	7	5.3%
…within the next 6 months?	5	3.8%
…within the next year?	14	10.7%
No upgrade is planned – current service is appropriate	82	62.6%
Don't know	23	17.6%

18. If "No upgrade is planned – current service is appropriate," would additional services—such as a faster connection available at your location or additional providers (competition)—change your answer?

	Frequency	Percent
Yes, additional services would change my answer	6	7.4%
Yes, additional providers (competition) would change my answer	11	13.6%
It would take both additional services **and** additional providers to change my answer	20	24.7%
No, neither new services nor new providers would change my answer	38	46.7%
Don't know	6	7.4%

19. If you indicated that your company connects to the Internet with a "Dial-up modem" from this location, which of the following statements best describes why you do not connect via a broadband (i.e., high-speed) connection?

	Frequency	Percent
Broadband Internet access is not available to this location	3	13.6%
Broadband Internet is not worth the price or is too expensive for the company	15	68.2%
The broadband connection that is available is not sufficient for the company	4	18.2%
The company does not need to use broadband Internet to do its business	0	0.0%
Some other reason	0	0.0%

20. If "Broadband Internet access is not available to this location," do you plan on purchasing broadband Internet access for the company when it becomes available?

	Frequency	Percent
Yes	2	66.7%
No	0	0.0%
Don't know	1	33.3%

21. How much does your company pay each month for its Internet connection at this location? (If you are unsure, please make a best estimate, rounded to the near $10.) Please type a **dollar** amount below.

	N	Average Monthly Cost
Dial-up	21	$30.89
Broadband (cable/DSL, or ISDN)	52	$163.34
Broadband (T1/T3)	15	$727.04
Other (satellite, fixed wireless)	8	$102.89
Other (multiple types of connections)	2	$2,770.00

22. When did you have your company's broadband Internet connection installed?

	Frequency	*Percent*
Within the last 30 days	1	1.2%
Between 30 and 90 days ago	4	4.8%
Between 90 and 180 days ago (3–6 months)	6	7.1%
Between 180 and 365 days ago (6–12 months)	16	19.0%
1–3 years ago	41	48.8%
More than 3 years ago	14	16.7%
Don't know	2	2.4%

23. If your company's Internet broadband connection was installed within the last 180 days, how many days did your Internet Service Provider quote you for installation of your Internet service? Please enter a **number** of days below.

N = 8	Average = 3.3	Max = 14.0	St. Dev. = 4.4

24. If your company's Internet broadband connection was installed within the last 180 days, was your high-speed Internet connection installed on time by the provider?

	Frequency	Percent
Yes	8	72.7%
No	1	9.1%
Don't know/don't remember	2	18.2%

Internet Usage

25. Does your company have a website?

	Frequency	Percent
Yes	95	81.2%
No	21	17.9%
Don't know	1	0.9%

26. If "No," does your company plan to have a website in the next 12 months?

	Frequency	Percent
Yes	5	25.0%
No	13	65.0%
Don't know	2	10.0%

27. Has anyone at your company ever participated in or used a videoconference to conduct business?

	Frequency	Percent
Yes	31	26.3%
No	81	68.6%
Don't know	6	5.1%

28. If you said "No" and videoconferencing facilities were *available* for your company's use at your current location, how often would your company use videoconferences?

	Frequency	Percent
About once a year	10	12.7%
At least once a year but less than once a month	14	17.7%
At least once a month but less than once a week	11	13.9%
At least once a week but less than once a day	3	3.8%
At least once a day	1	1.3%
Don't know	40	50.6%

29. How often does your company use the Internet for …

	About Once a Year	About Once a Month	About Once a Week	About Once a Day	More than Once a Day	Don't Know
…selling or accepting orders for products or services?	N = 24 23.5%	N = 10 9.8%	N = 11 10.8%	N = 6 5.9%	N = 28 27.5%	N = 23 22.5%
…placing orders for products or services?	N = 10 8.8%	N = 24 21.2%	N = 27 23.9%	N = 15 13.3%	N = 29 25.7%	N = 8 7.1%
…e-mail (internal and external)?	N = 1 0.8%	N = 1 0.8%	N = 4 3.5%	N = 12 10.4%	N = 96 83.5%	N = 1 0.8%
…providing	N = 15	N = 4	N = 21	N = 7	N = 45	N = 17

information to employees?	13.8%	3.7%	19.3%	6.4%	41.3%	15.6%
…accepting real time payments such as credit card or debit payments?	N = 20 21.1%	N = 6 6.3%	N = 4 4.2%	N = 6 6.3%	N = 13 13.7%	N = 46 48.4%
…financial transactions with banks?	N = 9 9.1%	N = 6 6.1%	N = 17 17.2%	N = 17 17.2%	N = 12 12.1%	N = 38 38.4%
…performing billing or bill payments over the Internet?	N = 7 7.1%	N = 15 15.2%	N = 18 18.2%	N = 3 3.0%	N = 15 15.2%	N = 41 41.4%
…accounting and internal auditing?	N = 12 12.9%	N = 9 9.7%	N = 6 6.5%	N =4 4.3%	N = 15 16.1%	N = 47 50.5%
…inventory tracking and control?	N = 14 15.6%	N = 4 4.4%	N = 5 5.6%	N = 6 6.7%	N = 15 16.7%	N = 46 51.1%
…shipment tracking and control?	N = 7 7.1%	N = 9 9.2%	N = 18 18.4%	N = 14 14.3%	N = 21 21.4%	N = 29 29.6%
…to download or send large documents?	N = 5 4.4%	N = 19 16.8%	N = 18 15.9%	N = 21 18.6%	N = 38 33.6%	N = 12 10.6%

Demographics

30. Where are you completing this survey?

	Frequency	Percent
On a computer at the company	109	93.2%
On a computer at your home	8	6.8%
On a computer in someone else's home	0	0.0%
On a computer located in some public area (e.g., at a library or school computer laboratory)	0	0.0%

31. When was your company founded? Please type the **year** as a four-digit **number** below.

	Frequency	Percent
1900 and earlier	4	3.6%
1901 to 1920	6	5.4%
1921 to 1940	7	6.3%
1941 to 1960	22	19.8%
1961 to 1980	37	33.3%
1981 to 2000	35	31.5%
2001 to present	0	0.0%

Survey Complete

You have completed the survey. Thank you for your participation.

Residential Survey Instrument & Compiled Results

[INSTRUCTIONS TO PHONE BANK IN CAPS, BRACKETS]

[INTRODUCTION]

Hello, I'm calling from Public Sector Consultants in Lansing, Michigan. We are conducting a survey in the tri-county area about how residents use information technology in their daily lives, and about the types of Internet connections that people use from their homes. The survey is not being conducted for any candidate, political party, or business.

[IF THE RESPONDENT ASKS FOR MORE INFORMATION ABOUT THE SURVEY SPONSOR: "The survey is being conducted for the LinkMBS Team, an organization that promotes economic development in Midland, Bay, and Saginaw Counties."]

[RANDOM SELECTION OF RESPONDENT AT HOUSEHOLD LEVEL]

Are you 18 years of age or older and a resident of Michigan?

Yes ..... Continue
No ..... Terminate

Are you a resident of Midland, Bay, and Saginaw County?

Yes ..... Continue
No ..... Terminate

Before we begin, let me tell you that this interview is completely voluntary. If we come to any question that you don't want to answer, just let me know and we'll go on to the next question. Let me also assure you that all your responses will remain confidential.

1) To begin the survey, would you please tell me how many phone lines you have in your house? Please include all phone, fax, and computer lines, but do *not* include cellular telephones. [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
1	274	69.2%
2	84	21.2%
3	19	4.7%
4	10	2.5%
5	7	1.9%
6+	2	0.3%
	396	100.0%
Don't know [VOLUNTEERED]	1	
Refused/other [VOLUNTEERED]	3	

Use of the Internet

2) Have you yourself **ever** used the Internet?

	N	Valid %
a) Yes	259	64.7%
b) No	141	35.3%
	400	100.0%
c) Don't know [VOLUNTEERED]	0	
d) Refused/other [VOLUNTEERED]	0	

3) [ASK ONLY IF Q2 = 2] Which of the following reasons best describes why you have not used the Internet? [ROTATE; SKIP TO QUESTION 10 WHEN COMPLETE]

	N	Valid %
a) No access to the Internet	38	31.2%
b) Too complicated/don't understand the Internet	29	23.8%
c) Not worth the time, hassle, or expense	44	35.9%
d) It's difficult to read information on the Internet	11	9.0%
	122	100.0%[14]
e) Don't know [VOLUNTEERED]	9	
f) Refused/other [VOLUNTEERED]	11	

4) Which of the following statements best describes how often you usually use the Internet? Do you usually use the Internet …

	N	Valid %
a) About once a year	8	2.9%
b) At least once a year but less than once a month	20	7.8%
c) At least once a month but less than once a week	32	12.4%
d) At least once a week but less than once a day	43	16.9%
e) At least once a day	155	60.1%
	257	100.0%
f) Don't know [VOLUNTEERED]	0	
g) Refused/other [VOLUNTEERED]	2	

[14] Percentages may not = 100% due to rounding.

5) Do regularly use the Internet from somewhere other than your home?

	N	Valid %
Yes	116	44.7%
No	143	55.3%
	259	100.0%
Don't know [VOLUNTEERED]	0	
Refused/other [VOLUNTEERED]	0	

6) Have you **ever** purchased anything over the Internet?

	N	Valid %
a) Yes	158	60.9%
b) No	101	39.1%
	259	100.0%
c) Don't know [VOLUNTEERED]	0	
d) Refused/other [VOLUNTEERED]	0	

7) Have you ever used the Internet to trade a stock, pay a bill, or conduct online banking?

	N	Valid %
Yes	95	36.6%
No	164	63.4%
	259	100.0%
Don't know [VOLUNTEERED]	0	
Refused/other [VOLUNTEERED]	0	

8) Have you **ever** connected to the Internet **without** using a personal computer? That is, have you ever connected to the Internet using a PDA, cellular phone, other handheld device, or game console?

	N	Valid %
Yes	22	8.7%
No	236	91.3%
	259	100.0%
Don't know [VOLUNTEERED]	0	
Refused/other [VOLUNTEERED]	0	

9) [ASK ONLY IF QUESTION 8 = 1] How often do you connect to the Internet using one of these devices? [READ RESPONSES]

	N	Valid %
About once a year	3	15.4%
At least once a year but less than once a month	2	10.5%
At least once a month but less than once a week	11	51.9%
At least once a week but less than once a day	1	5.1%
At least once a day	4	17.1%
		100.0%
Don't know [VOLUNTEERED]	1	
Refused/other [VOLUNTEERED]	0	

Household Computers

10) How many computers are currently in use in your household? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	123	30.7%
1	200	49.9%
2	49	12.3%
3	17	4.3%
4	6	1.4%
5	0	0.0%
6	1	0.2%
7	2	0.5%
8	0	0.0%
9	0	0.0%
10	0	0.0%
11	1	0.2%
Refused/other [VOLUNTEERED]	2	0.5%
	400	100.0%

11) [ASK ONLY IF Q10 = 0] Which of the following statements best describes why you do not have a computer at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
I have no time to use a computer at home	11	10.2%
I can use a computer somewhere else	11	10.2%
I do not want a computer at home	47	43.6%
A home computer is too expensive	32	29.7%
Computers are too hard to learn and use	7	6.2%
	108	100.0%
Don't know [VOLUNTEERED]	8	
Refused/other [VOLUNTEERED]	7	

12) How many computers in your household are connected to the Internet? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	46	16.9%
1	183	66.7%
2	32	11.8%
3	8	3.0%
4	2	0.8%
5	1	0.4%
6	1	0.4%
		100.0%
Don't know [VOLUNTEERED]	0	
Refused [VOLUNTEERED]	3	

13) [ASK ONLY IF QUESTION 12 = 0] You indicated that you do not have Internet access at home. Which of the following is the primary reason that you have chosen not to have Internet access at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
a) A hardware or software problem	2	4.7%
b) Not sure how to use the Internet	4	10.0%
c) Internet access is not worth the price (too expensive)	15	35.1%
d) Lack of Internet availability or coverage	1	2.4%
e) Do not need to access the Internet from home	14	31.3%
f) Use the Internet at work or at school	5	11.3%
g) Combination [VOLUNTEERED]	2	5.3%
	44	100.0%
h) Don't know [VOLUNTEERED]	1	
i) Refused/other [VOLUNTEERED]	1	

Household Internet Usage and Connection Type

14) When you use the Internet at home, is it primarily to complete a work or school assignment, for recreation, or about equally for work and recreation?

	N	Valid %
Complete a work or school assignment	15	7.0%
Recreation	107	48.3%
About equal work and recreation	99	44.7%
		100.0%
Don't know [VOLUNTEERED]	3	
Refused/other [VOLUNTEERED]	7	

15) Next, I will read you several ways people connect to the Internet from home. Which of these types of connections do you use **most often** to connect to the Internet from your home?

	N	Valid %
Dial-up modem	128	60.3%
DSL	11	5.2%
Cable modem	68	31.9%
Fixed wireless	1	0.5%
Satellite	4	2.0%
Some other type of connection [RECORD RESPONSE]	0	0.0%
		100.0%
Don't know/Refused [VOLUNTEERED]	19	

Dial-up Connection Detail

16) You indicated that you do not have a high-speed Internet connection at home. Which of the following is the primary reason that you have chosen not to have high-speed Internet access at home? [ROTATE]

	N	Valid %
A hardware or software problem	4	3.3%
Not sure how to use the Internet	0	0.0%
High-speed Internet access is not worth the price (too expensive)	50	44.2%
Lack of high-speed Internet availability or coverage	15	13.5%
Don't need high-speed access to the Internet from home	27	23.5%
Use high-speed Internet at work or at school	6	5.0%
Combinations [VOLUNTEERED]	12	10.5%
	113	100.0%
Don't know [VOLUNTEERED]	8	
Refused/other [VOLUNTEERED]	7	

17) [ASK ONLY IF QUESTION 16 = 4] Do you plan on purchasing high-speed Internet access when it becomes available in your area? [SKIP TO QUESTION 20 WHEN COMPLETE]

	N	Valid%
a) Yes	10	76.2%
b) No	3	23.8%
	14	100.0%
c) Don't know [VOLUNTEERED]	2	
d) Refused/other [VOLUNTEERED]	0	

High-speed Connection Detail

18) When did you have your high-speed Internet connection installed? [RECORD FREE RESPONSE DATE. IF ONLY MONTH AND YEAR ARE GIVEN, SET THE DATE TO THE 1st OF THE MONTH. RECORD IN MM/DD/YYYY FORMAT. RECORD DON'T KNOW = 1/1/1911; REFUSED/OTHER = 2/2/1911]

	N	Valid %
1997	1	1.3%
1998	1	1.3%
1999	2	2.7%
2000	5	6.7%
2001	21	28.0%
2002	36	48.0%
2003	9	12.0%
	75	100.0%
Don't know [VOLUNTEERED]	0	
Refused/other [VOLUNTEERED]	18	

19) [ASK ONLY IF QUESTION 18 IS 9/1/2002 OR LATER] Was your high-speed Internet connection installed on time by the provider?

	N	Valid %
a) Yes	13	100.0%
b) No	0	0.0%
	13	100.0%
c) Don't know [VOLUNTEERED]	0	
d) Refused/other [VOLUNTEERED]	0	

Additional Connection Detail

20) Would you mind telling me about how much you pay, on a monthly basis, for the Internet connection and e-mail service from your home? [RECORD RAW AMOUNT IN DOLLARS AND CENTS. RECORD ALL ANSWERS WITH TWO DECIMAL PLACES. CODE DON'T KNOW = $888.88; REFUSED/OTHER = $999.99]

Type of Connection		Cost					
		.01–14.99	15.00–19.99	20.00–34.99	35.00–49.99	50.0–Highest	Total
Dial-up	Count	N = 35	N = 14	N = 53	N = 1	N = 1	N = 104
	%	33.7%	13.5%	51.0%	1.0%	1.0%	100.0%
Broadband	Count	N = 1	N = 3	N = 17	N = 26	N = 10	N = 57
	%	1.8%	5.3%	29.8%	45.6%	17.5%	100.0%

21) Would you please tell me the name of your Internet service provider at your home? [CODE FREE RESPONSE BASED ON THE OPTIONS IN ALPHABETICAL ORDER BELOW. **DO NOT READ THE LIST OF OPTIONS.** IF RESPONSE IS NOT LISTED USE CODE 19 (OTHER) AND RECORD NAME]

	N	Valid %
a) ACD.net	0	0.0%
b) America OnLine (or AOL)	53	27.4%
c) Arialink	0	0.0%
d) AT&T (or AT&T Broadband, AT&T WorldNet, Comcast)	7	3.6%
e) Charter	59	30.3%
f) CompuServe	2	1.1%
g) Corecomm/Voyager	0	0.0%
h) EarthLink	0	0.0%
i) Juno/NetZero (United Online)	8	4.2%
j) Mercury.net	3	1.4%
k) Millennium (or Millennium Digital)	0	0.0%
l) MSN (or Microsoft Network)	13	6.9%
m) Qwest	0	0.0%
n) RoadRunner	0	0.0%
o) SBC/Prodigy/Yahoo (or Ameritech)	10	5.3%
p) Speednet	5	2.5%
q) TDS Metrocomm	0	0.0%
r) Verizon	0	0.0%
s) Other [See 'Additional Info' for Company Name]	34	17.4%
	194	100.0%
t) Don't know [VOLUNTEERED]	9	
u) Refused/other [VOLUNTEERED]	9	

22) Thinking about the services you receive from your Internet service provider, are you very satisfied, somewhat satisfied, neutral, somewhat unsatisfied, or very unsatisfied with … [ROTATE. CODE VERY SATISFIED = 1, SOMEWHAT SATISFIED = 2, NEUTRAL = 3, SOMEWHAT UNSATISFIED = 4, VERY UNSATISFIED = 5, DON'T KNOW = 6, REFUSED/OTHER = 7]

- the monthly fee for your Internet connection?
- the speed of your Internet connection?
- the service quality of your Internet connection?
- the customer service at your Internet service provider?
- your choice of providers (that is, that there are multiple companies competing for your business)?

	Monthly fee for your Internet connection		Speed of your Internet connection		Service quality of your Internet connection		Customer service at your Internet service provider		Your choice of providers	
	N	**Valid %**	**N**	**Valid %**	**N**	**Valid %**	**N**	**Valid %**	**N**	**Valid %**
Very Satisfied	87	44.1%	61	30.3%	92	44.0%	104	52.7%	82	43.8%
Somewhat Satisfied	57	29.0%	79	39.2%	87	41.7%	67	33.9%	53	28.5%
Neutral	22	11.2%	15	7.5%	17	8.2%	18	9.0%	33	17.8%
Somewhat Unsatisfied	18	9.3%	33	16.4%	10	4.7%	4	2.2%	12	6.2%
Very Unsatisfied	13	6.4%	13	6.6%	3	1.2%	4	2.1%	7	3.7%
Total	**197**	**100.0%**	**202**	**100.0%**	**208**	**100.0%**	**197**	**100.0%**	**187**	**100.0%**
Don't know [VOLUNTEERED]	13		9		4		16		25	
Refused [VOLUNTEERED]	3		1		0		0		0	

Demographics

To conclude the survey, I just have a few more questions for you.

23) What is your ZIP code? [RECORD ZIP CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999]

24) In what county do you live? [CODE WITH FIPS CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999. VALID RESPONSES ARE MIDLAND, BAY, AND SAGINAW COUNTY]

County	Frequency	Percent
Bay County	116	29.0%
Midland County	73	18.2%
Saginaw County	211	52.8%
Total	**400**	**100.0%**

25) Do you currently have children of school age (K–12) or younger?

	N	Valid %
a) Yes	123	31.4%
b) No	270	68.6%
	394	100.0%
c) Refused/other [VOLUNTEERED]	6	

26) In what year were you born? [FREE RESPONSE, RECORD AS FOUR-DIGIT YEAR, CODE REFUSED/OTHER AS 9999]

	N	Valid %
>25	33	8.8%
25–34	56	15.0%
35–44	68	18.3%
45–54	68	18.3%
55–64	70	18.9%
65–74	44	11.7%
75+	33	8.9%
	372	100.0%
Refused [VOLUNTEERED]	28	

27) What is the highest level of education you have completed?

	N	Valid %
Less than high school	65	16.7%
High school graduate	137	35.1%
Some college or technical degree	117	30.1%
College graduate	46	11.7%
Postgraduate study or degree	25	6.4%
	390	100.0%
Refused [VOLUNTEERED]	10	

28) Gender [BY OBSERVATION ONLY. CODE MALE = 1, FEMALE = 2]

	N	Valid %
Male	195	48.7%
Female	205	51.3
	400	100.0%

Additional Information – Other Answers to Question 21

(Some respondents may have more than one provider; provider may be identified by more than one name.)

Response	Frequency	Percent
BREFMAN	1	0.2%
CENTRAL MICHIGAN UNIVERSITY	1	0.1%
CENTURY	1	0.1%
CENTURY TEL	5	1.3%
CENTURYTEL	1	0.1%
CENTURYTELL	1	0.3%
CHARTER	1	0.1%
COGNISURF	1	0.3%
CONCENTRIC	1	0.3%
DIAMOND	2	0.6%
DIAMONDS COMMUNICATION	1	0.3%
EDZONE	1	0.3%
FAMILY EXPLORER	1	0.1%
FAMILY VIDEO	2	0.5%
FAMILY VIDEO (FAM VID)	1	0.1%
HIGH STREAM.NET	1	0.1%
JOURNEY COMMUNICATION	1	0.3%
MERIT	1	0.2%
MICHCOM	1	0.3%
MICHNET	1	0.2%
MINDNET	1	0.2%
PEOPLE PC	1	0.1%
QUIK	1	0.1%
TIGER COMMUNICATIONS	1	0.3%
TOAST NET	1	0.3%
TURBO NET	1	0.1%
USOL	1	0.3%
VOYAGER	1	0.1%
WALMART CONNECT	1	0.3%
X AND O COMMUNICATIONS	1	0.3%
XO	1	0.3%
XO COMMUNICATIONS OR CONCENTRIC.NET	1	0.3%

Telecommunications Research & Data Collection

Telecommunications Provider Inventory

CRT conducted the provider inventory with providers by conducting personal interviews, interviews over the phone and researching publicly available resources. CRT interviewed representatives from the following corporations and organizations:

- Regional and statewide fiber network operators
- Regional cable television companies
- Regional telephone companies
- Regional wireless Internet providers.

An electronic copy of the provider database (MS Access) is included as part of the project CD-Rom in order to allow the client free access to this information.

Surveys of telecommunications providers have been effective in determining a great deal of information related to the region's infrastructure. However, providers were reluctant to provide confidential information for fear of giving competitors information.

A great deal of information is available from public sources, however, and that information was used by CRT to assemble maps and analysis for this report.

Coverage maps for each of the Broadband Internet services available in the region were created using data received from providers, as well as data

collected from publicly available sources. For example, maps of cable modem coverage areas included in this report are intended to illustrate the areas of likely coverage.

Coverage Findings

There were significant findings from the provider inventory for a number of communities in the region. Throughout the region, Speednet offers wireless access to residents using licensed radio frequencies from a number of towers located in all three counties. While there are many townships in the region that have no cable or DSL Internet access, Speednet's wireless infrastructure and Air Advantage's infrastructure in Saginaw county offer coverage to nearly the entire tri-county region. In addition, the proposed infrastructure expansion from ISP Wireless Group, Inc. in southern Saginaw County and M-33 Access in Bay County will further augment the broadband infrastructure throughout the region.

Linwood

Representatives from Charter Communications stated that NO cable modem access is available in Linwood, even though there IS cable television service available there. Charter could not forecast when it expected to upgrade their network to serve Linwood with high-speed Internet access.

Sanford

In Sanford, TDS Telecom provides DSL to all residential and business locations served by the company.

Saginaw County Townships without either Cable Modem access or DSL coverage:

- Albee Township
- Buena Vista Township
- Bridgeport Township
- Chapin Township
- Frankenmuth Township
- Freemont Township
- Lakefield Township
- Merion Township
- St. Charles Township

Bay County Townships without either Cable Modem access or DSL coverage:

- Beaver Township
- Fraser Township
- Garfield Township
- Kawkawlin Township
- Linwood Township
- Mt Forrest Township
- Meritt Township
- Pinconning Township

Midland County Townships without either Cable Modem access or DSL coverage:

- Edenville Township
- Jasper Township
- Lincoln Township
- Larkin Township
- Mills Township
- Porter Township
- Warren Township

Regional Telecommunications Mapping

This data was compiled in ArcGIS, a common Geographic Information System (GIS) software package produced by ESRI, Inc. The projection used in this project is the NAD1983 Hotine Oblique Mercator Azimuth Natural Origin, GCS North American 1983.

A second powerful tool in GIS is called geocoding. Also called address matching, geocoding is useful because it is a quick and easy way to pinpoint a database or a table of addresses. Using the information companies submitted to the Master Access Database for the Link Michigan project, addresses for central offices and towers were plotted on the map interface. Some maps were created by importing or digitizing CAD drawings of existing or planned network locations.

This GIS data is available digitally on the project website, http://www.linkmbs.org, and is included with this report on CD-Rom. This data is public and can be used by any qualified GIS analyst, public or private.

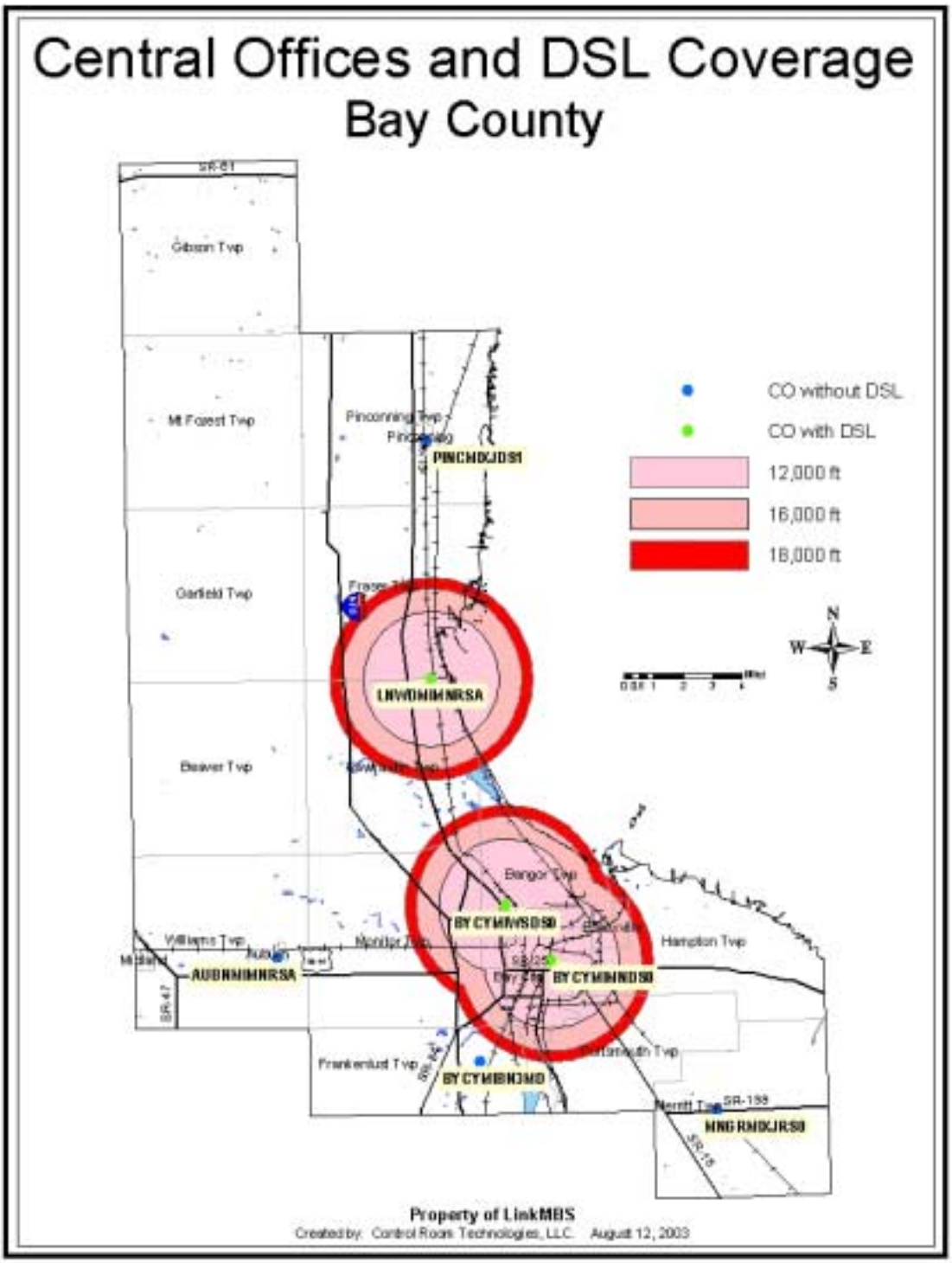
This section includes maps that cover various types of coverage in the tri-county region. The following lists the types of maps that are included:

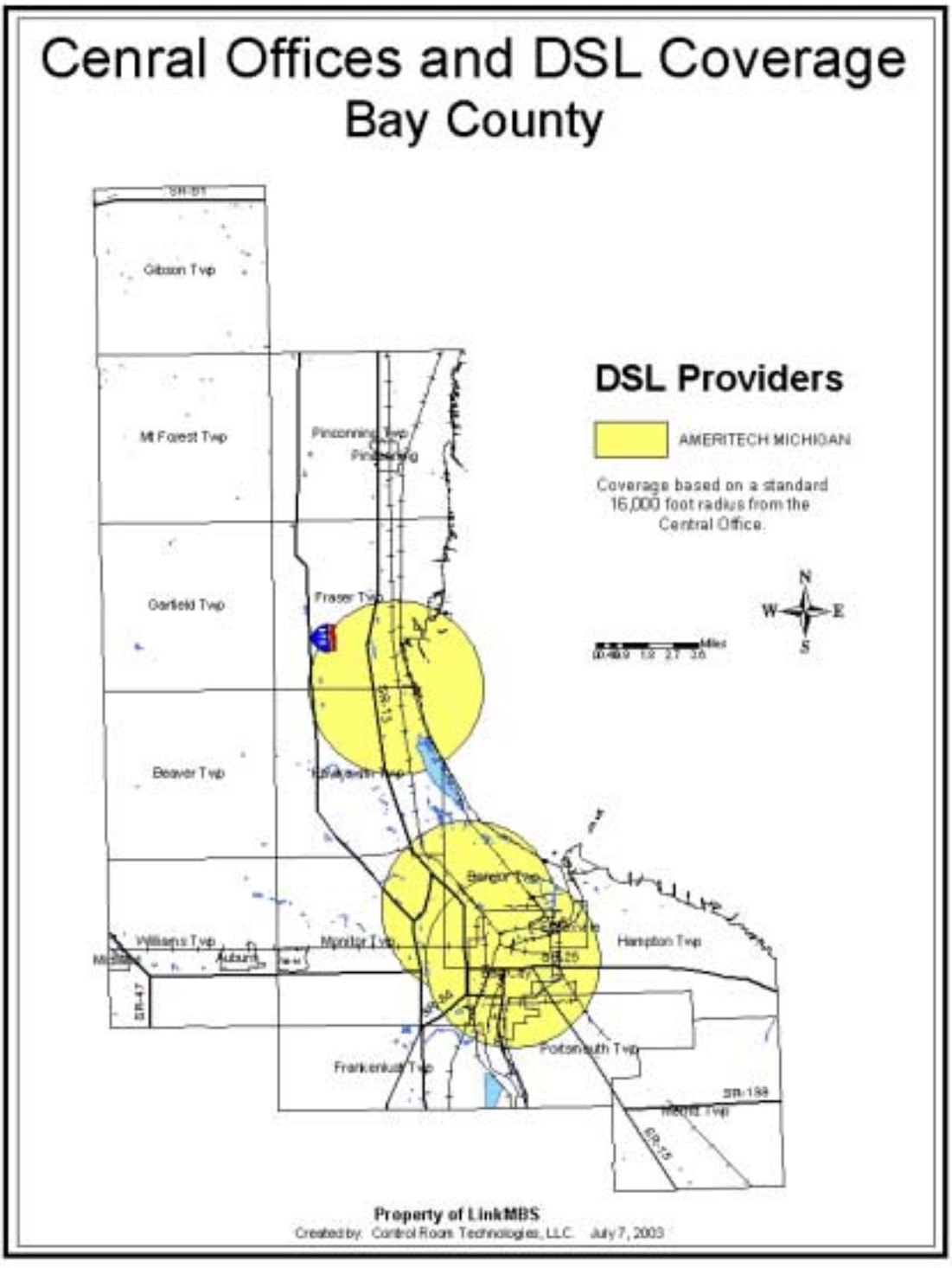
- Central Offices / DSL Maps
- Central Offices (All central offices in the tri-county region).

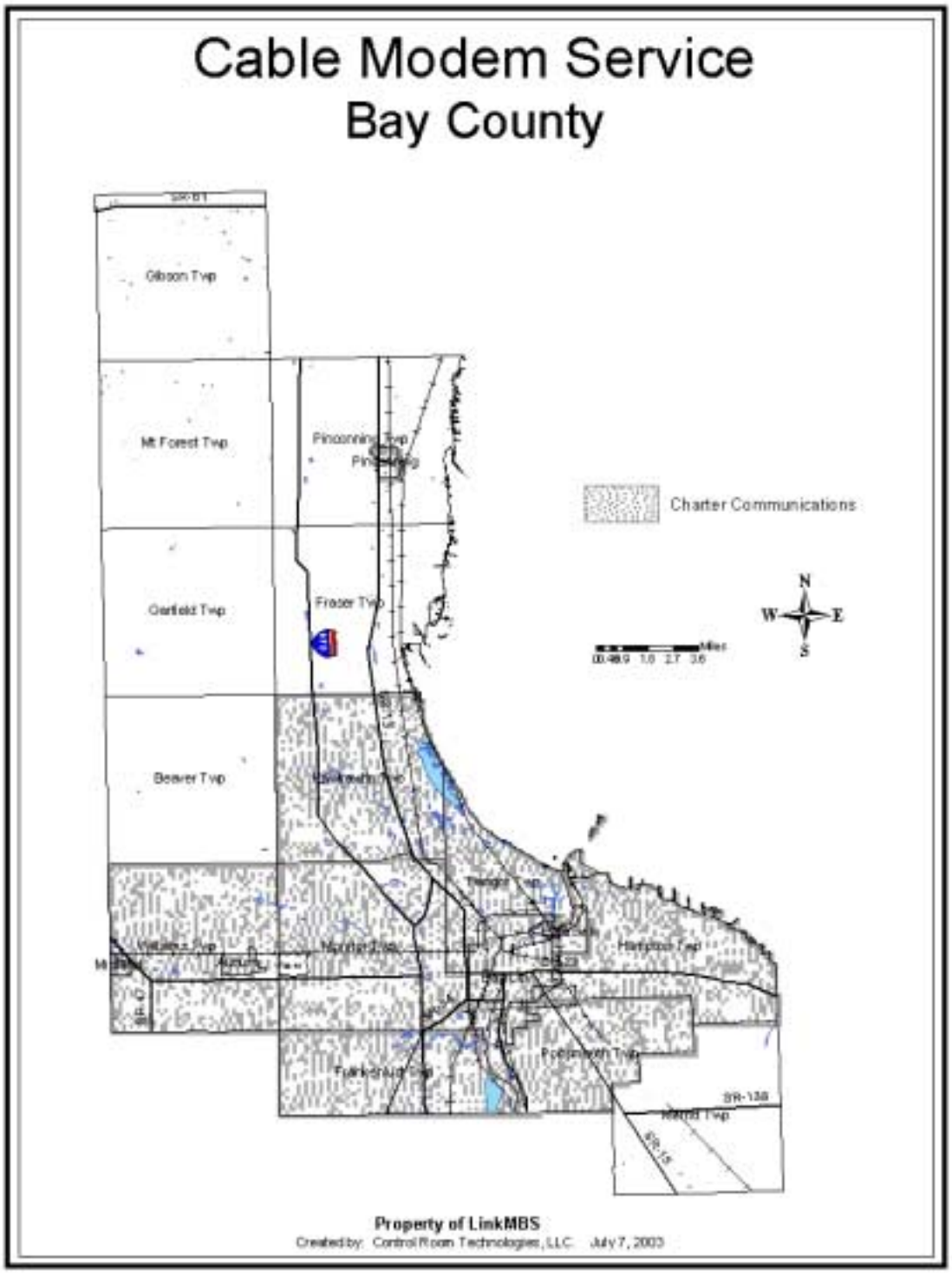
- Applicable DSL Coverage areas (12,000 ft., 16,000 ft. and 18,000 ft. radius circles from qualified COs).
- Cable Modem Maps
- Fiber Providers/Route Maps.
- POPs (if available).
- Fixed Wireless Providers
- Wireless Coverage Area (if available).

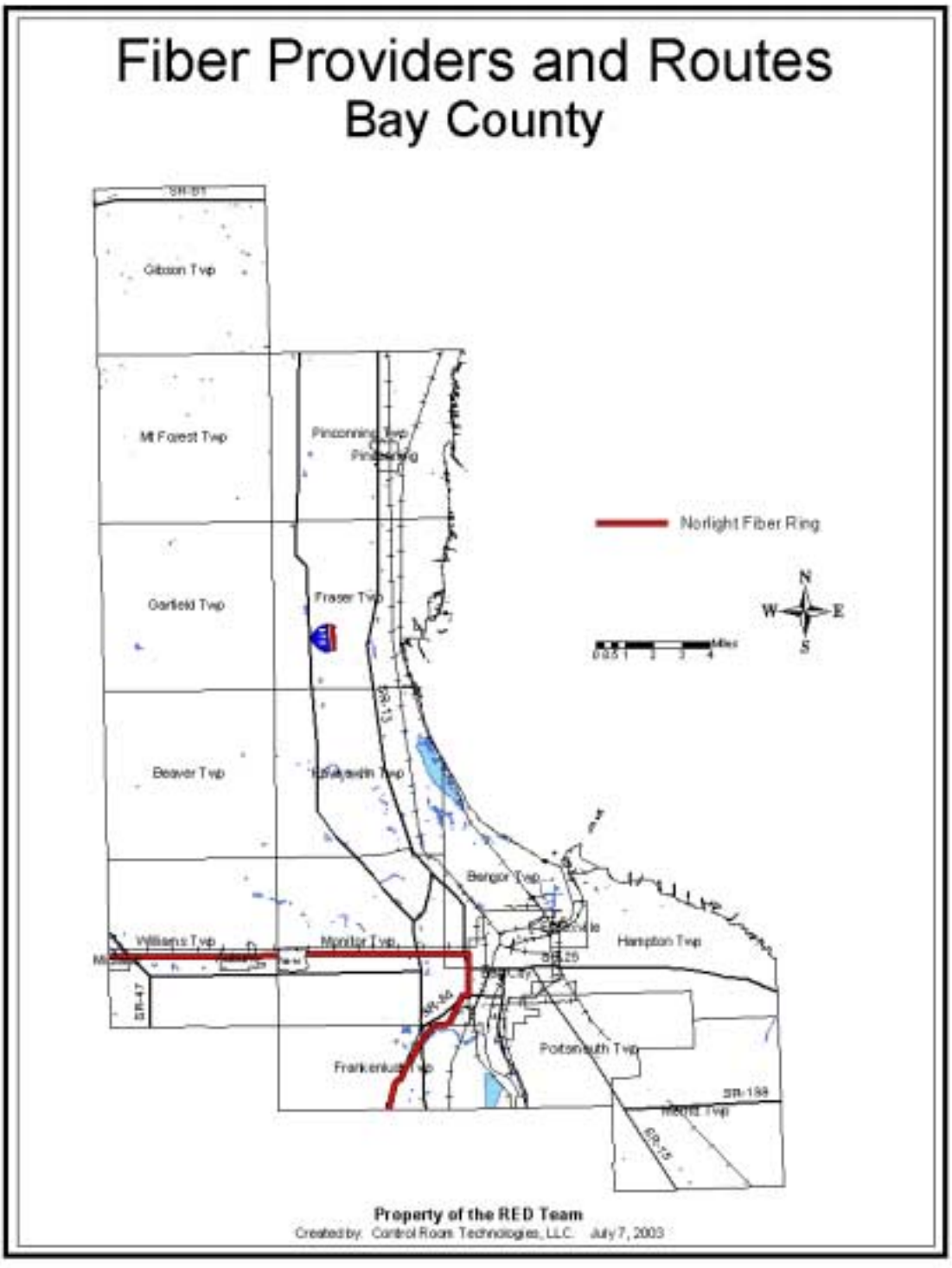
The maps that follow in the remainder of this section illustrate broadband Internet coverage across the tri-county region.

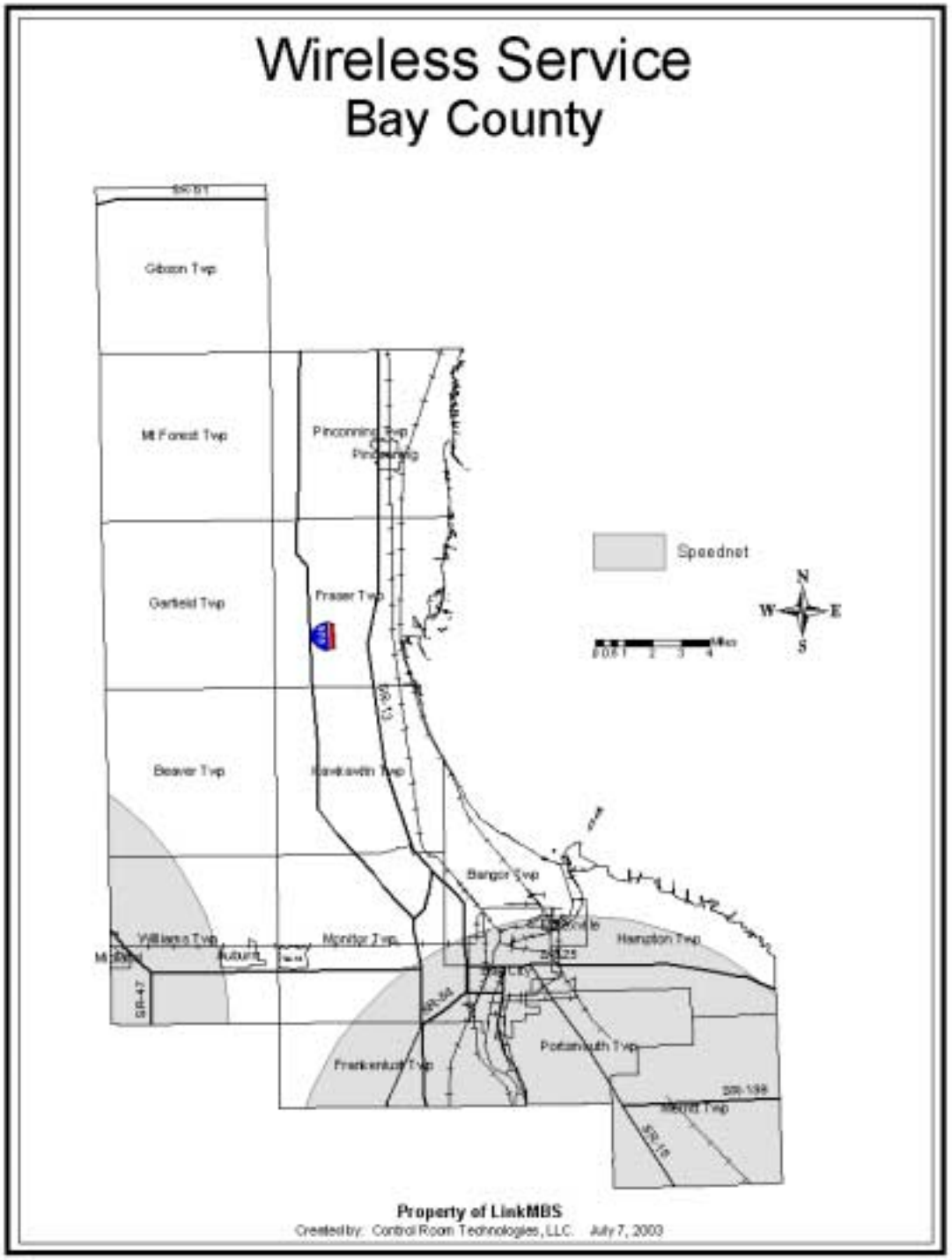
Bay County Maps



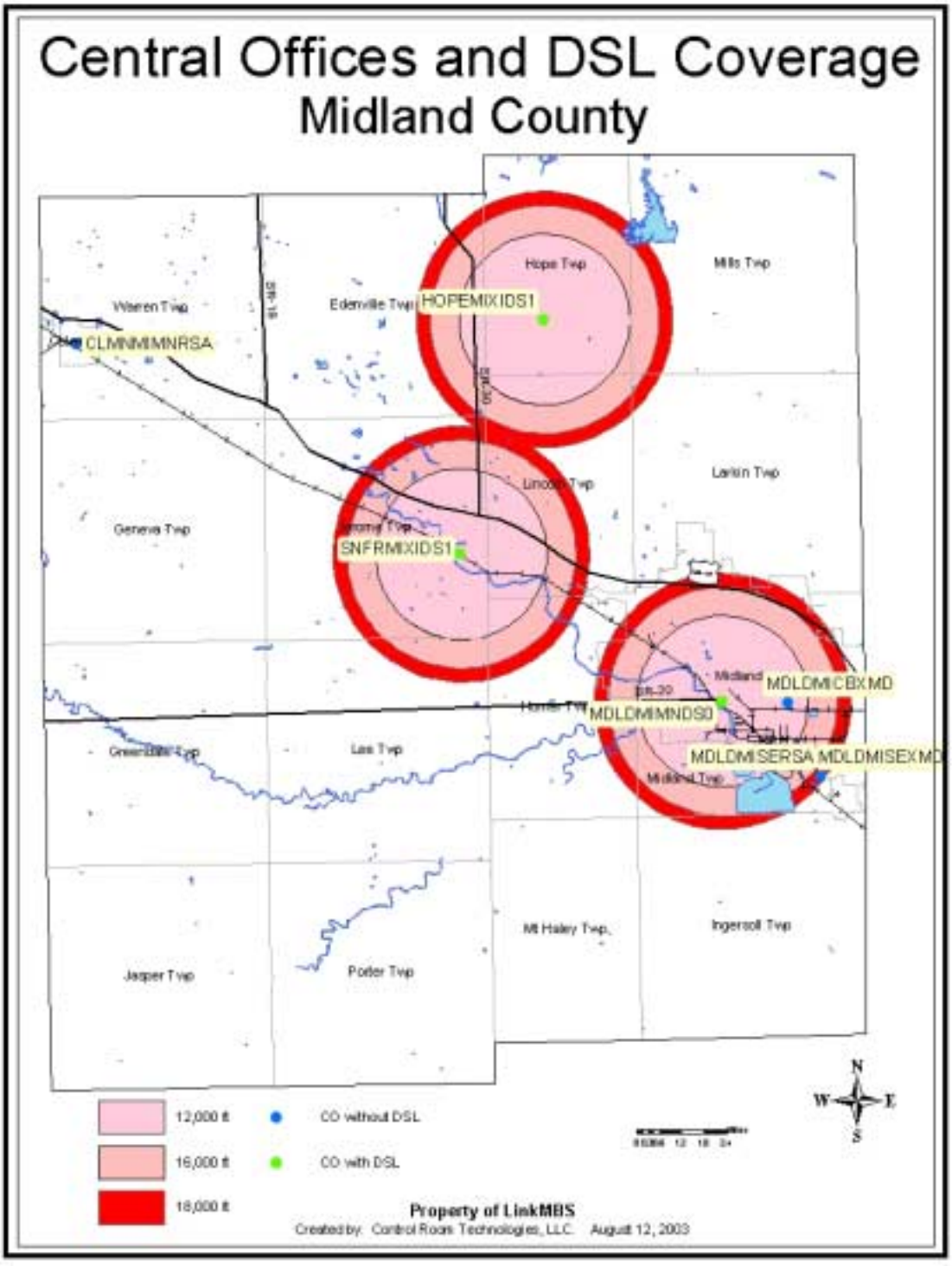

Cenral Offices and DSL Coverage
Bay County
Gibson Twp
Mt Forest Twp
Garfield Twp
Beaver Twp
Williams Twp
Hampton Twp
Frankenlust Twp
Portsmouth Twp
DSL Providers
AMERITECH MICHIGAN
Coverage based on a standard 16,000 foot radius from the Central Office.
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003

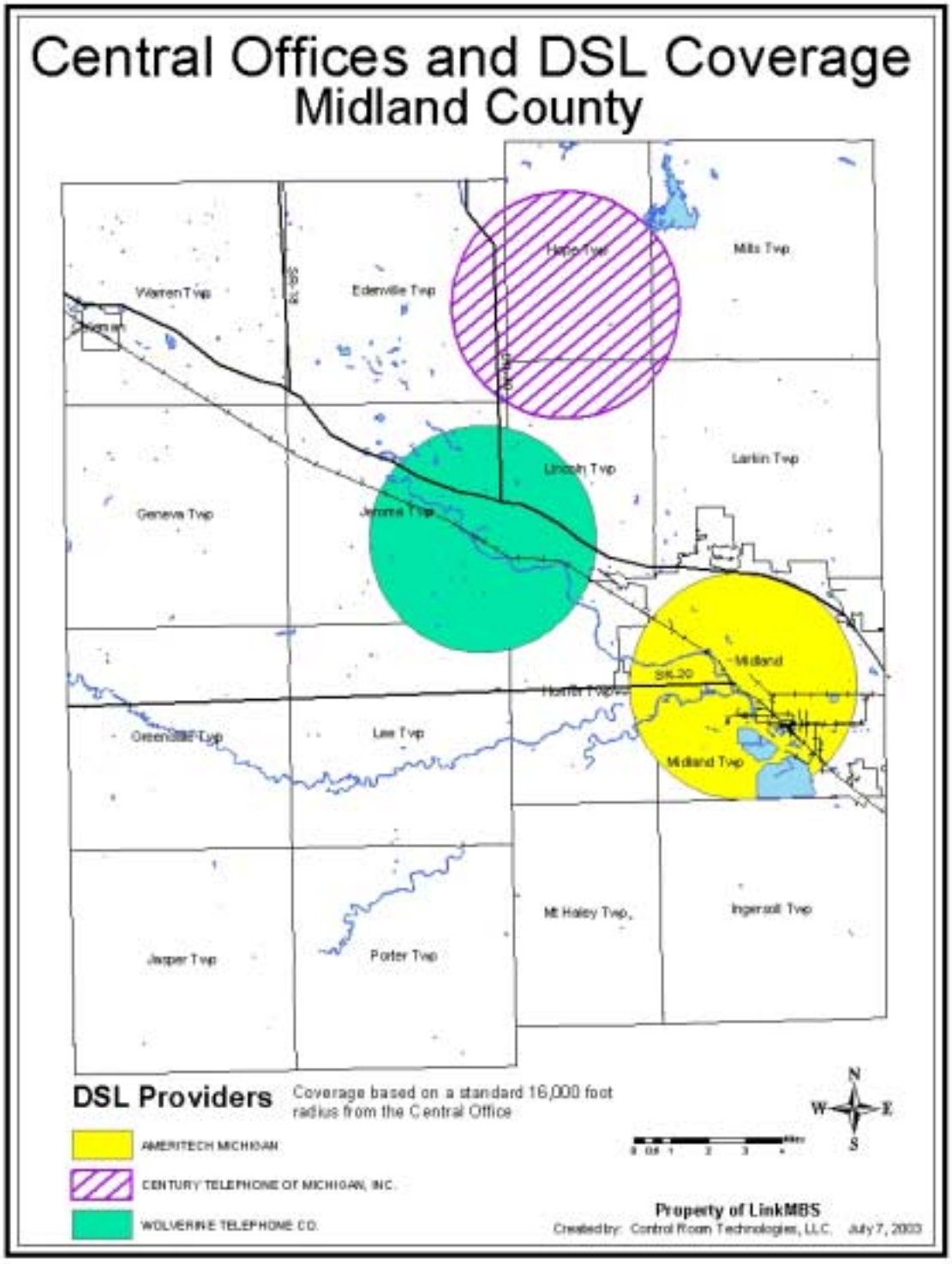

Cable Modem Service
Bay County
Gibson Twp
Mt Forest Twp
Garfield Twp
Fraser Twp
Beaver Twp
Hampton Twp
Charter Communications
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC July 7, 2003

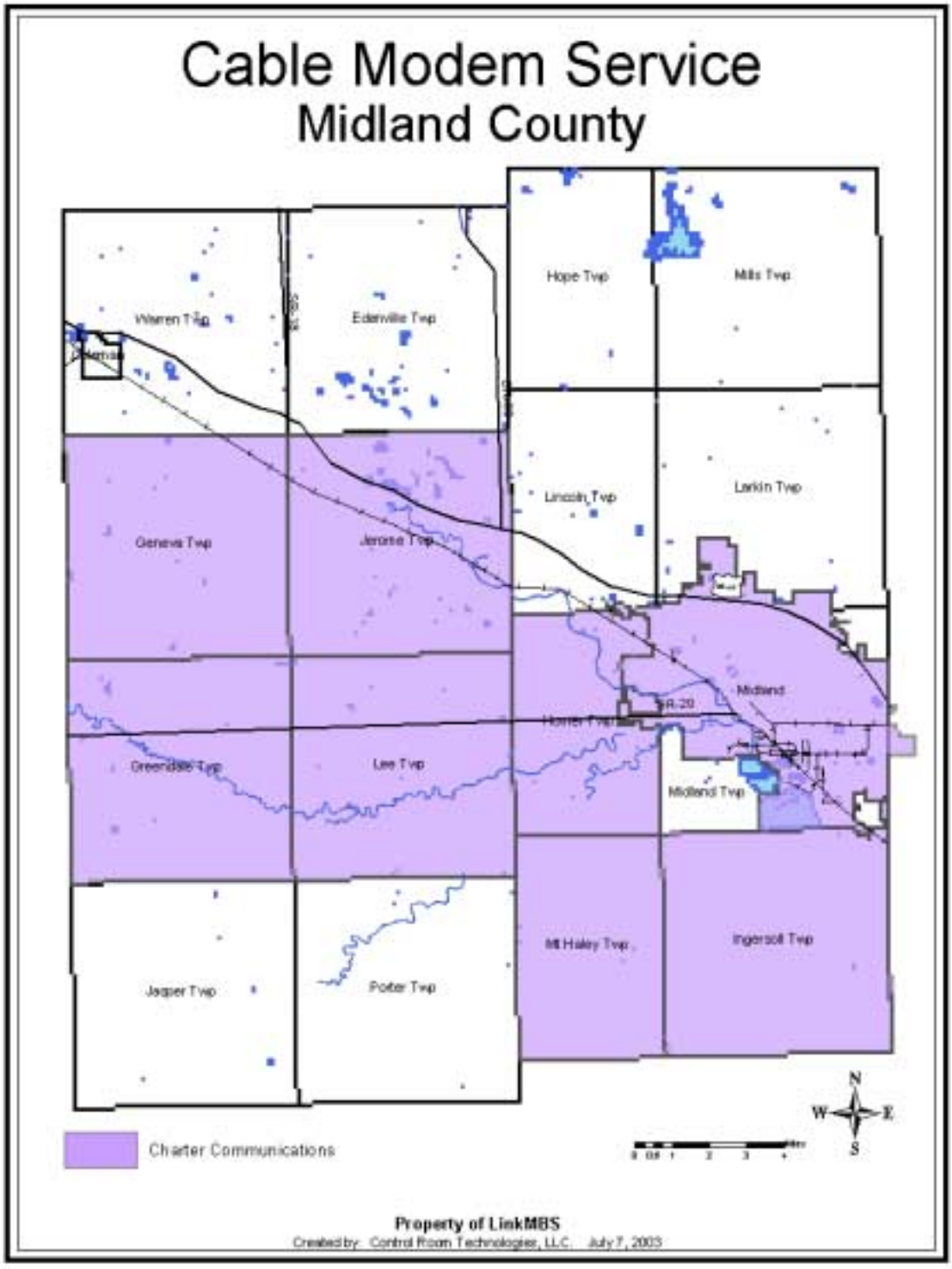

Fiber Providers and Routes
Bay County
Gibson Twp
Mt Forest Twp
Garfield Twp
Beaver Twp
Fraser Twp
Norlight Fiber Ring
N
W
E
S
Bangor Twp
Williams Twp
Monitor Twp
Hampton Twp
Portsmouth Twp
SR-13
SR-25
SR-47
SR-15
Property of the RED Team
Created by: Control Room Technologies, LLC. July 7, 2003

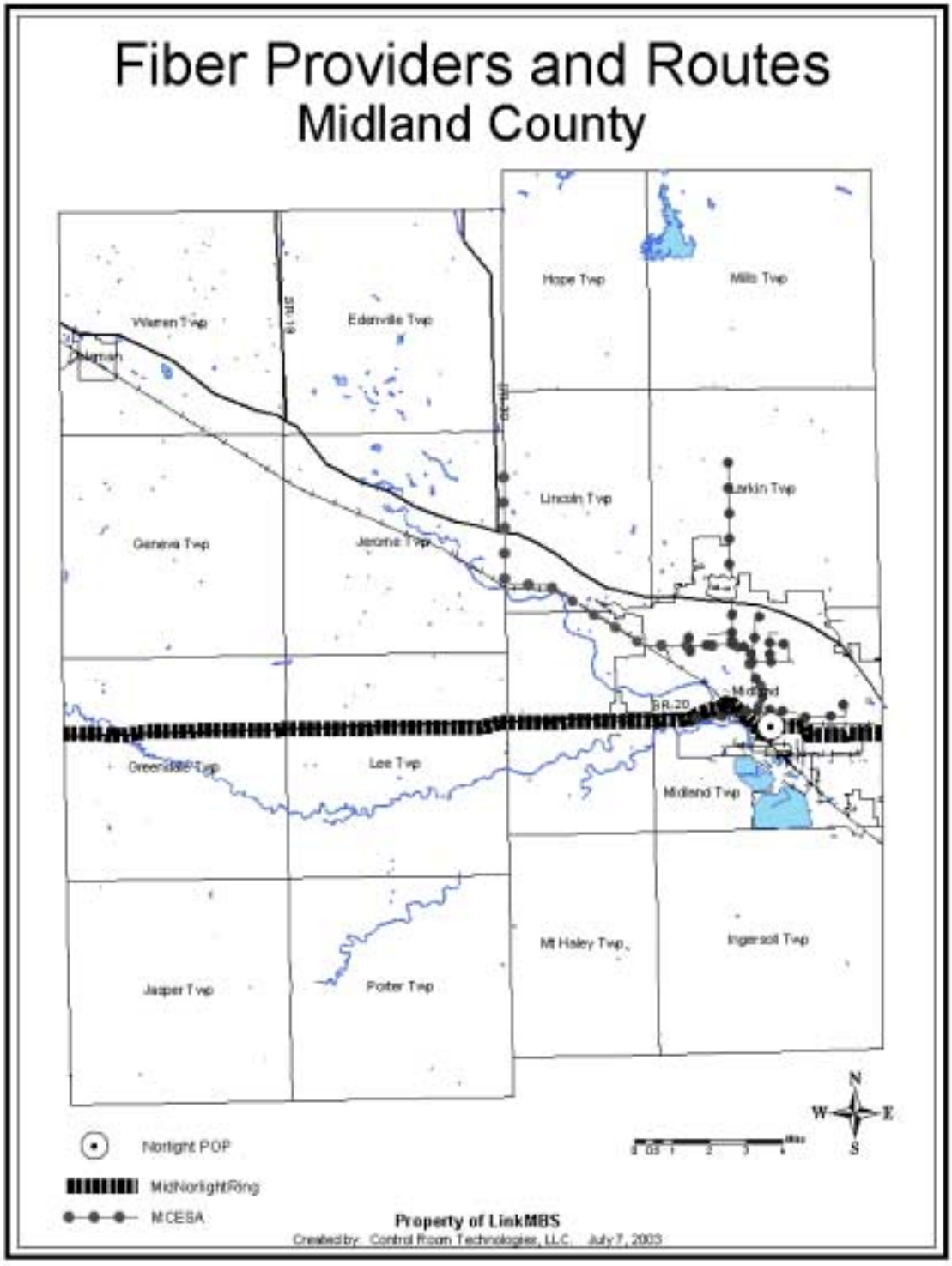

Wireless Service
Bay County
Gibson Twp
Mt Forest Twp
Pinconning Twp
Garfield Twp
Fraser Twp
Beaver Twp
Bangor Twp
Williams Twp
Monitor Twp
Auburn
Hampton Twp
Portsmouth Twp
Frankenlust Twp
SR-13
SR-47
SR-84
SR-25
SR-15
Speednet
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003

Midland County Maps




Central Offices and DSL Coverage
Midland County
Warren Twp
Edenville Twp
Mills Twp
Larkin Twp
Lincoln Twp
Geneva Twp
Jerome Twp
Midland
SR-20
Midland Twp
Lee Twp
Mt Haley Twp.
Ingersoll Twp
Jasper Twp
Porter Twp
DSL Providers
Coverage based on a standard 16,000 foot radius from the Central Office
AMERITECH MICHIGAN
CENTURY TELEPHONE OF MICHIGAN, INC.
WOLVERINE TELEPHONE CO.
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003


Cable Modem Service
Midland County
Hope Twp
Mills Twp
Warren Twp
Edenville Twp
Lincoln Twp
Larkin Twp
Geneva Twp
Jerome Twp
Midland
M-20
Greendale Twp
Lee Twp
Midland Twp
Mt Haley Twp
Ingersoll Twp
Jasper Twp
Porter Twp
N
W
E
S
Charter Communications
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003


Fiber Providers and Routes
Midland County
Hope Twp
Mills Twp
Warren Twp
Edenville Twp
Lincoln Twp
Larkin Twp
Geneva Twp
Jerome Twp
Midland
Lee Twp
Midland Twp
Mt Haley Twp.
Ingersoll Twp
Jasper Twp
Porter Twp
N
W
E
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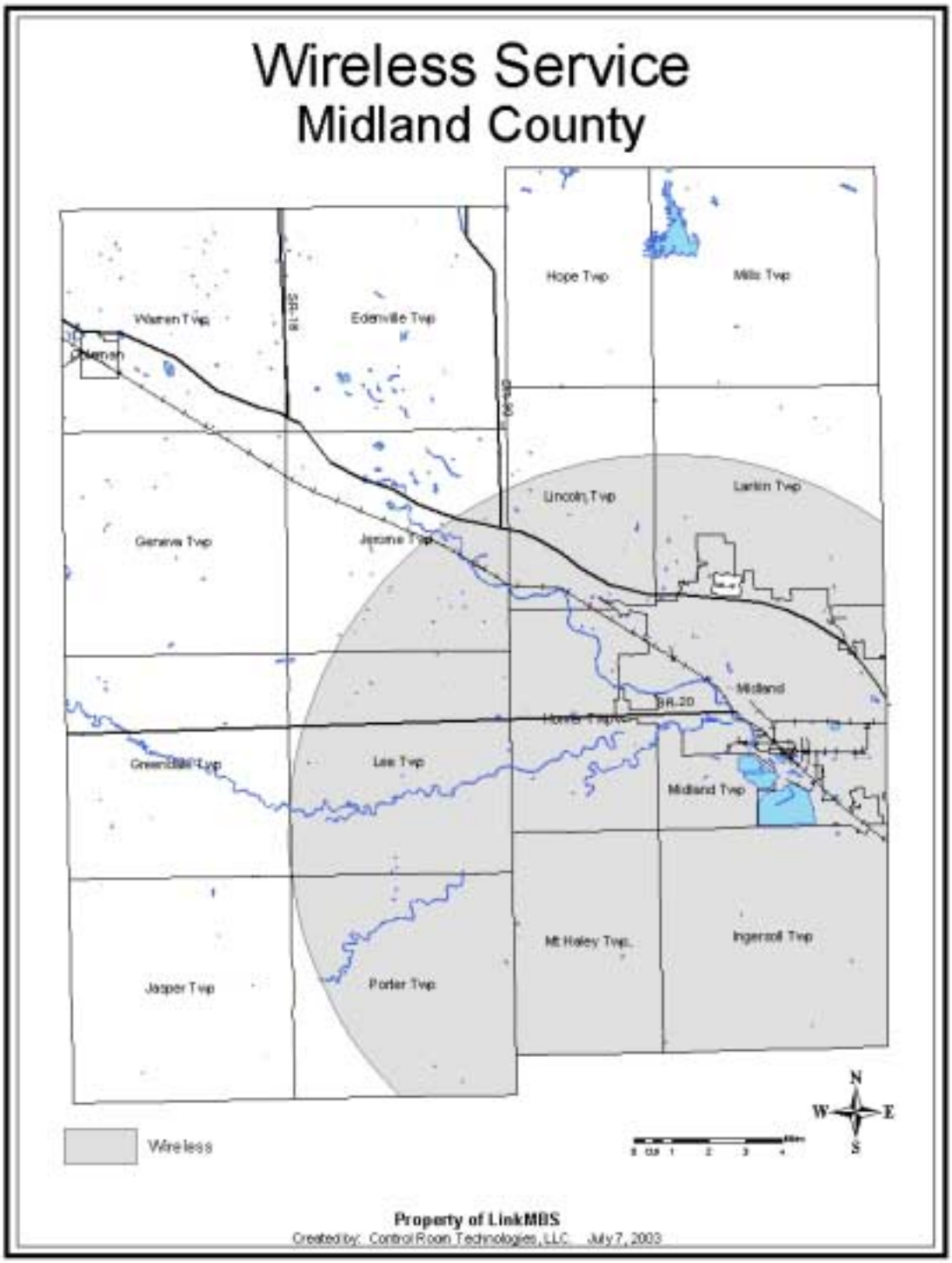
Norlight POP
MidNorlightRing
MCESA
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003


Wireless Service
Midland County
Hope Twp
Mills Twp
Warren Twp
Edenville Twp
SR-18
Geneva Twp
Jerome Twp
Lincoln Twp
Larkin Twp
Midland
SR-20
Lee Twp
Midland Twp
Mt Haley Twp.
Ingersoll Twp
Jasper Twp
Porter Twp
N
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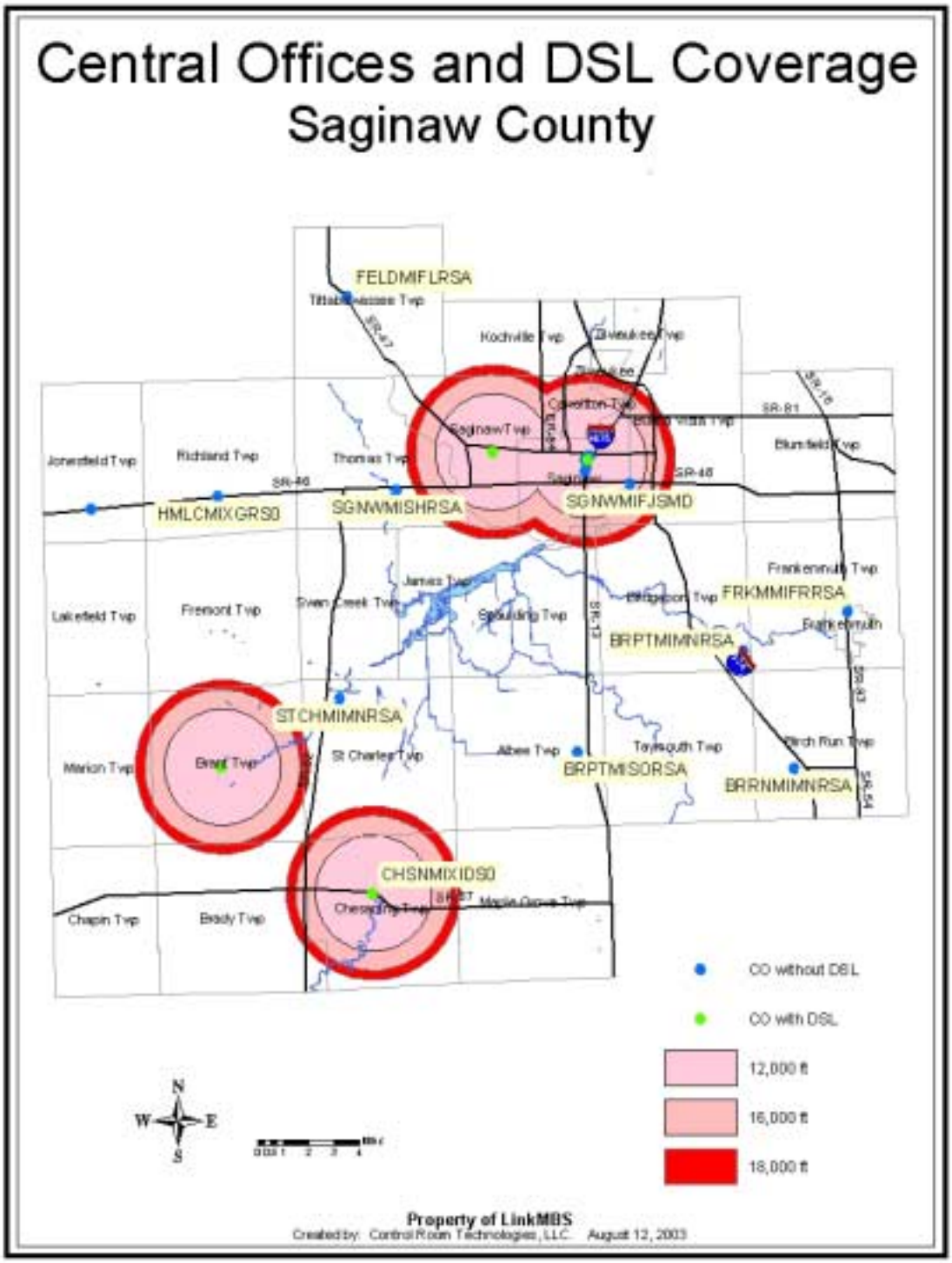
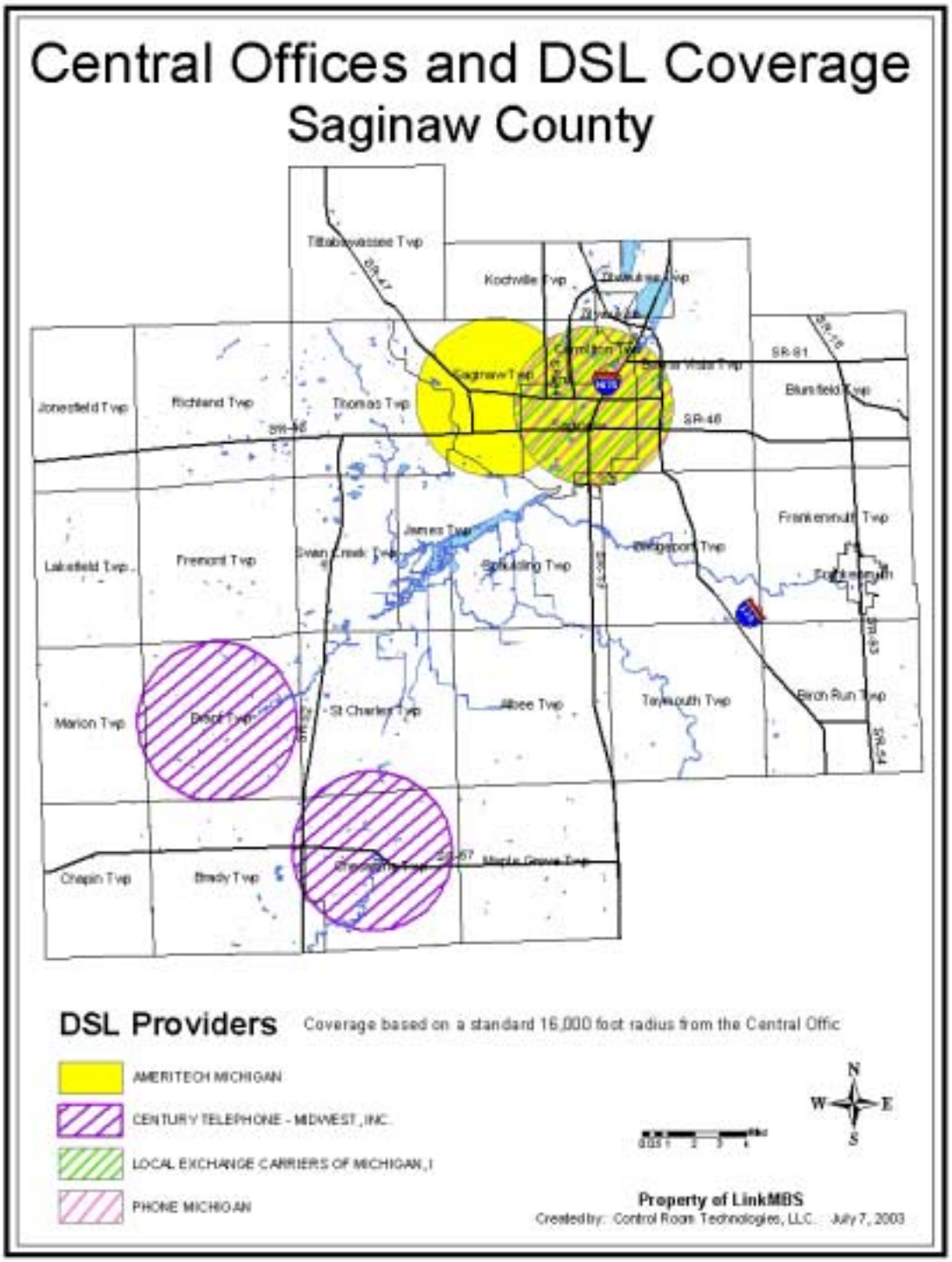
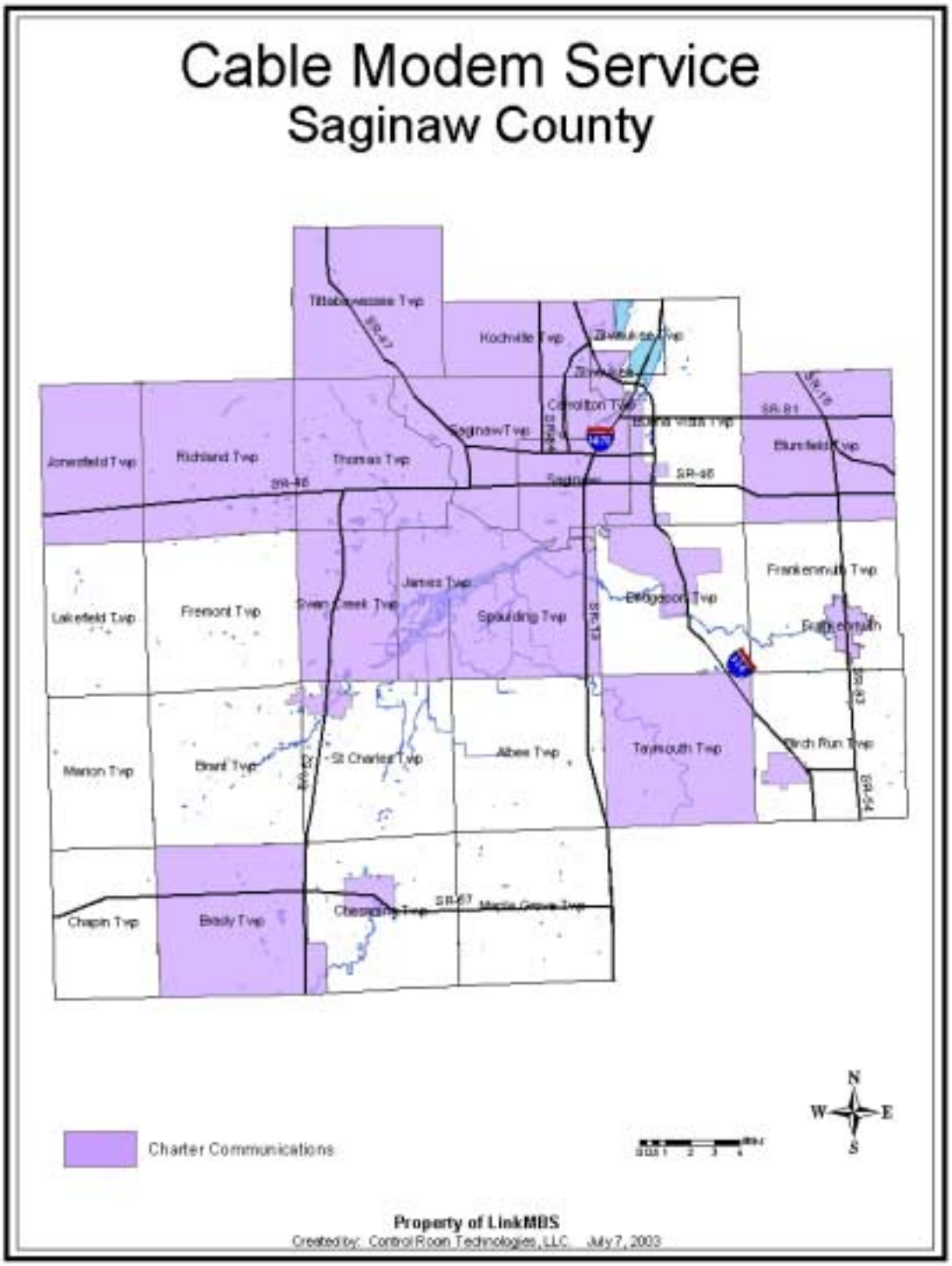
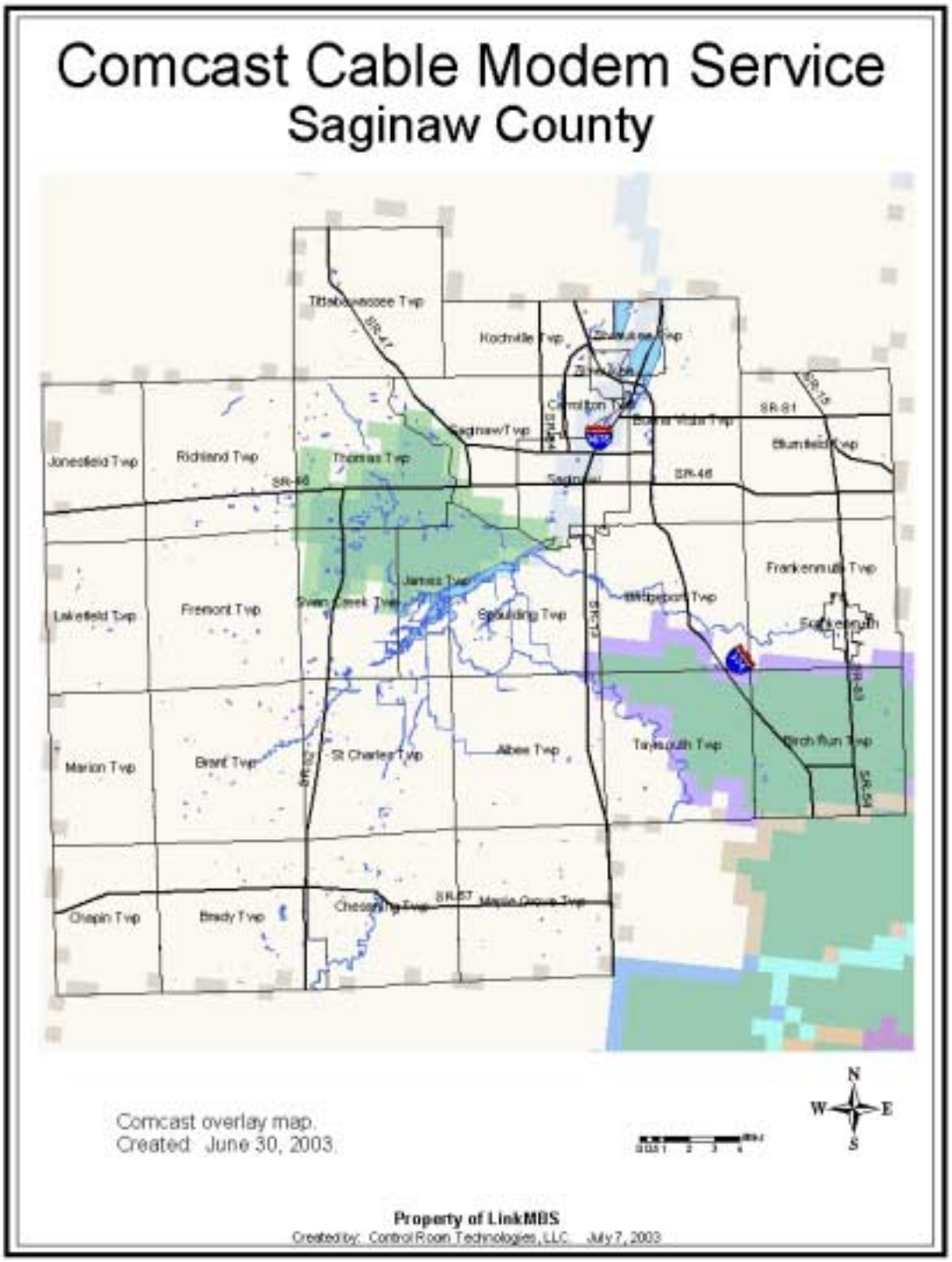
E
S
Wireless
Property of LinkMBS
Created by: Control Room Technologies, LLC July 7, 2003

Saginaw County Maps




Central Offices and DSL Coverage
Saginaw County
Kochville Twp
Richland Twp
Thomas Twp
Saginaw Twp
Carrollton Twp
Blumfield Twp
SR-81
SR-46
Frankenmuth Twp
Lakefield Twp
Fremont Twp
James Twp
Swan Creek Twp
Spaulding Twp
Bridgeport Twp
Marion Twp
Brant Twp
St Charles Twp
Albee Twp
Taymouth Twp
Birch Run Twp
SR-54
Chapin Twp
Brady Twp
Maple Grove Twp
DSL Providers
Coverage based on a standard 16,000 foot radius from the Central Offic
AMERITECH MICHIGAN
CENTURY TELEPHONE - MIDWEST, INC.
LOCAL EXCHANGE CARRIERS OF MICHIGAN, I
PHONE MICHIGAN
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003


Cable Modem Service
Saginaw County
Kochville Twp
Carrollton Twp
Saginaw Twp
Richland Twp
Thomas Twp
Zilwaukee Twp
Bridgeport Twp
Frankenmuth Twp
Blumfield Twp
Lakefield Twp
Fremont Twp
James Twp
Spaulding Twp
Taymouth Twp
Birch Run Twp
Marion Twp
Brant Twp
St Charles Twp
Albee Twp
Chapin Twp
Brady Twp
Maple Grove Twp
SR-46
SR-83
SR-54
SR-81
N
W
E
S
Charter Communications
Property of LinkMBS
Created by: Control Room Technologies, LLC July 7, 2003


Comcast Cable Modem Service
Saginaw County
Tittabawassee Twp
Kochville Twp
Carrollton Twp
Saginaw Twp
Bridgeport Twp
Buena Vista Twp
Blumfield Twp
Frankenmuth Twp
Jonesfield Twp
Richland Twp
Thomas Twp
Saginaw
James Twp
Swan Creek Twp
Spaulding Twp
Lakefield Twp
Fremont Twp
Marion Twp
Brant Twp
St Charles Twp
Albee Twp
Taymouth Twp
Birch Run Twp
Chapin Twp
Brady Twp
Chesaning Twp
Maple Grove Twp
SR-46
SR-81
SR-15
SR-83
SR-54
SR-57
N
W
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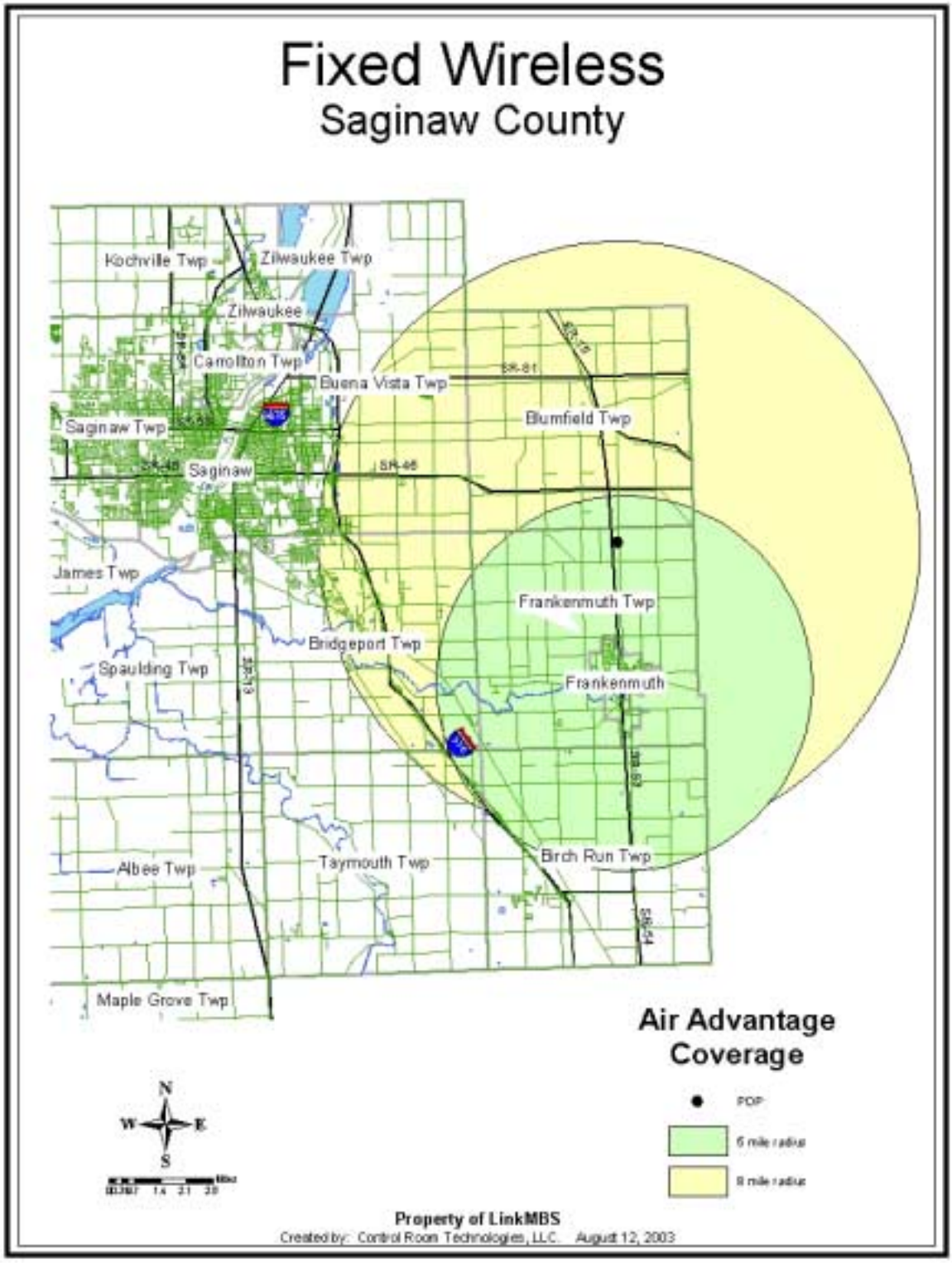
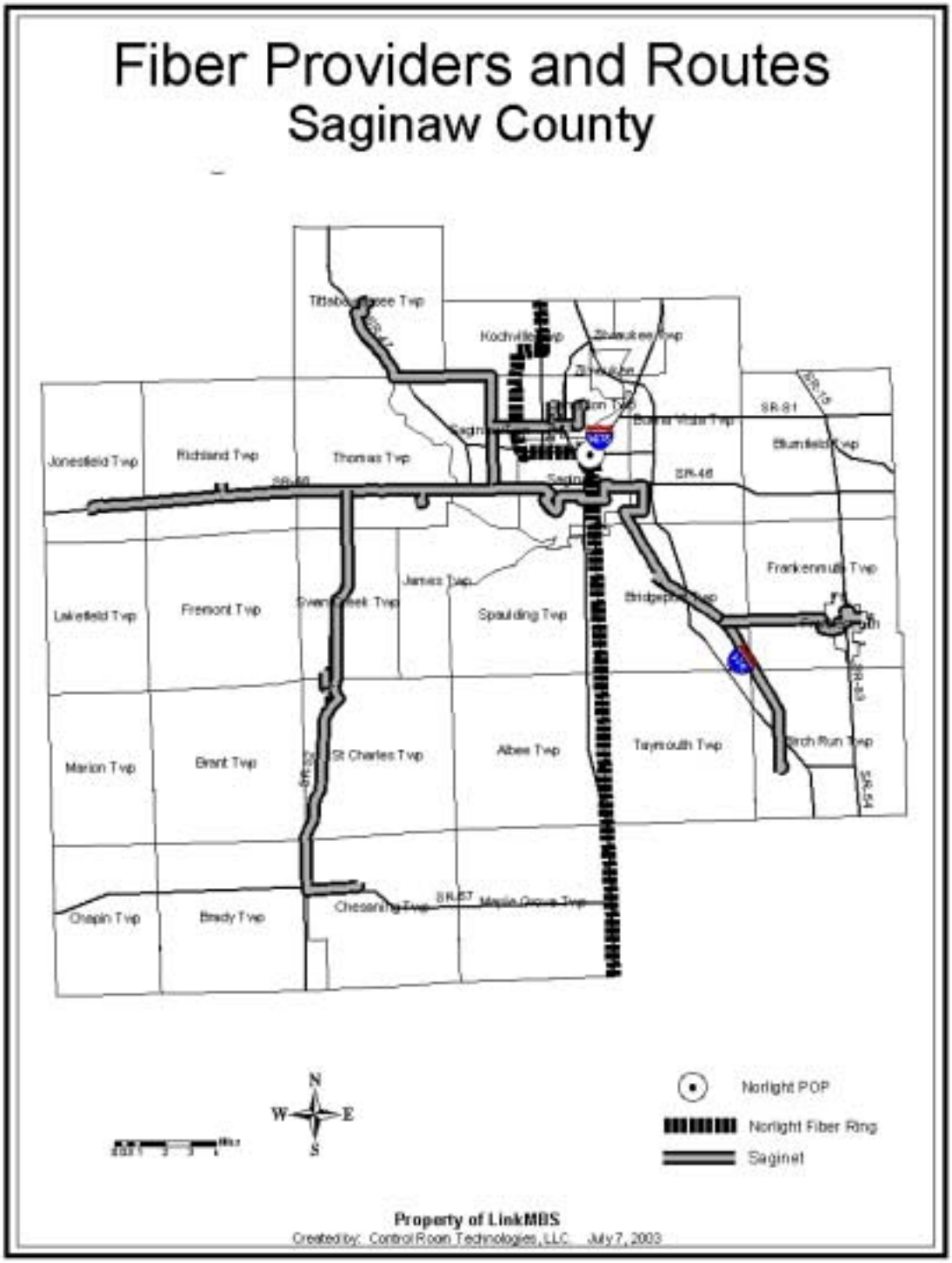
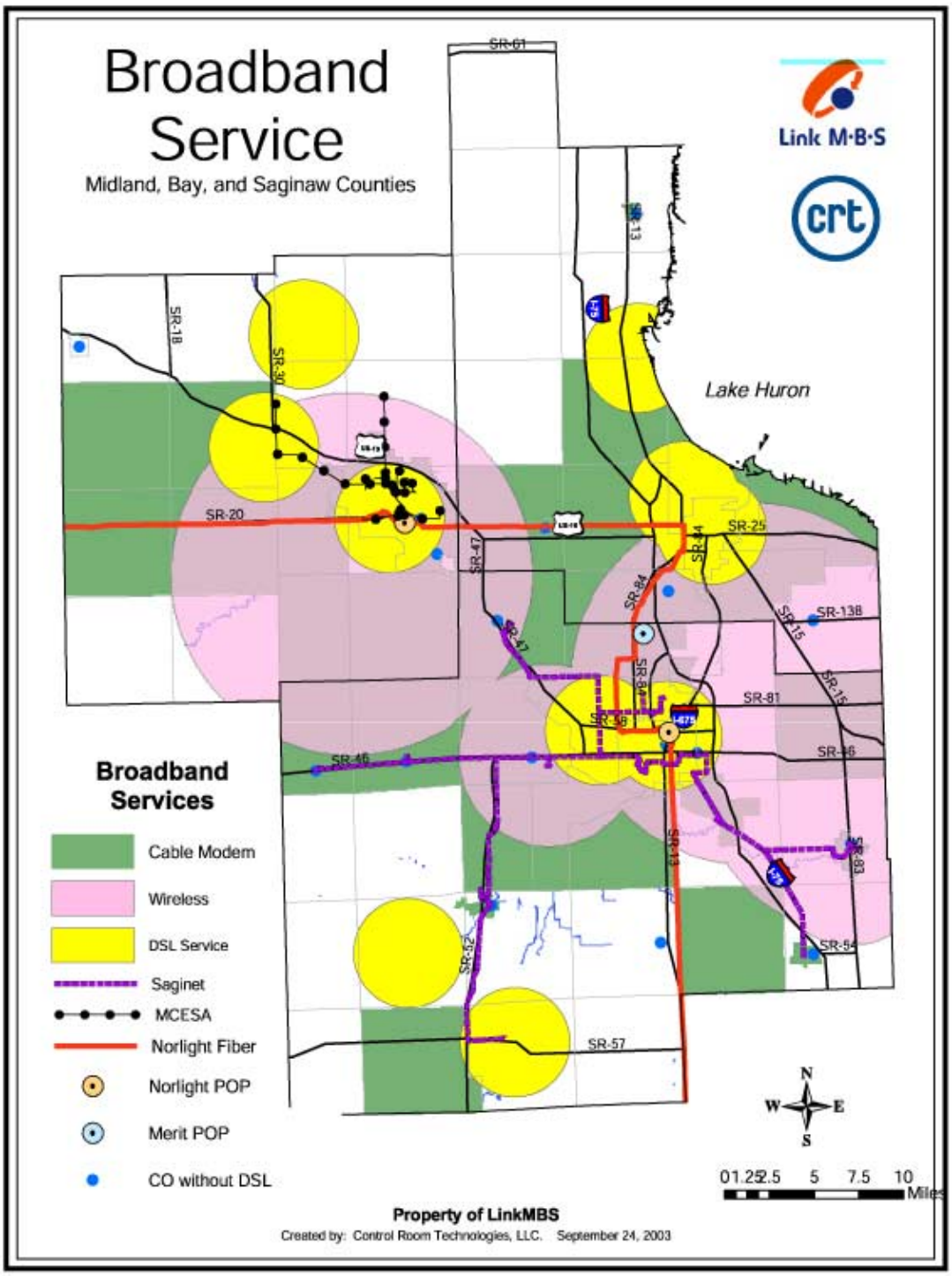
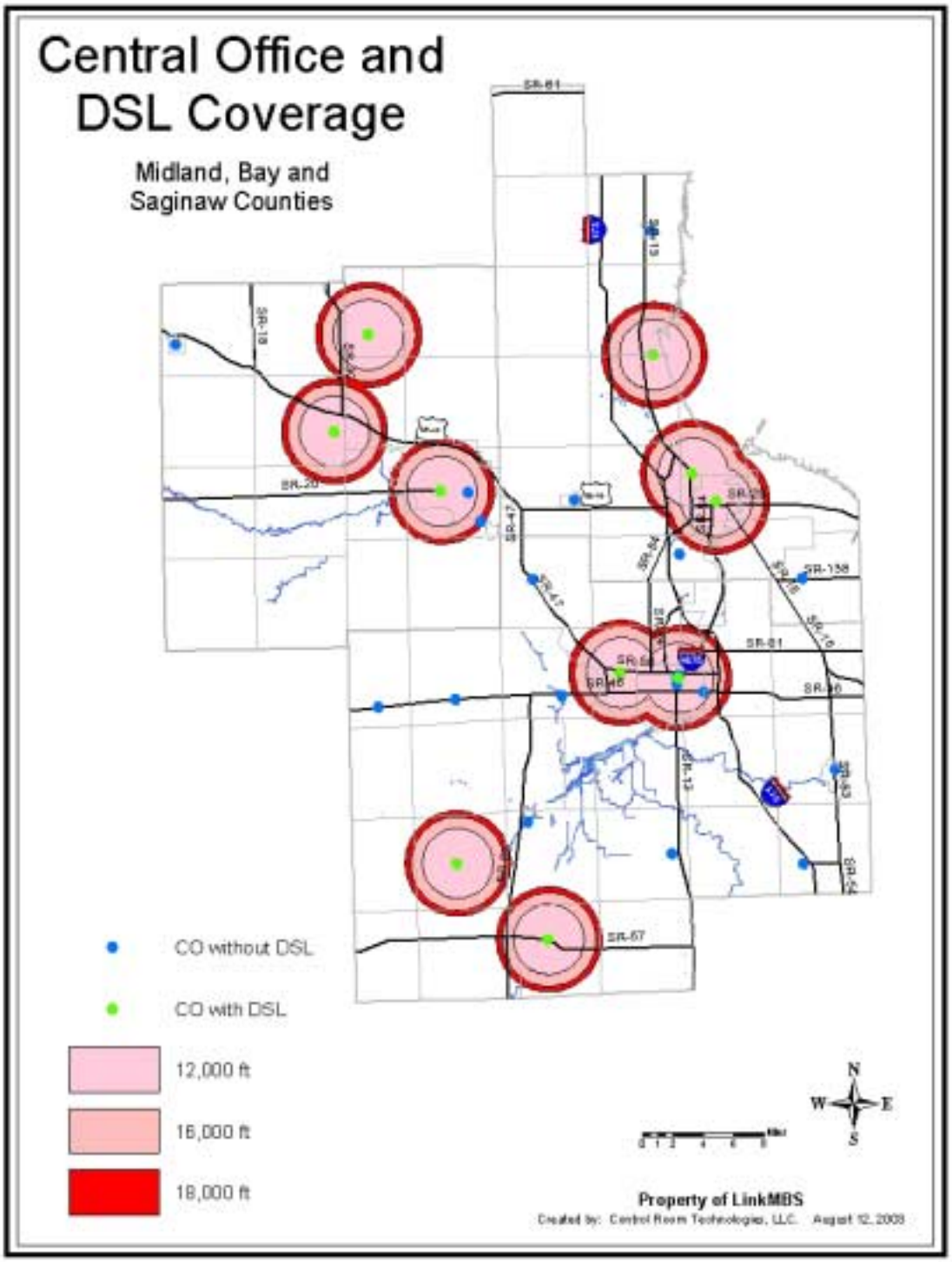
S
Comcast overlay map.
Created June 30, 2003.
Property of LinkMBS
Created by: Control Room Technologies, LLC July 7, 2003

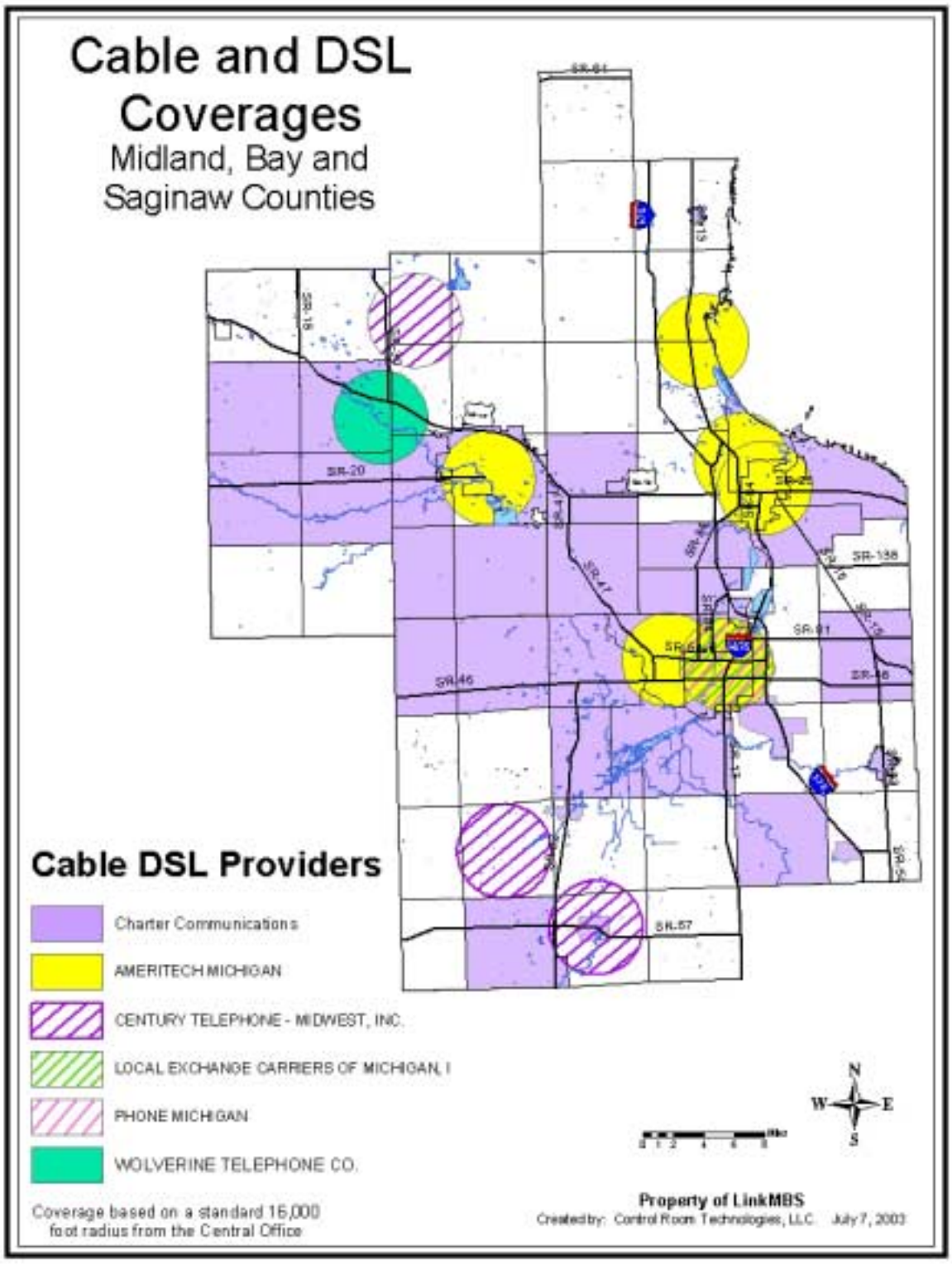

Fixed Wireless
Saginaw County
Kochville Twp
Zilwaukee Twp
Zilwaukee
Carrollton Twp
Buena Vista Twp
Saginaw Twp
Saginaw
Blumfield Twp
James Twp
Frankenmuth Twp
Bridgeport Twp
Spaulding Twp
Frankenmuth
Albee Twp
Taymouth Twp
Birch Run Twp
Maple Grove Twp
Air Advantage
Coverage
PDP
6 mile radius
8 mile radius
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. August 12, 2003

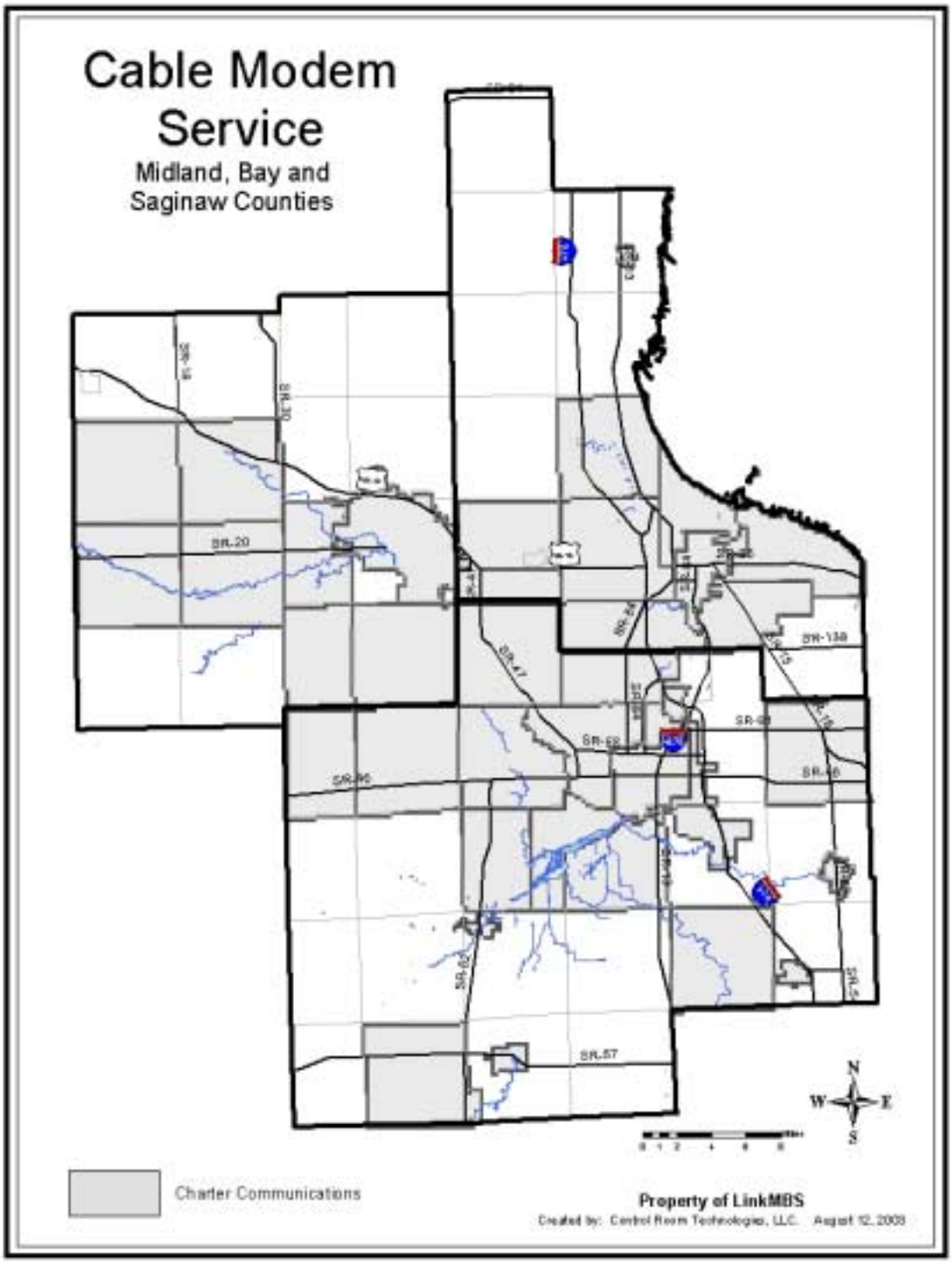

Fiber Providers and Routes
Saginaw County
Jonesfield Twp
Richland Twp
Thomas Twp
Lakefield Twp
Fremont Twp
James Twp
Spaulding Twp
Frankenmuth Twp
Marion Twp
Brant Twp
St Charles Twp
Albee Twp
Taymouth Twp
Birch Run Twp
Chapin Twp
Brady Twp
SR-81
SR-46
SR-83
SR-54
N
W
E
S
Norlight POP
Norlight Fiber Ring
Saginet
Property of LinkMBS
Created by: Control Room Technologies, LLC July 7, 2003

Composite Maps: Bay, Midland and Saginaw Counties




Central Office and
DSL Coverage
Midland, Bay and
Saginaw Counties
SR-61
SR-13
SR-18
SR-20
SR-47
SR-84
SR-158
SR-81
SR-46
SR-83
SR-54
SR-67
CO without DSL
CO with DSL
12,000 ft
16,000 ft
18,000 ft
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. August 12, 2003


Cable and DSL Coverages
Midland, Bay and Saginaw Counties
SR-61
SR-13
SR-15
SR-20
SR-41
SR-46
SR-138
SR-57
Cable DSL Providers
Charter Communications
AMERITECH MICHIGAN
CENTURY TELEPHONE - MIDWEST, INC.
LOCAL EXCHANGE CARRIERS OF MICHIGAN, I
PHONE MICHIGAN
WOLVERINE TELEPHONE CO.
Coverage based on a standard 16,000 foot radius from the Central Office
N
W
E
S
Property of LinkMBS
Created by: Control Room Technologies, LLC. July 7, 2003


Cable Modem Service
Midland, Bay and Saginaw Counties
SR-20
SR-30
SR-47
SR-46
SR-57
N
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Charter Communications
Property of LinkMBS
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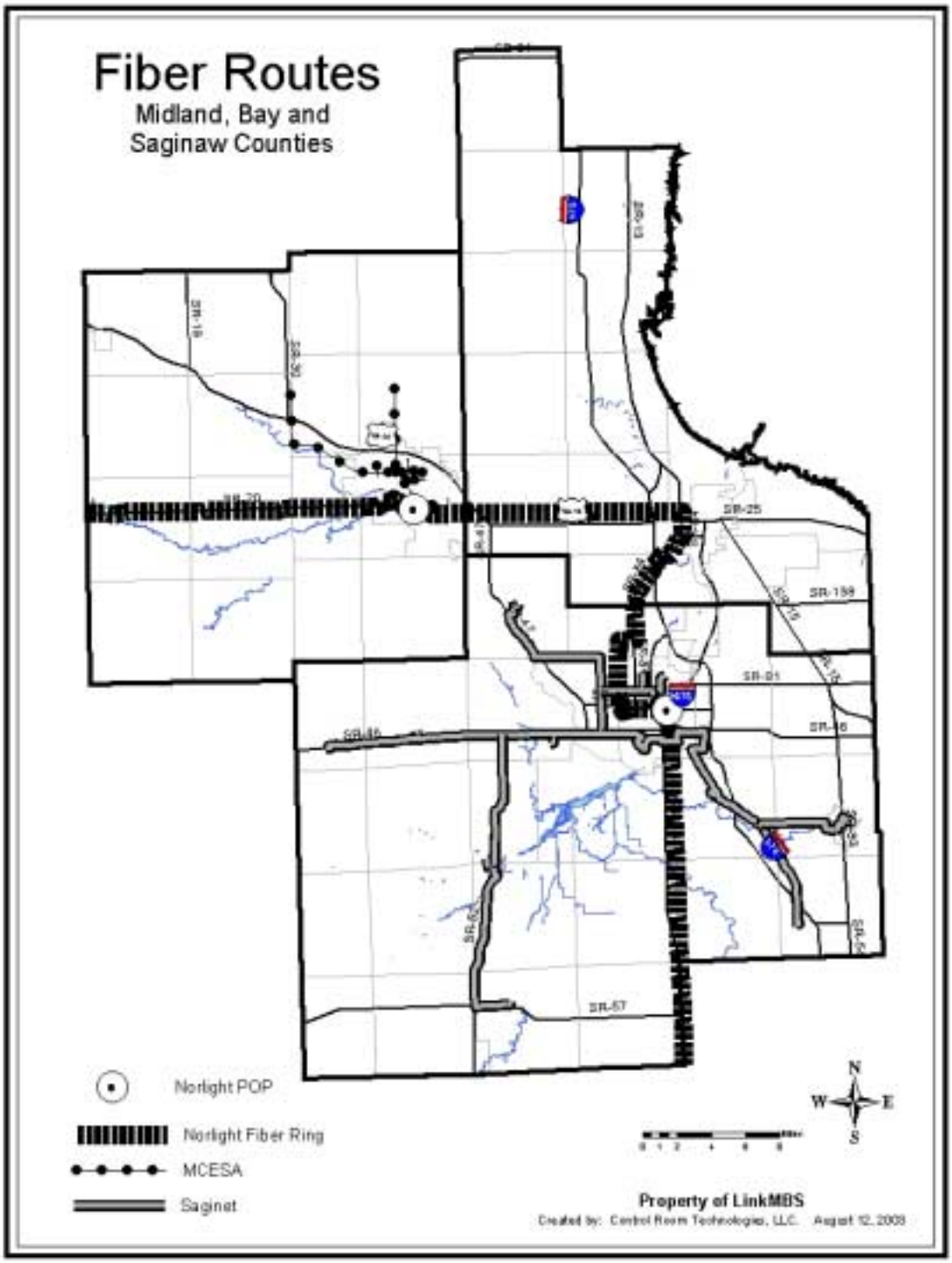
Fiber Routes
Midland, Bay and
Saginaw Counties
SR-25
SR-159
SR-47
SR-57
Norlight POP
Norlight Fiber Ring
MCESA
Saginet
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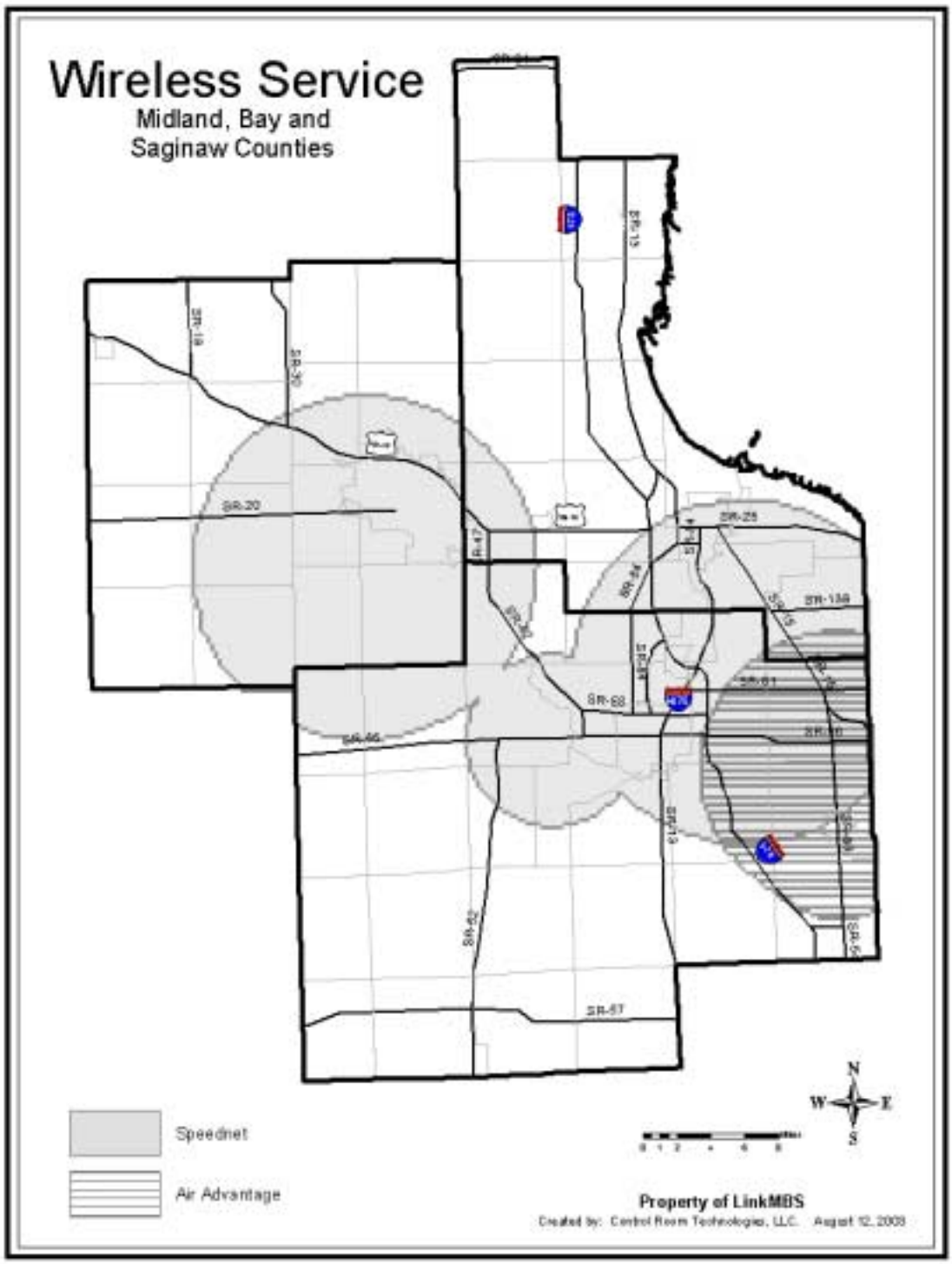
Wireless Service
Midland, Bay and
Saginaw Counties
SR-13
SR-18
SR-30
SR-20
SR-47
SR-84
SR-25
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SR-61
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SR-46
SR-13
SR-42
SR-57
N
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Speednet
Air Advantage
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Frequently Asked Questions

This section includes questions and answers created to teach our stakeholders about advanced telecommunications services and how they relate to the region.

Healthcare Industry

How will high-speed access help the healthcare industry in Mid-Michigan?

One of Mid-Michigan's fastest growing industries is healthcare. Healthcare providers are a significant consumer of regional Information Technology resources from hardware integration and software sales to telecommunications services. IT resources are consumed by this industry because of the massive amount of data that is needed to conduct business. For the Mid-Michigan region to remain competitive, better yet, to increase market share, access to advanced telecommunications services will be crucial.

Increasingly, digital healthcare systems, such as advanced imaging systems, require higher speed data communications systems. When fiber optic connections are unavailable at a desired installation, complicated and time consuming construction could be necessary. The industry and community at large will benefit when high-speed data services are more

generally available to the region – the latest systems can be deployed quicker and to a wider variety of locations.

What advanced telecommunication services do healthcare providers consider mandatory in order to achieve efficiency and quality care?

Health insurers and Health Maintenance Organizations require health care providers to conduct all billing and accounting transactions digitally. Increasingly, provider data and patient records are being stored digitally. To work with this digital information, powerful computers and servers need to be used, but it doesn't end there. Broadband Internet access is now a critical component of this equation. Transferring large amounts of digital information across town or across the country is nearly impossible without high-speed connections. For example, when access to fiber optic networks isn't realistic because of economic or construction barriers, high speed wireless connections will become absolute necessities if efficient and quality care will be provided quickly.

What about security issues, patient confidentiality?

In 1996, Congress passed the Health Insurance Portability and Accountability Act. Known as HIPAA, this legislation requires providers and anyone else with access to individual patient data to implement new security and patient confidentiality practices. Storing information digitally allows for

greater security, but simultaneously requires more vigilance to protect patient confidentiality. The ability to transfer records securely over a private network or the Internet is contingent on access to high-speed lines.

Health Information Portability increases the efficiency of health-care. If a patient will be referred to a specialist or collaborating physician, digital file transfer eliminates administrative costs and unnecessary delays related to mailing paper documents. To realize this vision, physicians, health care facilities and all related parties need to be connected to a common communications network. The Internet is the most cost effective common network available and will be leveraged to increase the speed and quality of care surrounding health information portability.

Can hospitals or other health facilities in rural or remote locations leverage resources or staff from facilities in metropolitan areas using high-speed communications?

Yes. The question effectively describes a common vision among healthcare providers. Commonly referred to as telemedicine, increasingly healthcare technology relies on digital technology interconnected via data communications networks. These networks can be interconnected across long distances, only when high-speed services are available in the area.

Imaging systems are a great example. Technicians trained to operate systems, such as X-Ray or MRI, can digitally capture an image in one facility

and electronically transfer the images to another site for analysis by a remote radiologist. This equipment is common and a functional reality today – so long as both facilities have data connections fast enough to efficiently carry the enormous files produced by the MRI system. While dedicated fiber optic or leased communication circuits are most common today, future adoption of high speed Internet connections promise to dramatically reduce cost of deployment and possible locations limited only by the availability of high speed Internet access.

Education

How will high-speed Internet access benefit the region's educational system?

Students, educators and parents are beginning to utilize the Internet as another component of their education, to better integrate classroom activities with parents and to connect classrooms with remote educational resources – such as electronic field trips, research materials and even remote classrooms.

Historically, schools wishing to interconnect multiple facilities in a district or across a region, construction of fiber optic cables were required. This process requires several months to complete, with costs in the range of millions of dollars. And this only accomplishes connectivity between pre-determined facilities – what about connecting parents or future unknown sites quickly? Utilizing broadband links to the Internet promises to reduce cost and increasing the possible locations where educational resources can be tapped.

Using the Internet as a resource for communication with educators in addition to using it as an educational resource is becoming a common practice. Video conferencing and virtual field trips are only affordable, and in some instances only possible, through broadband Internet connections.

The simple supply of broadband lines is really only half the story – far more exciting is integration of interactive web technologies with the daily life

of education. Already today, teachers and administrators utilize web publishing to integrate classroom activities with parents and the community. Servers located at the school present classroom reports, daily activities, grades, or homework – even allow teachers to create communities of parents who can communicate privately using web based discussion message boards.

When broadband Internet is generally adopted by the community at-large, does the application of technology become reality. If a low percentage of parents have broadband access at home, the system will be slow to deploy. While adoption rates of systems, such as described above, may be low when initially introduced, maintaining the course is crucial in helping build demand for broadband services.

What advanced telecommunication services do Mid-Michigan public/private schools, colleges and universities need in place to keep students in sync with the rest of the country?

It is vital the respective institutions are well connected to major backbones and the region's leading Internet service providers. In order to provide the quickest data path between the school and students, the region's ISP's are encouraged to privately inter-connect their networks with the school. In order to provide the quickest data path between remote

learning resources, the school is encouraged to maintain links to the major Internet backbones.

Government (Regulators/Legislators)

What is the best way to electronically communicate with constituents other than e-mail?

While e-mail is an excellent and relatively easy method of communicating with the community, it is only the first step. Even a basic web site is the next best step. Messages to the community should be published to the organization's web site. This allows the public to review or search important communications on-demand, without pre-registering for E-mail lists.

More advanced web design techniques, such as live or on-demand video, audio conferencing and animated presentations have become easier and less expensive to produce than ever. For example, every computer with Windows XP is shipped with basic video recording and web publishing software. Most computer users can utilize these features.

Business/Industry/Chamber Boards/Associations/Tri-County Economic Development Councils

How will high-speed Internet access benefit area chambers of commerce and Tri-county economic development councils?

Businesses are increasingly reliant on digital communications with suppliers, vendors, employees and customers. The major industrial businesses of the region have all adopted Internet based technologies as their standard for method of basic communications, such as transferring CAD/CAM drawings, accepting orders, and conducting electronic commerce.

From an economic development perspective, broadband availability is essential to ensure the region, as a whole, can maintain and continue to increase competitiveness. Broadband Internet will increasingly be perceived as a utility, just like water and sewer. Service must be generally available in the region, or businesses will locate outside the region.

The perspective of Chambers, existing businesses and their related associations is similar, only more imminent. If your members are not educated in the benefits or understand how to use Broadband Internet, they will begin to lose their competitive position in the market. It is reality, customers are demanding service delivery and integration over the Internet and with web-based technologies. The chambers and associations would best serve their members by taking the role as technology advisors, introducing

effective best practices from other regions or effectively or simply introducing Broadband experts to prospective users.

What is DSL?

DSL (Digital Subscriber Line) is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. xDSL refers to different variations of DSL, such as ADSL, HDSL, and RADSL. Assuming your home or small business is close enough to a telephone company's main "central office" that offers DSL service, you may be able to receive data at rates up to 6.1 megabits (millions of bits) per second, enabling continuous transmission of motion video, audio, and even 3-D effects. More typically, individual connections will provide from 1.5 megabits to 512 Kbps downstream and about 128 Kbps upstream. A DSL line can carry both data and voice signals and the data part of the line is continuously connected. DSL installations began in 1998 and will continue at a greatly increased pace through the next decade in a number of communities in the U.S. and elsewhere. Compaq, Intel, and Microsoft working with telephone companies have developed a standard and easier-to-install form of ADSL called G.Lite that is accelerating deployment. DSL is a direct competitive technology to cable modem and wireless Internet service providers.

How is DSL delivered to my business?

DSL uses the unused bandwidth on traditionally analog telephone lines to deliver high-speed Internet as a digital signal transmitted along-side your analog voice calls. Traditional phone service connects your home or small business to a telephone company office over copper wires. Traditional phone service was created to let you exchange voice information with other phone users using very simple analog signals. Since the telephone company's signaling is already set up for this analog wave transmission, it's easier for it to use that as the way to get information back and forth between your telephone and the telephone company. That's why your computer has to have a modem - so that it can demodulate the analog signal and turn its values into the string of 0 and 1 values, which make up digital signals.

If DSL uses the same phone line as my modem, why is DSL faster?

Because analog transmission only uses a small portion of the available amount of information that could be transmitted over copper wires, the maximum amount of data that you can receive using ordinary modems is about 56 Kbps (thousands of bits per second. The ability of your computer to receive information is constrained by the fact that the telephone company filters information that arrives as digital data, puts it into analog form for your telephone line, and requires your modem to change it back into digital.

In other words, the analog transmission between your home or business and the phone company is a bandwidth bottleneck.

Digital Subscriber Line is a technology that assumes digital data does not require change into analog form and back. Digital data is transmitted to your computer directly as digital data and this allows the phone company to use a much wider bandwidth for transmitting it to you. Meanwhile, if you choose, the signal can be separated so that some of the bandwidth is used to transmit an analog signal so that you can use your telephone and computer on the same line and at the same time.

If DSL uses standard telephone lines, do I need to purchase service from the same company who provides my voice service? Can I buy service from someone other than SBC?

No, in short, DSL service is available from several companies other than SBC or your traditional provider of voice services. SBC and the other telephone companies in the state are regulated entities of the Michigan Public Services Commission (MPSC) and FCC. These regulators have required the owners of the voice telephone lines (SBC, Verizon, etc, who are referred to as ILEC's or Incumbent Local Exchange Carriers) to provide fair access to competitive carriers requesting use of their networks at wholesale prices. Competitive carriers are referred to as CLEC's (or Competitive Local Exchange Carriers.) These CLEC's still utilize the same copper loops entering

your home or office owned by ILEC's, but utilizes their own equipment on either end of the phone line to deliver service. The phone circuit, while obviously very important to reach your home or office, is really a small part of delivering DSL service.

There are many DSL service providers who are also CLEC's and purchase wholesale phone lines from the ILECS (SBC, Verizon, etc) Each provider offers different products and services. In many cases, their service is competitively priced, with similar or greater value to the ILEC provided DSL. DSL from ILECs or CLECs are usually of equal quality, value and price. Either provider offers a quality solution.

How long, on average, will it take to get DSL installed?

The availability and quality of phone lines in your area will determine the delivery speed. When everything goes well, delivery time should be in 2 weeks or less, depending only on how quickly the phone company delivers the physical phone line to your site. However, many of the phone lines in any given area may be aging, slightly damaged or somehow insufficient to support the digital signals of DSL without additional work. The process of installing DSL where phone lines are sub-optimal is called "Line Conditioning." An engineer will begin replacement of wires and other physical components of the network until the line quality is elevated to the necessary standards of digital transmission. This can be very time

consuming and expensive. In extreme cases, DSL providers may tell you they can't deliver service, even after working for several weeks. If line conditioning resolves the line quality issues, your service should be delivered within 6 weeks or less.

Who is involved with installing DSL?

Installing DSL is a collaborative process among many companies and technical disciplines. There are typically many companies collaborating to deliver your DSL service. While many players are involved, you should only consider the company which you placed your order as a single point of contact for information on your order.

Once you place your order with the DSL provider, they in-turn place an order with the local phone company for the phone circuit. Don't be surprised if SBC or Verizon shows up to install a new phone line at your site to carry your DSL service, even if you ordered your service from someone other than these companies. (See description above how DSL service is delivered.) In many cases, on-site work, such as running cables or installing routers is outsourced to a local technical sub-contractor.

Can I cancel after I place and order, but before DSL is installed?

This policy differs among DSL providers. In many cases, you should expect to pay a cancellation fee if you terminate even before service is delivered. Remember, installing DSL can become a time consuming and costly endeavor for the DSL provider. Even before your service is installed, the provider will lose all the money invested in pursuit of delivering your service.

Why do some locations qualify for DSL, but others do not? Why do speeds vary from location to location?

There are two primary factors in determining availability of DSL to your location.

First is related to your Central Office (CO). Every telephone line in the region is connected to one of several centralized “hubs” called Central Offices (CO’s). To make DSL available to an area, the DSL provider must install their DSL equipment inside the CO. If the CO used for you phone service does not have the required DSL equipment, you are out of luck.

The second factor is related to line length or quality. In short, the digital signals required to carry DSL service will degrade as the wire between you and the CO becomes longer. The longer the wire, DSL speeds will be slower. The physical length limitation of most DSL service is 15,000 to

18,000 feet. If your phone line is longer than this, you are out of luck entirely.

DSL speeds are typically sold as “best effort” because of these technical limitations. For example, you may pay the same for a 1.5 megabit connection than you would 1.0 megabit connection – because the line just simply may not support the target speeds.

What is T1?

T1 is a special designation of digital phone lines, which can be used for high capacity voice, data, Internet access or a combination of any of these services on the same line.

When used for Internet access Service is very similar to DSL, but considerably higher quality. Another benefit is T1 service lacks all the line quality and distance limitations common to DSL service. Most importantly, service is regulated by the FCC, which holds the T1 service providers to dramatically higher standards of quality. This means providers typically guarantee 99.999% of system availability and actual rates of data speed. In contrast, DSL service is commonly referred to as a “best effort” system, which commonly experiences downtime and deviations in available speed.

If your office has a T1 line, it means that the phone company has delivered a highly refined, digital circuit. A T1 line can carry 24 digitized voice channels, or it can carry data at a rate of 1.544 megabits per second.

If the T1 line is being used for telephone conversations, it plugs into the office's phone system. If it is carrying data it plugs into a network router.

A T1 line can carry about 192,000 bytes per second -- roughly 60 times more data than a normal residential modem. It is also extremely reliable -- much more reliable than an analog modem. Depending on what they are doing, a T1 line can generally handle quite a few people. For general browsing, hundreds of users are easily able to share a T1 line comfortably. If they are all downloading MP3 files or video files simultaneously it would be a problem, but that still isn't extremely common.

A T1 line might cost between $400 and $1,500 per month depending on who provides it and where it goes. The other end of the T1 line needs to be connected to an ISP and the total cost is a combination of the fee the phone company charges and the fee the ISP charges.

Does a T1 require fiber optic cables?

No. T1 uses the standard copper wires used to deliver normal phone service. The only difference is, the copper is highly conditioned and special gear is installed at both ends of the wire to ensure quality and reliability. T1 also may also require 4 copper wires, versus 2, which is used for DSL or standard phone service.

What is a T3, DS3, OC3, or OC12, etc…?

These are advanced telecommunications services, rarely used in small or medium sized businesses. The names refer to different types of advanced, ultra-high-speed telecommunications circuits.

All of these services require fiber-optic cable to be delivered.

If a large company needs something more than a T1 line, the following table shows some of the common line designations:

- DS0 - 64 kilobits per second
- ISDN - Two DS0 lines plus signaling (16 kilobits per second), or 128 kilobits per second
- T1 - 1.544 megabits per second (24 DS0 lines)
- T3/DS3 (T3 and DS3 usually refer to the same thing) - 44.5 megabits per second (28 T1s combined to form 1 circuit)
- OC3 - 155 megabits per second (3 DS3's combined to form 1 circuit)
- OC12 - 622 megabits per second (12 DS3's combined to form 1 circuit)
- OC48 - 2.5 gigabits per seconds (48 DS3's combined to form 1 circuit)
- OC192 - 9.6 gigabits per second (192 DS3's combined to form 1 circuit)

As you increase speed, services are aggregated together in what is commonly referred to as multiplexing or “muxing.” The Mux is a device, which is installed at your facility and provides the connection between the fiber optic network and your network router.

If fiber is near my office, can I get higher speed service to the Internet less expensively? What if I already have fiber in the building? How much does it cost to install fiber?

There are several complex factors involving delivery of service over fiber beyond the scope of this document. The answers provided to these questions are meant to provide a general perspective for potential consumers or readers of this report.

If you intend on ordering DS3 or above, fiber lines are required to deliver service to your location. If fiber is already in YOUR building, you are very lucky – obtaining service should be relatively easy and significantly less expensive.

The Michigan Public Service Commission (MPSC) and FCC regulates that competitive carriers to SBC/Verizon must be provided a deeply discounted wholesale rate to sub-lease all existing telephone infrastructure (generally speaking.) This includes fiber. The problem arises when fiber does not already exist at your facility. There is no regulation requiring SBC or

Verizon to force construction investments where fiber facilities don't already exist. This means construction and added cost will be involved.

Installation and construction of fiber into an office can be a time consuming and very expensive endeavor no matter how close major fiber lines are to your facility. That said, the shorter the distance required for construction, generally speaking, costs and time required to complete construction will be less.

While the cost of fiber construction varies dramatically based on complicated factors beyond the scope of this primer, we can make some estimates to offer perspective. Above ground construction is commonly priced between $10,000 and $30,000 per mile, with underground between $30,000 and $60,000 per mile. Most service providers will amortize these expenses in your service agreement – which may increase your monthly or one-time installation costs.

A typical 1-mile above ground construction job can require between 90 and 180 days to complete. This includes a process of engineering, permitting, construction, inspection, testing and turn-up.

If you are starting a business, or locating a business, which anticipates it will require access to DS3 or greater service, it is wise to seek facilities offering access to existing fiber optic networks rather than build. Anticipate realistic delivery schedules and associated costs in your budget if you do not.

What is Wireless Internet? How does Wireless compare to DSL or T1?

Wireless Internet is an exciting technology, emerging over the last 2 years, which typically delivers DSL/Cable Modem quality Broadband Service. More formally referred to as “Fixed Wireless,” service is unrelated to the Internet access available on roaming devices, such as cell phones and pagers.

Fixed wireless delivers Internet over high frequency microwave radio signals between the ISP’s tower and an antenna installed at your office or home.

As discussed earlier, DSL is not available everywhere. T1, while commonly considered the best available, is accordingly much higher priced than everything else. Wireless offers access to many locations where DSL and Cable Modems are not yet available.

What speeds are offered by Fixed Wireless providers? How does this compare with DSL? Is it available everywhere?

Wireless shares characteristics to DSL and Cable Modem. Speeds with wireless connections are usually a factor of distance, similar to DSL. The further your site is from a tower, the lower quality the signal. To compensate, some wireless providers lower the speed of your connection to

ensure reliability. Unlike DSL, bandwidth is shared among other users on the tower, which is common to cable modem systems. Depending on the policies of the provider, speed may be vary dramatically depending on the time of day or quantity of other users sharing the system. This does not mean speeds will suffer – just a factor of the policies of the wireless ISP. A diligent business consumer should evaluate the practices and policies of the provider to ensure quality is acceptable for their needs.

Availability of wireless is generally limited to locations that have a clear-line-of-site to the provider's radio tower. Sites with dense tree coverage may not qualify. Most providers offer free site analysis to help determine availability.

Which is more affordable, DSL or Wireless?

Prices of all services are highly competitive in the region. As of this writing, the least expensive option was offered by SBC, which starts its pricing at $29.99. That being said, service has limited availability and only offered as an introductory price. Wireless for business is priced between $49.99 and $149.99 in the region.

Residents/General

What is DSL?

DSL stands for Digital Subscriber Line. Often, DSL is proceeded by one of the letters “A, S, H, or x”. These letters describe the kind of DSL in use, with “ADSL” corresponding to the majority of residential DSL installations and “SDSL” describing a method of DSL that many businesses use. “xDSL” is used to describe DSL in generic terms.

DSL technology involves equipment located outside the home or office, the actual phone lines in your home or office and a modem or similar device connected to your computer or network of computers. DSL Modems help to convert the signals from your computer to travel on the same copper lines that carry regular voice telephone service. Many ADSL installations involve regular voice and high-speed data traveling on the same copper phone line, often at the same time. To accomplish this, digital signal processors in the modem suppress the noise created when high-speed data is crammed down a standard copper-wire phone line. DSL Modems can deliver Internet access at speeds as much as 2 megabits, or 36 times the speed of the fastest dial-up modems. The average speed that residents in the Tri-County area receive is closer to 1 megabit, or about 18 times the speed of a fast dial-up modem.

DSL is offered by the local telephone company or a Competitive Local Exchange Carrier (CLEC). In either instance, the lines that connect your

home to the Internet are owned by the Incumbent Local Exchange Carrier (ILEC) such as SBC or Verizon. For example, your DSL bill may say another company's name on it, like TDS Telecomm, even though your connection is installed and maintained by SBC. In this instance, TDS pays SBC a wholesale rate to use their lines between your home or office and the nearest SBC Central Office. This allows TDS to connect to your home or office using SBC's lines, which then allows them to provide Internet access to you.

What is Broadband?

Broadband refers to the method in which data is transferred over a network. In this document, broadband typically refers to high-speed Internet traffic delivered to homes or offices using a "broadband" technology like DSL, Cable Modem, Fixed Wireless, Satellite or Fiber. According to the Federal Communications Commission, full broadband lines are lines with information carrying capability in excess of 200 Kbps in both directions, simultaneously. This could also apply to a private network; for example, two hospitals on opposite sides of town may have direct fiber connection between them that could also be described as "broadband".

Are cable modems faster?

As of this writing, Cable Modems seem to have the lead on download speed over all other technologies. But there is no limit to human invention – there will always be a better, faster, cheaper option as more consumers adopt the technology.

Currently, cable modems seem to offer up to 2 megabits of download speed, while DSL and wireless top out around 1.5 megabits. DSL is more commonly offered to residence at slower speeds because of its distance limitation.

Wireless is the only provider offering high-speed upload capacity to home users. If you intend on conducting business from home, or seek high-speed upload service, wireless might be the fastest option as of this writing.

Which is more affordable, cable, DSL or wireless?

Prices of all services are highly competitive in the region. As of this writing, the least expensive option was offered by SBC, which starts it's pricing at $29.99. That being said, service has limited availability and only offered as an introductory price. Wireless for business is priced between $32.95. Cable is commonly priced between $29.99 and $59.99, depending on current promotions.

Telecomm Investment Barriers

This section contains content that was originally drafted in a memorandum by Loomis Law in response to questions posed by CRT about statewide, regional and local telecommunications regulations.

Summary

This memorandum describes the applicable regulatory and statutory issues that providers may face that would impact their ability to provide broadband services. Generally, federal, state, and local regulation of the facilities used to provide broadband varies depending on the type of facilities that the provider utilizes in providing the service.

"Wired" technology, which utilizes T-1 lines, integrated services digital networks (ISDN), digital subscriber lines (DSL), and cable modems, require the provider to arrange for the installation of their wires and cables on poles or in conduits. This entails negotiations with all the owners of those poles and conduits along which the wires and cables will run, and the cost to install the wires and cables vary widely. State statutory law also governs the placement of wires on poles, and may require the construction of additional poles. To the extent that a provider wants to place wires or poles on private property, the provider must separately negotiate an easement with each private landowner over which the facilities would cross.

The ability of municipalities to directly regulate and impose fees on providers whose facilities are located in public rights-of-way has varied over

the past 100 years, however, legislation enacted by the Michigan Legislature in 2002 imposes an annual uniform fee of up to 5¢ per linear foot for all telecommunication providers whose facilities are located in public rights-of-way. Although this new legislation may be subject to constitutional attack or federal preemption at some point in the future, at present it is the governing standard for the determination of the fees that providers must pay for use of public rights-of-way.

Cable modems, a common broadband technology provided by cable providers, are generally less expensive than the facilities of telecommunication providers in terms of constructing new facilities in public rights-of-way because under federal law they are not subject to the per-foot fee imposed by the 2002 legislation. However, cable providers historically have more fixed or embedded costs, and must pay franchise fees of between 3 and 5% of their gross revenues to municipalities. Telecommunication providers, in contrast, rarely pay a percentage of their gross revenues to municipalities; however, they are subject to the annual maximum 5¢ per linear foot fee required by the 2002 legislation.

Fixed wireless, an emerging broadband technology, is less affected by the new 5¢ per linear foot fee because much of the facilities involved in providing the service are not located in public rights of way. To the extent that fixed wireless providers have wires and cables located in public rights-of-way, however, they are subject to the 5¢ per linear foot fee. Fixed

wireless is also subject to federal, state, and local regulation regarding the construction and placement of the providers' antenna towers. Satellite broadband providers are subject federal regulation of their satellites, but they are not generally regulated by state and local governments.

Background

The regulatory and statutory issues that telecommunications providers may face to provide broadband services will vary depending on the type of technology employed to provision broadband. Each type of technology has its own comparative advantages and disadvantages. Probably the most feasible technologies at this time are xDSL, cable modem, fixed wireless, and satellite. Less likely broadband technologies are ISDN, T-1 lines and fiber-to-home.[15]

For purposes of the instant discussion, the legal and regulatory obstacles faced by providers wishing to build broadband infrastructure is dependent upon whether the technology needed is "wired" to the customer. "Wired" technology would include telecommunications services that are already available, such as ISDN and T-1 service, DSL service that is becoming increasingly available, but has inherent future limitations, cable modem services, and fiber-to-home. These "wired" technologies require access to extensive rights-of-way through which to install the necessary poles, conduits, wires and cables.

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[15] IDSN is currently available to most telephone subscribers from their local phone company, and while generally capable of providing speeds (128 kbps) about 2 ½ times the speed of dial-up modems, do not offer speed anywhere near the speeds offered by the other technologies. Telephone subscribers also have for several years had the ability to purchase dedicated T-1 lines (which consists of 24 channels) from local phone companies. This option, however, because of its cost, has been traditionally utilized by business customers. Fiber-to-home, which would require a rebuild of existing transmitting facilities, namely the replacement of existing copper wires with fiber optic cable, while providing maximum speed (100 Mbps) would be cost prohibitive. However, installing fiber optic cable instead of copper wire could be an option for new construction, depending on size and location of the development.

Wired broadband providers desiring to upgrade or expand their facilities typically install their wires and cables on existing poles or in existing conduits. They may own the existing poles or conduits, but very frequently the owner is a third party, such as an electric utility or another telecommunications provider from whom they will lease space to install their wires and cables. In rare situations, a provider will have no alternative but to install new poles or conduits. In the typical situation, where a provider uses existing poles or conduits, there will be multiple owners of the poles and conduits along the selected route. For example, Consumers Energy may own the poles on one mile of the route, the next mile of poles may be owned by a municipal electric utility, the next portion may be owned by an electric co-operative, and Ameritech may own another portion. The provider will have to negotiate with each of the various owners for pole and conduit space. The prices the owners require vary widely. For example, the requested price for pole space ranges from $3 to $25 per pole per year. Also, the level of information that the pole owners require varies widely. Some pole owners require an engineering drawing of each pole, showing the location of all existing wires and cables and the proposed location of new wires or cables.

There are also state regulations that must be followed which dictate how many wires can be placed on poles and their location (height from ground and side of pole). If an existing pole is at its load capacity, a taller

replacement pole or an additional pole will have to be installed with attendant additional costs being charged to the new installing party.

In addition to negotiating with each pole and/or conduit owner along the selected route, the provider must be cognizant of who owns the property on which the pole or conduit is placed. The poles or conduits are either on private property or in public rights-of-way. If the poles or conduits are on private property, the owner of the poles or conduits have obtained an easement from the property owner to obtain the right to set their facilities on the property. The terms of the easement typically specify whether the pole or conduit owner can permit additional parties to attach to the poles or lay additional lines in the conduit. If the pole owner has not been conveyed that right, then the right to approve or refuse the installation of additional lines remains with the owner of the real estate. In such situations, the provider seeking to install new facilities would have to negotiate and purchase a separate easement from the owner of the real estate. In other words, when the poles or conduits are on private property, the terms of the easements of each parcel of land through which the proposed route passes control whether additional wires and cables can be installed on existing poles or in existing conduits. When private property is involved, the determination of the applicable property rights for each parcel can potentially be a daunting task. At times, the task is simplified if the owner of the poles or conduits will warrant to the provider of new facilities that the easements granted to

the pole or conduit owner include the right to permit the installation of new wires or cables.

In cases where the property owner retains the right to require additional easements for the installation of additional wires and cables, if the property owner refuses to grant the easement at fair market value, a telephone company may initiate a condemnation proceeding in circuit court to force the granting of an easement at fair market value. However, the right of condemnation only exists in the lower peninsula of Michigan. MCL 484.9, MCL 484.10.

If the poles or conduits are located in public rights-of-ways, certain statutes come into play.

Legislative History

The Constitution of 1908 took effect on January 1, 1909. Section 28 of Article VIII of the 1908 Constitution specifically stated that no public utility shall have the right to use the public highways and other public place without the consent of the township, city, or village. In addition, this section stated that no public utility could transact with a local business in a township, city, or village without first obtaining a franchise from the township, city, or village.[16]

By the last half of the 1900s, the telephone companies that operated in the state almost unanimously held the position that the above constitutional provision did not apply to them. The telephone companies that provided services to over 95% of the counties in the state held the position that they possessed a "statewide franchise" as a result of property rights that the state legislature had granted to them prior to the enactment of the Constitution of 1908. A statewide franchise obviated the need for a telephone company to obtain franchises from municipalities. The possession of a statewide franchise by phone companies existing prior to January 1, 1909 was upheld by the Michigan Supreme Court on more than one occasion early in the 1900s and by the Sixth Circuit Court of Appeals as recently as 2000. *TCG Detroit v City of Dearborn*, 206 F3d 618 (CA 6, 2000).

[16]These provisions were continued in the Constitution of 1963 at Article VII, § 29. The main difference in the new constitution was that "counties" were added to the list of local governments, which possessed the right to control their public highways and places.

Furthermore, the few telephone companies that did not possess statewide franchises gradually took the position that they were not subject to Article VIII, § 28 of the 1908 Constitution because the provisioning of telephone service had advanced to a degree that it could no longer be considered “a local business.” Thus, the phone companies took the position that the transaction of telephone service was not subject to local control or local regulations.

While gas and electric utilities have, for the most part, continually sought franchises from cities, villages, and townships since the 1908 constitution was enacted, telephone companies in recent decades in general did not seek such municipal approvals.

In 1991, the Michigan Telecommunications Act (“MTA”) was enacted, which partially deregulated telephone service, in favor of a competitive model. In 1995, the MTA was amended to include a provision that required telecommunications providers using the highways, streets and other public places to obtain a permit from cities, villages and townships for the right to do so. MCL 484.2254. In the same 1995 Amendments to the MTA, the Legislature, in the definition of telecommunications service “is not a public utility service.” MCL 484.2102 (dd). The ostensible purpose of specifying that telecommunications service was not a public utility service was to make clear that the Legislature did not intend telecommunications providers to be subject to Article VII, § 29 of the 1963 Constitution.

The 1995 Amendments to the MTA resulted in many municipalities attempting to impose right-of-way fees on telecommunications providers. Litigation resulted in the federal and state courts, and before the Michigan Public Service Commission. Appeals from the Michigan Public Service Commission rulings are still pending before the Michigan Court of Appeals, among others. The litigation involved such questions as: (i) whether the municipalities' fees exceeded its "fixed and variable costs" of maintaining the rights-of-way, the standard for fees set in the 1995 Amendments; (ii) whether the Legislature could constitutionally prescribe that telecommunications providers were not subject to Article VIII, § 29 of the 1963 Constitution; (iii) whether provision of telecommunications service constituted the transaction of a local business; (iv) whether the 1995 Amendments allowed fees to be imposed on existing facilities in the public rights-of-ways; and (v) whether telecommunications providers that held statewide franchises were exempt from paying permit fees under the 1995 Amendments to the MTA.

As a practical matter, most of the municipalities imposed right-of-way fees only on new construction and not on existing facilities. The new construction was performed largely by the new entrant telecommunications companies (referred to as competitive local exchange carriers ("CLECs")) while the existing facilities were almost always owned by the incumbent telephone company (referred to as "incumbent local exchange carriers

("ILECs")). As a result, a concern arose at the Legislature that the "playing field" for ILECs and CLECs was uneven. In an attempt to resolve the concerns and the many disputes that had arisen under the 1995 Amendments, earlier this year, the Legislature enacted the Metropolitan Extension Telecommunications Rights-of-Way Oversight Act, 2002 PA 48 ("Act 48"). This legislation repealed §§ 251, 252, 253, and 254 of the Michigan Telecommunications Act, MCL 484.2251, 484.2252, 484.2253, and 484.2254, which formerly controlled the granting of permits by local units of government to telecommunications providers for access to public rights-of-way.[17]

Act 48 granted municipalities authority similar to what they possessed under the 1995 Amendments, but with certain significant differences. The Act, which becomes effective on November 1, 2002, established a new state agency, the Metropolitan Extension Telecommunications Rights-of-Way Oversight Authority (the "Authority") to coordinate rights-of-way matters with municipalities. Act 48 generally provided for standardized application procedures, standardized permit terms, and standardized fees applicable to all telecommunications providers. Under Act 48, a "provider," which is

[17] These repealed statutory sections required municipalities to grant, and telecommunication providers to obtain, a permit for access to, and ongoing use of, all rights-of-way, easements, and public places under the municipality's control and jurisdiction. The municipality had to either approve or deny the provider's application within 90 days, and it could not "unreasonably" deny the application. Any fees or assessments had to be non-discriminatory and not in excess of the fixed and variable costs to the municipality of granting the permit and maintaining the rights-of-way, easements, or public places used by a provider.

synonymous with the term “telecommunication provider” in the Act (§ 2(j)), must generally pay a one-time $500 application fee to each municipality whose boundaries include public rights-of-way for which the provider seeks access or use (§ 6(4)). For the period November 1, 2002 to March 31, 2002, the provider must pay a maintenance fee to the Authority of 2¢ per each linear foot of public right-of-way that the providers’ facilities occupy within a metropolitan area (§ 8(3)). For subsequent years, the annual maintenance fee increases to a maximum of 5¢ per each linear foot (§ 8(4)).

Recognizing that certain provisions in Act 48 could possibly be viewed as unconstitutional by municipalities and that other provisions could possibly be viewed as unconstitutional by providers, Act 48 contained a provision (§ 20) that provided that either house of the legislature or the governor could request the Supreme Court to issue an advisory opinion regarding the constitutionality of the act.

After the passage of Act 48, the House of Representatives requested the Michigan Supreme Court to issue such an advisory opinion on May 28, 2002, the Supreme Court granted the House’s request and invited parties to file briefs with the Court on four issues:

- Whether the Authority could constitutionally require a permit and assess an annual fee on all providers, including providers that assert statewide franchise rights.

- Whether the Authority is a duly constituted metropolitan authority under the Constitution.
- Whether the creation of the Authority possessing powers over the public rights-of-ways was an infringement of the Constitutional right of municipalities to control the public rights-of-way within their boundaries.
- Whether the annual fees imposed by Act 48 to recover the costs of maintaining public rights-of-ways were a valid fee that could be imposed without voter approval.

When the filing deadline came, only the City of Dearborn filed a brief with the Supreme Court in opposition to the constitutionality of Act 48. Furthermore, the City of Dearborn only addressed Issue Number 3. Only four parties filed briefs supporting the Constitutionality of the Act.

On September 23, 2002, the Supreme Court issued an Order vacating its earlier order in which it had agreed to issue an advisory opinion. Because only one opposing brief addressing only one of the issues had been filed, which the Court interpreted as an "apparent lack of interest in the legal questions posed by the Legislature," the Supreme Court decided that any challenge to the constitutionality of Act 48 should be prosecuted in the traditional manner.[18]

[18] The probable reason that only one entity challenged the constitutionality of Act 48 is because all the major stakeholders were involved in the rights-of-way debate at the Legislature. As eventually enacted,

Thus, questions regarding the constitutionality of Act 48 still remain. However, until an actual party files suit challenging the constitutionality of Act 48 and a Court rules that a particular section is unconstitutional, the Act is presumed constitutional as a matter of law and will control as of its effective date, November 1, 2002.

At the same time that Act 48 was enacted, the Legislature enacted 49 PA 2002 ("Act 49"). Act 49 also established a state agency, the Michigan Broadband Development Authority ("Broadband Authority"). The Broadband Authority is empowered to issue bonds and lend the proceeds to potential or current providers of broadband services at low interest rates. Act 49 took effect on March 14, 2002.

Act 48 was the product of significant compromises by all factions. Having agreed to compromise at the Legislature, the major stakeholders did not feel like they could attack the Act in the Courts.

Regulation Of Specific Broadband Technologies

Cable Modems

However, broadband service provided through cable modems operate under a different regulatory framework than do broadband services provided via "telecommunications" service. Broadband service utilizing a cable modem is a "wired" service and makes use of public rights-of-way in much the same way that telecommunications services make use of rights-of-way.

Cable services are regulated pursuant to the Cable Communications Policy Act of 1984, 47 USC 521 *et seq*. ("Cable Act"). The Cable Act defines "cable service" as "(A) the one-way transmission to subscribers of (i) video programming, or (ii) other programming service, and (B) subscriber interaction, if any, which is required for the selection or use of such video programming or other programming service[.]" 47 USC 522(6).

In contrast, telecommunications service on the federal side is regulated primarily pursuant to the Federal Telecommunications Act of 1996 ("FTA"), 47 USC 151 *et seq*. "Telecommunications service" is defined as "means the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used." 47 USC 153(46). The term "telecommunications," in turn, refers to "the transmission, between or among points specified by the user, of information of the user's choosing,

without change in the form or content of the information as sent and received." 47 USC 153(43).

While cable service and telecommunications service are currently defined as distinct types of services and subject to different regulations under different statutes, advances in technology have greatly blurred the historic distinction. Telephone networks and cable television networks are beginning to use similar technologies and similar hybrid fiber/copper networks. The Internet can be delivered over either telephone networks or cable networks. Every day, the Internet becomes the source of more and more "streamed" video programming. This fact raises the question whether a service should be pigeonholed as either a telecommunications service or a cable service or whether the classification should be based upon the type of network over which the content is delivered. And again, the networks themselves are becoming less and less distinguishable.

As to access to the public and private rights-of-way, there is no question that cable providers have an advantage under § 621(a)(2) of the Cable Act, 47 USC 541(a)(2). This section states that "any [cable] franchise shall be construed to authorize the construction of a cable system over public rights-of-way and through easements which [are] within the area to be served by the cable system and which have been dedicated for compatible use…" In other words, the federal government has dictated that cable franchises, which a cable provider procures from a municipality, entitle

the provider to use the rights-of-way without paying additional compensation. In 1990, the Michigan Court of Appeals, in *Mumaugh v Diamond Lake Cable*, 183 Mich App 597; 456 NW2d 425 (1990), following the lead of decisions of several other states, held that the above quoted provisions authorized cable providers to use not only public rights-of-ways, but also private easements that a property owner had granted for the purpose of telephone, electric, gas, or other public transmission of public utility services.

The Court found that the statute was not an unconstitutional taking of private property without just compensation (i) because it preserved that the property owner had received just compensation when it sold easement initially to the first public utility, and (ii) because the Cable Act requires the cable company to pay the property owner for any damage it did to the owner's property when installing new cable.

Thus, unlike telecommunications providers, cable providers have a federally created right of access to all public rights-of-ways and private easements granted to other utilities.

In addition, the rates that cable companies have to pay to the public utility to attach their cables to existing utility poles is regulated by the MPSC. Approximately a decade ago, the MPSC established a pole attachment rate of $3.74 per pole. This rate is considerably lower than the rate that telecommunications providers have typically been able to negotiate with the

existing utilities to attach new cable and wires to existing poles. Thus, cable companies should be able to construct new facilities in public rights-of-way and private easements at a considerably lower incremental cost than telecommunications providers.

On the other hand, cable companies historically had more fixed or embedded costs related to municipalities than telecommunications providers have had. Cable providers typically pay franchise fees to municipalities equivalent to between 3 and 5% of their gross revenues. In contrast, very few telecommunications providers in Michigan have agreements with municipalities that obligate them to pay a percentage of their gross revenues to the municipality. With the passage of Act 48, municipalities can now be expected to receive substantially more revenues from telecommunications providers than they have historically received. However, the revenues will be based upon the number of feet of facilities that the provider has placed or wishes to place in the public rights-of-ways. It remains to be seen whether such “per foot” compensation methodology will generally generate more revenues from telecommunications providers than municipalities currently receive from cable providers using a “percentage of revenues” formula.

Act 48 also addresses situations where a telecommunications provider has a franchise from a municipality to provide cable service. If a telecommunications provider possesses such a franchise, then the annual rights-of-way maintenance fee that the provider has to pay can be no higher

than 1 cent per foot. Such rate cap obviously compares favorably with the up to 5 cent per foot rate the provider would otherwise have to pay. If the telecommunications provider uses the very same facilities to provide telecommunications service that it uses to provide cable service, the provider is required to pay no additional rights-of-way fees under Act 48.

In addition to the uncertainties that may exist at the state level, additional uncertainties exist at the federal level. On July 29, 2002, the FCC issued a Public Notice in DA-02-2578, scheduling a forum for October 16, 2002 to discuss issues relating to right-of-way management. The purpose of the forum was to try to reach a consensus position, where possible, to identify a model for access and management of rights-of-way with respect to the communications industry. One of the topics of discussion was the extent to which the FCC had authority, under the Federal Telecommunications Act of 1996 to preempt local regulation and establish a uniform, nationwide regime to enable telecommunications providers to access the public rights-of-way. It is unknown at this time whether the federal government is likely to preempt state and local authority over public rights-of-way. If such preemption occurs, it would obviously change the regulatory landscape and affect the obstacles and obligations that telecommunications providers would face constructing new facilities. Presumably, if the FCC decides it can preempt state and local regulation in this field, there will be a strong tendency to construct a model that is somewhat within the rights Cable

providers have under the Cable Act to access and use public rights-of-way and private utility easements.

Fixed Wireless

Fixed wireless, also known as terrestrial wireless, utilizes land-based transmitters to provide high-speed broadband services to both businesses and individuals. Fixed wireless is so-called because the transmitting and receiving stations are stationary. The provider of fixed wireless typically operates one or more master microwave antennae located on tall structures adjacent to the service area. The provider's antennae towers are linked by either fiber or wireless technology. End-users of the service utilize small antennae on top of their office buildings or homes. These small antennae, because of their shape, are sometimes called "pizza box" antennae, and they act as both receivers of downstream Internet data and transmitters of upstream data.

Generally, the end-user must have a "line of sight" or "near line of sight" to the provider's central antenna in order to work properly. Therefore, antenna towers are typically three to five miles apart. Connection speed, however, is not limited by the end-user's distance from the providers' antenna or the number of fixed wireless users in the area. Fixed wireless is an "always on" connection that does not require the end-user to "dial-up" the provider or tie-up a telephone line.

Fixed wireless access is sometimes confused with satellite Internet access. Both services transmit data without the use of wires; however, they utilize different equipment to provide the service. Satellite Internet access sends and receives data through orbiting satellites to a dish located on the end-user's house or building, whereas fixed wireless access uses a path of antennae between the provider and the end-user.

Federal Regulation

Fixed wireless Internet providers must construct or lease antenna towers in order to serve their customers. Federal regulations govern the construction, marking, and lighting of some antennae. For any proposed construction an "antenna structure," the Federal Communications Commission ("FCC") generally requires registration of any antenna structure that is required to be registered with the Federal Aviation Administration ("FAA"). 47 CFR 17.4. Under these regulations, the owner of the antenna is responsible for ensuring regulatory compliance, notwithstanding any agreement that the owner may have with any other party.[19] 47 CFR 17.2(c).

The FAA generally requires notice of any antenna structure more than 60.96 meters (200 feet) in height or located near an airport. 47 CFR 17.7. The FCC Rules specifically define "antenna structures" as the "radiating

[19] However, if the owner cannot file the registration because it is subject to a denial of federal benefits under the Anti-Drug Abuse Act of 1988, 21 USC 862 *et seq*., the first licensee authorized to locate on the structure must register the antenna structure, and provide a copy of the registration to the owner. 47 CFR 17.6(c).

and/or receive system, its supporting structures and any appurtenances mounted thereon." 47 CFR 17.2(a). Antenna structures, therefore, include free standing structures that specifically support or act as antennae, as well as a structure mounted on some other man-made object such as a building or bridge. In the latter case, however, only the structure must be registered with the FCC, not the building or bridge.[20]

Note that the FCC registration requirement is in addition to the FAA notification requirement. The owner must undertake registration after the owner has requested the FAA to study the site and has received a "final determination of no hazard." 47 CFR 17.4(b). The FAA may require the owner to meet various painting and lighting requirements. 47 CFR 17.21-17.58.

The FCC and FAA regulations do not apply to the construction or alternation of "[a]ny object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, *and* would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation." 47 CFR 17.14(a) (emphasis original). An owner claiming under this exemption must submit a detailed explanation to the FCC. *Id*. Further,

[20] Objects such as buildings, observation towers, bridges, windmills, and water towers that do not have an antenna mounted on them are not "antenna structures" and do not require registration.

the registration requirement does not apply to any antenna structure of 6.10 meters (20 feet) or less in height, unless it would increase the height of another antenna structure. 47 CFR 17.14(b). Presumably, this exempts antenna structures 200 feet or shorter that would otherwise require registration because of their proximity to an airport.[21]

Registration entails completion of FCC Form 854. The FCC does not currently impose any fee for the registration of antenna structures.

State Regulation

As discussed above, Act 48 governs telecommunications providers' annual payments to the Authority for providers' use of a municipality's public rights-of-way. Act 48 has limited application to providers of fixed wireless Internet service. First, the Act only concerns facilities located in "public rights-of-way," which the Act defines as "the area on, below, or above a public roadway, highway, street, alley, easement, or waterway. The term does not include a federal, state, or private right-of-way." The end-user's antenna is typically located on the end-user's building or residence, and the provider's antennae are typically located on buildings. Therefore, these facilities are not located on, below, or above a public roadway, highway, street, alley, easement, or waterway, and so they are not located in "public rights-of-way."

[21] Although irrelevant to fixed wireless, the FCC and FAA also exempts "[a]ny air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the Administrator of the Federal Aviation Administration, the location and height of which is fixed by its functional purpose." 47 CFR 17.14(c).

Second, the fee only applies to “telecommunication facilities” located in public rights-of-way. “‘Telecommunication facilities’ . . . do not include antennae, supporting structures for antennae, equipment shelters or houses, and any ancillary equipment and miscellaneous hardware used to provide federally licensed commercial mobile service as defined in § 332(d) of part I of title III of the communications act of 1934, chapter 652, 48 Stat. 1064, 47 U.S.C. 332 and further defined as commercial mobile radio service in 47 C.F.R. 20.3, and service provided by any wireless, 2-way communications device.” As noted, often fixed wireless providers lease antenna towers from cellular telephone providers, and so to the extent that the equipment is used to also provide federally licensed commercial mobile radio service (“CMRS”), the Act would appear to exclude it from the definition of “telecommunication facilities” and hence would not require fixed wireless providers to pay an annual fee to the Authority.

With respect to fixed wireless providers who construct and own their own facilities, the Act presents a closer question. As discussed, antennae towers are not typically located in public rights-of-way. However, fixed wireless providers do utilize some cables and wires. Note that the definition of “telecommunication facilities” quoted above, in addition to excluding equipment used to provide CMRS, excludes “service provided by any wireless, 2-way communications device.” This language raises the issue whether the Legislature also intended to exclude fixed wireless providers,

given that fixed wireless entails use of a "wireless, 2-way communications device." Such an interpretation is doubtful, however, because the term "telecommunication provider" includes a provider of "broadband internet transport access service (§ 2(k)(iii)), which, in turn, is defined as "the broadband transmission of data between an end-user and the end-user's internet service provider's point of interconnection at a speed of 200 or more kilobits per second to the end-user's premises." Fixed wireless fits this definition, and so the most cautious approach would be to assume that the Legislature intended that fixed wireless providers, to the extent that they have cables, lines, wires, switches, conduits, pipes, or sheaths located in public rights-of-way, would be subject to Act 48.

Although Act 48 does not appear to apply to the regulation of the provider's own towers, Michigan's Tall Structure Act, MCL 259.481 *et seq*. requires the registration of certain types of structures with the Michigan Aeronautics Commission. Antennae and towers fall within the Act's purview. MCL 259.481(p). Like the FAA and FCC regulations discussed above, the Act generally requires a permit prior to construction of a structure that is, or that increases the height of an existing structure, higher than 200 feet above the ground elevation at the structure's site, or would be located near an airport. MCL 259.282.

Municipal Regulation

Under the present state of the law, municipalities may regulate the size and placement of the fixed wireless provider's antenna towers. Townships have broad zoning power under § 1 of the Township Zoning Act, MCL 125.271, and cities and villages may place restrictions on the use of land and structures, including ensuring that "uses of the land shall be situated in appropriate locations and relationships," MCL 125.581. Cities and villages also have the authority to regulate the height of "buildings"—an undefined term that may include antennae. MCL 125.582. Further, Home Rule cities may establish regulate the height, area, size, and location of buildings, and the use of "structures." MCL 117.4i.

The FTA limits state and municipal control over the placement, construction, and modification of "personal wireless service facilities." 47 USC 332(c)(7). Under the FTA, the state or municipality may not (1) unreasonably discriminate among providers, or (2) prohibit or have the effect of prohibiting the provision of personal wireless services. Further, the state or local government must act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time. *Id*. However, these restrictions on state and local government only apply to facilities used to provide "commercial *mobile* services" (47 USC 332(7)(C)(i)(ii)), and so they do not extend to providers of fixed wireless.

Regarding the end-user's fixed wireless antenna, however, municipal regulation is limited. The FCC's regulations prohibit any state or local law or regulation, including zoning, land-use, or building regulations, or any private covenant, contract, lease, homeowners' association rule or similar restriction, on property within the exclusive use or control of a user (where the user has a direct or indirect ownership or leasehold interest in the property) that impairs the installation, maintenance, or use of an antenna. 47 CFR 1.4000(a)(1). The protection applies to antennae that are one meter or less in diameter (or are located in Alaska), and includes antennae used for fixed wireless signals,[22] as well as a supporting mast. 47 CFR 1.4000(a)(1)(i), (iv).

A law, regulation, or restriction impairs installation, maintenance, or use of an antenna if it (1) unreasonably delays or prevents installation, maintenance, or use, (2) unreasonably increases the cost of installation, maintenance, or use, or (3) precludes reception or transmission of an acceptable quality signal. 47 CFR 1.4000(3). The FCC further requires that any fee or cost be reasonable in light of the cost of the equipment or services and the rule, law, regulation or restriction's treatment of comparable devices, and generally prohibits civil, criminal, administrative, or

[22] "Fixed wireless signals" refers to "any commercial non-broadcast communications signals transmitted via wireless technology to and/or from a fixed customer location. Fixed wireless signals do not include, among other things, AM radio, FM radio, amateur ("HAM") radio, Citizen's Band (CB) radio, and Digital Audio Radio Service (DARS) signals." 47 CFR 1.4000(a)(2).

other legal action to enforce any restriction or regulation. 47 CFR 1.4000(4).

A municipality may impose a restriction if it is necessary to accomplish a clearly defined, legitimate safety objective, or to preserve a prehistoric or historic district, site, building, structure or object. The restriction must be no more burdensome to affected antenna users than is necessary to achieve its objective. 47 CFR 1.4000(b).

End-users with antennae used to transmit fixed wireless signals only receive protection under 47 CFR 1.4000 if a label is affixed to the antenna that (1) provides adequate notice regarding potential radio frequency safety hazards, and (2) references the applicable FCC-adopted limits for radio frequency exposure. 47 CFR 1.4000(c).

Municipalities or associations may apply to the FCC for a determination that a particular restriction is permissible or prohibited under this section, but they bear the burden of demonstrating compliance. 47 CFR 1.4000(e). Municipalities may also apply for a waiver of the regulations by showing local concerns of a highly specialized or unusual nature. 47 CFR 1.4000(d).

Satellite Broadband

As noted above, satellite Internet access utilizes orbiting satellites and terrestrial dishes to provide broadband service. The federal government regulates orbiting satellites to an extent that makes discussion here impractical. With regard to regulation of the end-user's antenna, the above

discussion of the FCC protection against municipal regulation is equally relevant.

Broadband Over Power Lines

Digital power lines generally purport to have the capacity to carry data at the same speeds as cable or DSL lines. Because electricity is more prevalent in homes than cable or even telephone lines, electric lines have the potential to serve as a ubiquitous network for the provision of broadband service, which would be particularly advantageous in underserved and rural areas.

BPL systems use existing electric lines as a transmission medium to provide high-speed communications capabilities by coupling radio frequency energy onto the power line. BPL systems may operate either inside a building (In-House BPL) or over utility poles and medium voltage power lines (Access BPL). In-House BPL systems can eliminate the need to install new wires between computers and between other electronic devices because they use electrical outlets available in every room of a building to transfer information. Therefore, consumers can readily implement communications local area networking and similar technology. Access BPL systems can be used to provide high-speed Internet access and other broadband services to homes. As discussed fully below, the offering of broadband through electric lines implicates state and federal regulations.

FCC Regulation

On April 23, 2003, the Federal Communications Commission (FCC) issued a Notice of Inquiry seeking public comment on the use of BPL. *In re Inquiry Regarding Carrier Current Systems, including Broadband over Power Line Systems*, ET Docket No. 03-104 (rel'd April 28, 2003) (*NOI*). The issues on which the FCC requested public comment in the *NOI* can be generally summarized as follows:

The current state of high speed BPL technology, including the data transmission speeds that Access BPL can achieve;

- The potential interference effects, if any, on authorized spectrum users;
- Test results from BPL experimental sites;
- The appropriate measurement procedure for testing emission characteristics for all types of carrier current systems;
- Changes that may be needed to 47 CFR Part 15 in order to foster the development of BPL and to ensure that interference is not caused to other services as a result of this technology; and
- The spectrum and bandwidth that Access BPL and In-House BPL would use.

The FCC also stated that BPL providers were free to continue to operate their networks, and that they should deploy their networks in conformance with the existing regulations contained in 47 CFR Part 15,

which govern the manner in which intentional, unintentional, and incidental radiators may operate without a license, and cover such topics as harmful interference to users of the radio frequency spectrum, radio frequency emission limitations, engineering design and practice, and product labeling requirements. Because these regulations are technical and extensive, they are not discussed in detail here. Suffice to say that these regulations do not directly provide measurement procedures that apply specifically to systems using power lines as a transmission medium, which is what prompted the FCC to issue the NOI. *NOI*, ¶¶ 2, 8, 12.

Nevertheless, based on the FCC's issuance of the NOI, future federal regulation of BPL appears to be forthcoming. The fact that the FCC has inquired whether it should regulate BPL, as well as the individual statements by the FCC Commissioners appended to the *NOI* noting the great potential of BPL, and the willingness of several companies to test BPL, it may well prove to be a viable technology for the provision of broadband.

Public Rights-Of-Way

The Metropolitan Extension Telecommunications Rights-Of-Way Oversight Act, 2002 PA 48 (Act 48), which is discussed in prior memos, has ramifications for electric providers offering high-speed Internet service. Act 48 requires that a "[telecommunications] provider using or seeking to use public rights-of-way in a metropolitan area for its telecommunication

facilities shall obtain a permit . . . from the municipality and pay all fees required under this act." MCL 484.3105(1).

The Act defines telecommunication providers the same as does § 102(cc) of the Michigan Telecommunications Act (MTA), MCL 484.3102(cc).[23] It then adds "[f]or the purposes of this act only, a provider also includes . . . the following: . . . (iii) A person providing broadband internet transport service." MCL 484.3102(k)(iii). "Broadband internet transport service," in turn, is defined as "the broadband transmission of data between an end-user and the end-user's internet service provider's point of interconnection at a speed of 200 or more kilobits per second to the end-user's premises." MCL 484.3102(b). This definition appears to include an electric provider that offers BPL, assuming that it provides data transmission speeds of at least 200 kilobits per second. Therefore, such a provider would qualify as a "telecommunication provider" for purposes of Act 48.

In further support of this conclusion, Act 48 states:

"An electric [provider] . . . is not required to obtain a permit, pay the fees and charges, or fulfill the mapping requirements required under this act for facilities located in the public rights-of-way that are used solely for electric . . . services including internal utility communications and customer

[23] As explained in prior memos, the MTA defines a "telecommunication provider" as one that provides one or more telecommunication services for compensation (§ 102(cc)). The MTA defines "telecommunication services," in turn, as "regulated and unregulated services offered to customers for the transmission of 2-way interactive communication and associated usage. A telecommunication service is not a public utility service" (§ 102(dd)).

services such as billing and load management. The electric [provider] . . . shall only obtain a permit, pay the fees and charges, and fulfill the mapping requirements required under this act for each linear foot of public right-of-way containing facilities . . . used in providing telecommunication services to a person other than the utility, or its affiliate, for compensation. An electric [provider] . . . shall notify the commission if the electric [provider] . . . provides or leases telecommunication services to a person other than the utility or its affiliate for compensation. . . . " [MCL 484.3108(19) (emphasis added).]

As this section states, to the extent that an electric provider sells telecommunication services for compensation to a person other than itself or its affiliate, it must "obtain a permit, pay the fees and charges, and fulfill the mapping requirements required under this act for each linear foot of public right-of-way containing facilities" used in providing telecommunication services. As discussed above, the broad definition of telecommunication services under the MTA appears to include an electric provider offering BPL. Therefore, an electric provider that offers BPL is required to adhere to the provisions of Act 48, i.e., it must pay all fees and charges and fulfill the mapping requirements.

Pole Attachments

Michigan Law

The Michigan Legislature enacted MCL 460.6g, known as the Pole Attachment Act, in 1980, with an effective date of March 31, 1981. The Pole Attachment Act governs the rates that utilities may charge for attachment to their poles, ducts, or conduits, and it gives authority to the Michigan Public Service Commission (MPSC) to ensure that such rates are reasonable. The Act's definitions are critical to its application. The Act defines an "attaching party" as "any person, firm, corporation, partnership, or cooperatively organized association, *other than a utility* or a municipality, which seeks to construct attachments upon, along, under, or across public ways or private rights of way." MCL 460.6g(1)(a) (emphasis added). It further defines a "utility" as:

- Any public utility subject to the regulation and control of the commission that owns or controls, or shares ownership or control of poles, ducts, or conduits used or useful, in whole or in part, for supporting or enclosing wires, cables, or other facilities or apparatus for the transmission of writing, signs, signals, pictures, sounds, or other forms of intelligence, or for the transmission of electricity for light, heat, or power. [MCL 460.6g(1)(b).]

Therefore, the Act gives authority to the MPSC to ensure that pole attachment rates are reasonable when the attaching party is not a utility. The MPSC has determined that all utilities subject to the Pole Attachment Act should offer pole attachments at a single, statewide annual rate of $3.74 per pole. *In re Application of Consumers Power Co, et al, for authority to modify tariffs governing attachments to poles*, Cases Nos. U-10741, U-10816, and U-10831 (February 11, 1997), aff'd sub nom, unpublished opinion per curiam of the Court of Appeals, issued November 24, 1998 (Docket No. 203421).

Because electric providers have their own “poles, ducts, or conduits” and transmit “electricity for light, heat, or power,” they are utilities and cannot qualify as “attaching parties” within the meaning of the Pole Attachment Act. Consequently, they are not entitled to take advantage of the statewide annual rate of $3.74 per pole. Accord, *In re Complaint of GTE North, Inc against Indiana Michigan Power Co for its unjust, improper and exorbitant pole attachment rates*, Case No. U-10374 (March 30, 1994) (MPSC determined that it lacked subject matter jurisdiction over the pole attachment rates that a telecommunications provider pays to an electric utility because a telecommunication provider was a “utility” under the Pole Attachment Act). Instead, in the event that electric utilities that provide BPL need to attach their facilities to poles owned by other utilities, they will need to negotiate their own, likely higher, rates for such attachments.

Also noteworthy is the MPSC's response to an argument that the Michigan Cable Telecommunications Association (MCTA) raised in the *Consumers Power* case cited above. The MCTA urged an annual rate even lower than $3.74, asserting that electric utilities would soon begin to use their poles to offer communication services in competition with attaching parties, and that they would be able to charge lower rates because they would not have to pay to attach to their own poles. The MPSC stated that it was "not aware of any electric utility that is currently providing telecommunication services on a regulated basis in Michigan. If these concerns do materialize, so that an adversely affected party is in a position to create an evidentiary record, it may seek relief in an appropriate case." *Id*. at 31. Therefore, in the event that an adversely affected provider prosecutes a successful case against an electric utility that provides telecommunication services, the MPSC could decide to decrease the pole attachment rates that the electric provider may charge to attaching parties, or fashion some other type of relief that could have a negative economic impact on the electric provider.

The Pole Attachment Act is not the only Michigan statute that regulates pole attachment rates. Section 361 of the MTA, MCL 484.2361, regulates the rates that a telecommunication provider may charge to either (i) another telecommunication provider, or (ii) a cable television provider, by

establishing a range within which such rates must fall. Section 361 provides, in relevant part:

(1) A provider shall allow and establish the rates, terms, and conditions for attachments by another provider, cable service, or an educational institution establishing a telecommunication system under section 307.

(2) The rates, terms, and conditions shall be just and reasonable. A rate shall be just and reasonable if it assures the provider recovery of not less than the additional costs of providing the attachments, nor more than an amount determined by multiplying the percentage of the total usable space, or the percentage of the total duct or conduit capacity, which is occupied by the attachment, by the sum of the operating expenses and actual capital costs of the provider attributable to the entire pole, duct, or right-of-way.

(3) An attaching provider or cable service shall obtain any necessary authorization before occupying public ways or private rights-of-way with its attachment.

(4) A public utility that directly provides a regulated telecommunication service or cable service shall establish the rates, terms, and conditions for attachments as provided under this section.

(5) This section shall not be construed to limit the commissions authority to regulate the rates, terms, and conditions of attachments upon

poles or in ducts or conduits owned or controlled by utilities engaged in the transmission of electricity for light, heat, or power. [MCL 484.2361.]

The term "attachment," as used above, means "any wire, cable, facility, or other apparatus installed upon any pole or in any duct or conduit, owned or controlled, in whole or in part, by a provider." MCL 484.2361(1)(a). The phrase "usable space" refers to "the total distance between the top of a utility pole and the lowest possible attachment point that provides the minimum allowable grade clearance and includes the space which separates telecommunication and power lines." MCL 484.2361(1)(b).

The key provision is subsection (2) above, which mandates that the rates, terms, and conditions for pole attachments be just and reasonable, and defines the term "just and reasonable." Under this definition, a rate is "just and reasonable" if it is (i) not less than the amount that assures recovery of the additional costs of providing the attachments, and (ii) not more than an amount determined by multiplying the percentage of the total usable space which is occupied by the attachment, by the sum of the operating expenses and actual capital costs of the provider attributable to the entire pole.

As the statutory language indicates, § 361 would apply to an electric provider that engaged in the transmission of telecommunication services: "[a] public utility that directly provides a regulated telecommunication service or cable service shall establish the rates, terms, and conditions for

attachments as provided under this section." MCL 484.2361(5). The critical question is whether electric utilities offering BPL are providing "regulated telecommunication service" such that their attachment rates must comply with § 361. At present, whether BPL is a "regulated" telecommunication service within the meaning of § 361 is an open question. If the MPSC decides in the future that electric utilities offering high-speed Internet service are providing a "regulated telecommunication service," then such providers would have to determine their pole attachment rates under subsection (4) of § 361, which might be less that what they currently recover.

Federal Law

A Federal Pole Attachment Act also exists. The federal Act applies to situations in which a state has not regulated pole attachment rates. 47 USC 224(c). Because Michigan does regulate pole attachment rates, the Federal Pole Attachment Act does not apply in Michigan.

Additional Observations

Despite the potential regulatory consequences of BPL, it appears to be a viable technology for the provision of broadband services in the near future. As FCC Chairman Michael Powell has noted, "the potential of this new technology is immense." *NOI*, p 17 (separate statement of Chairman Powell), and the FCC's NOI appears decidedly geared toward fostering further development of BPL. Moreover, the FCC has noted that BPL has the potential to advance homeland security by creating new facilities to provide redundancy in case of disruption of one or more existing channels of communications. *NOI*, ¶ 9.

As of this writing, BPL networks are being tested in a dozen states around the country, as well as in some European countries. One provider, Main.net, has deployed a BPL system in Pennsylvania, Missouri, and Virginia, and has conducted trials in which it delivered high speed Internet service to over 200 users in those states.[24] Worldwide, Main.net's system operates in more than 20 countries. Main.net states that its network, in the aggregate, delivers broadband over power lines to more than 6,000 users.

To date, no electric provider appears to be offering BPL in Michigan. However, if tests in other states prove that BPL can satisfactorily serve both businesses and residences, other electric providers will likely consider using

[24] http://www.powerline-plc.com/media/newsreleases/Main.netAnnouncesComplianceWithFCCPart15.pdf

their own networks to provide BPL. Main.net states that it can provide end-to-end broadband network architecture at a fraction of the cost of xDSL, cable, and wireless providers,[25] which should make BPL attractive to both potential providers and customers. Additionally, the Power Line Communications Association (PLCA) has formed for the purpose of promoting BPL as a viable means of high-speed broadband delivery.

Because BPL is an emerging technology with great potential, it deployment should be closely followed. Those wishing to track the progress of BPL should check for announcements on the PLCA's website, http://www.plca.net/. Further, those wanting additional information on how BPL is working in certain areas should establish a liaison with governmental representatives in areas where BPL is currently being tested and deployed.

[25] http://www.powerline-plc.com/company/company.htm

Additional Regulatory Questions

May telecommunication providers pass their annual right-of-way fees on to their end-users?

In 2002, the Michigan Legislature enacted the Metropolitan Extension Telecommunications Rights-of-Way Oversight Act, 2002 PA 48 ("Act 48"), which generally imposes an annual fee on telecommunication providers that have their facilities in public rights-of-way. The express language of § 8(17) of Act 48 provides that "[a] provider shall not recover the costs required under this act through rates and charges to the end-users for telecommunication services." Therefore, providers may not pass on their right-of-way fees to their end-users. The sole method for recovering the costs of these fees is a tax credit, which will be discussed later in this memo.

Does any advantage exist in a telecommunications provider characterizing itself as a "cable company?"

As an initial matter, Act 48 applies to "telecommunication providers," which includes "[a] cable television operator that provides a telecommunications service" (§ 1(k)(i)). However, the annual maintenance fees that cable providers must pay to provide telecommunication facilities are less than other providers. Under § 8(11) of Act 48, a provider that possesses a cable franchise, or that operates with a municipality's consent, must pay an annual maintenance fee of 1¢ per linear foot that its facilities

occupy in rights-of-way located in a metropolitan area to provide telecommunication service. Affiliates of the provider may also take advantage of the lower annual maintenance fee if they use the same facilities that the cable company uses to initially provide cable service. Non-cable providers, on other hand, are subject to annual fees as high as 5¢ per linear foot (§ 8(4)). Cable providers must, however, continue to pay franchise fees to municipalities, which typically range between 3 and 5% of their gross revenues (§ 8(11); § 16).

A cable provider may avoid paying annual maintenance fees altogether by certifying to the Metropolitan Extension Telecommunications Rights-of-Way Oversight Authority ("Authority") that its aggregate investment in Michigan, since January 1, 1996, in facilities capable of providing broadband Internet service, exceeds the aggregate amount of the maintenance fees that it would otherwise have to pay (§ 8 (12)).

Although cable providers pay lower annual maintenance fees, merely labeling a broadband provider a "cable company" would not necessarily impart an advantage. First, the definition of "telecommunication provider" contained in § 1(k)(i) of the Act only mentions "cable television" operators, and so the lower, 1¢ per linear foot fee applies only to providers that actually provide "cable television." Therefore, a provider desiring to qualify for this lower fee would have to provide cable television service, rather than merely cable broadband service.

Note also that whether the provision of broadband service using a cable modem is a “cable service” is an open question. Act 48 does not define “cable service.” Both Federal courts and the Federal Communications Commission (FCC) have determined that providing Internet service over a cable modem is not “cable service.” AT&T Corp v City of Portland, 216 F3d 871, 877 (CA 9, 2000); In re Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, FCC 02-77 (rel’d March 15, 2002). Therefore, a provider of broadband service over a cable modem might be subject to the fee structure generally applicable to all telecommunication providers, rather than the lower fee for cable providers.

In light of the fact that (i) a cable company must provide cable television in order to qualify for the lower annual maintenance fee, (ii) it is unresolved whether the provision of broadband service using a cable modem is a “cable service,” and (iii) the fact that cable providers must continue to pay franchise fees to municipalities, no clear advantage appears to exist for a company to label itself a “cable company.”

What information may be protected as “confidential” under Act 48?

Section 6(5) of Act 48 governs trade secrets, proprietary, and confidential information submitted to municipalities:

An application for a permit under this section shall include route maps showing the location of the provider’s existing and proposed facilities in the

format as required by the authority under subsection (8). Except as otherwise provided by a mandatory protective order issued by the commission, information included in the route maps of a provider's existing and proposed facilities that is a trade secret, proprietary, or confidential information is exempt from the freedom of information act, 1976 PA 442, MCL 15.231 to 15.246.

Under this section, providers must submit maps showing the location of their existing and proposed facilities, except that a trade secret, proprietary information, or confidential information is exempt from the freedom of information act (FOIA). This allows providers to separately file confidential information under confidential cover and thereby prevent the public from viewing such information. The act does not define "trade secret," "proprietary," or "confidential" information, and so providers must use their judgment in asserting that such information is confidential.

With regard to confidential information submitted to the Authority for purposes of receiving financial assistance, § 6(7) of Act 2002 PA 49 provides:

> A record or portion of a record, material, information, or other data received, prepared, used, or retained by the authority in connection with an application to or project related to the broadband infrastructure assisted by the authority that relates to trade secrets, commercial, financial, or proprietary information submitted by the

applicant, and which is requested in writing by the applicant and acknowledged in writing by the president of the authority to be confidential, is not subject to the freedom of information act, 1976 PA 442, MCL 15.231 to 15.246. As used in this subsection, "trade secrets, commercial, financial, or proprietary information" means information that has not been publicly disseminated or that is unavailable from other sources, the release of which might cause the applicant significant competitive harm.

The definition of the phrase "trade secrets, commercial, financial, or proprietary information" might be helpful in defining the phrase "trade secret, proprietary, or confidential information" contained in § 6(5) of Act 48, discussed in the prior paragraph.

What are the tax implications of Act 48?

Telephone and telegraph companies generally must pay property tax on all of their property located in the state, 1905 PA 282, MCL 207.1 *et seq.*, and such property is centrally assessed, *Consumers Power Co v Port Sheldon Twp*, 91 Mich App 180, 186; 283 NW2d 680 (1979). The State Tax Commission has recently taken the position that Internet service providers (ISPs) should be treated as "telephone companies" for purposes of 1905 PA 282, and therefore be assessed centrally as well. Whether the State Tax

Commission's position will ultimately prevail remains an open question as of this writing.

At the same time that it enacted Act 48, the Legislature also enacted Act 50, which added § 13b to 1905 PA 282, MCL 207.13b (effective March 14, 2002). Act 50 gives tax credits to companies for expenditures, made after December 31, 2001, for equipment capable of carrying information in excess of 200 kilobits per second in both directions ("eligible expenditures"). Act 50 generally allows such companies a credit in an amount equal to 6% of their eligible expenditures, but it limits the amount of the credit as summarized in the following table:

Tax Year	Limitation
2003	3% of the company's tax liability under 1905 PA 282.
2004	6% of the company's tax liability under 1905 PA 282, or 100% of credit received in tax year 2003, whichever is greater.
2005	9% of the company's tax liability under 1905 PA 282, or 100% of credit received in tax year 2004, whichever is greater.
2006+	The company's tax liability under 1905 PA 282, or 100% of credit received in prior tax year, whichever is greater.

Companies that are not subject to Act 48's annual maintenance fees in a given tax year are not entitled to the credit, nor are those that fail to pay their fees as of May 1 of the tax year. MCL 207.13b(4). Companies must

apply to the State Board of Assessors by statutory deadlines in order to receive the credit.

With regard to the maintenance fees imposed by Act 48, as discussed earlier, a tax credit is "the sole method of recovery" of the fees (§ 8(17)).[26] Under § 8(14) of Act 48, a provider may apply to the Michigan Public Service Commission (MPSC) for a determination of the maximum amount of credit available under MCL 207.13b(5). Generally, the MPSC must issue a determination within 45 days of the date of the application. The exception is where the MPSC cannot make a determination based on the documentation supplied, in which case it may require a contested case proceeding in accordance with § 203 of the Michigan Telecommunications Act. The company will a) generally receive a credit in the amount of its maintenance fees paid as long as it provides verification of the costs that it paid under the act, and b) that its rates and charges for basic local exchange service (including revenues from intrastate subscriber line or end-user line charges) do not exceed the commission's approved rates and charges for those services.

Note that (b) above assumes that the provider provides basic local exchange service. Presumably, a broadband provider that does not provide

[26] This mandate is also reflected in Act 48's stated purposes, one of which is to insure that "a tax credit is the sole means by which providers can recover the costs under this act and to insure that the providers do not pass these costs on to the end-users of this state through rates and charges or telecommunication services" (§ 2(h)).

basic local exchange service may disregard the requirement of (b), but the issue is an open case. The amount of the credit to which the company is entitled will be its costs paid under Act 48 minus the credit allowed by MCL 207.13b, discussed above (Act 48, § 8 (14); 207.13b(5)).

The maximum credit to which the company is entitled is limited to the lesser of:

Its annual maintenance fees paid under Act 48 minus its credit allowed by MCL 207.13b; or

(The provider's annual maintenance fees paid under Act 48

– plus –

its total service long run incremental cost (TSLRIC) of providing basic local exchange service)

– minus –

(the provider's rates for basic local exchange service

– plus –

any additional charges the provider used to recover its TSLRIC for basic local exchange service).

In summary, the only tax credits available for Act 48's annual maintenance fees are to those companies that pay property tax on their property located in the state, and which are centrally assessed pursuant to 1905 PA 282, MCL 207.1 *et seq*. The amount of the credit is not available for those providers who cannot verify both their costs and that their basic

local exchange service rates do not exceed the commission's approved rates and charges for those services. The amount of credit is reduced to the extent that the provider receives a credit for eligible expenditures under Act 50.

If the credits under Acts 48 and 50 exceed the company's remaining tax liability in a given the tax year, then the portion of the credit that exceeds the remaining tax liability for that tax year is not refunded, but is carried forward to offset any remaining tax liability in subsequent tax years. MCL 207.13b(5).

In what ways may a provider minimize or avoid annual maintenance fees that Act 49 requires?

As an initial matter, under Act 48, the maximum annual maintenance fee for all years subsequent to March 31, 2003, is 5¢ per linear foot (§ 8(4)). However, not all providers will necessarily pay an annual fee of 5¢ per linear foot. Under the Act, the Authority must divide the total annual fees paid by the provider with the highest number of access lines in the state, i.e. Ameritech Michigan, by that provider's total number of access lines in the state, and thereby determine a statewide per access line fee. Other incumbent local exchange carriers (ILECs) will then pay no more than the amount per access line per year than does Ameritech Michigan, which will likely result in such ILECs paying less than 5¢ per linear foot. All other

providers in a given exchange will pay the same fee per linear foot as the ILEC serving the exchange (§ 8(6)).

To illustrate, Ameritech Michigan must pay an annual fee of 5¢ per linear foot, and based on the total fees that Ameritech Michigan pays, the Authority then calculates a per access line charge by dividing Ameritech Michigan's total annual fees by its total access lines in the state. Other ILECs then pay their fees based on Ameritech Michigan's per access line charge. Non-ILEC providers pay a per foot fee based on the per foot fee of the established ILEC in the same area.

Facilities Owned by Educational Institutions, States, Counties, and Municipalities

Educational institutions do not have to pay any fees or charges, or fulfill the mapping requirements of Act 48, for facilities that are constructed and used as provided under § 307 of the Michigan Telecommunications Act (MTA), i.e., the facilities are used for the instruction and training, including worker training, of students and other people utilizing the institution's educational services, as well as the conducting of research or the operation of the institution. However, to the extent that an educational institution goes beyond providing these services, it must obtain a permit, pay the fees and charges, and fulfill the mapping requirement required under this act for each linear foot of public right-of-way used in providing telecommunication services to residential or commercial customers (§ 8(18)).

Also, a state, county, municipality, municipally owned utility, or affiliate, is not required to obtain a permit, pay any fees or charges, or fulfill the mapping requirements required under Act 48 for facilities used solely for state, county, municipality, or governmental entity, or utility services (including internal state, county, municipality, governmental entity, or utility communications and customer services such as billing or load management). This exemption extends also to billing and metering services performed for an alternative electric supplier, an alternative gas supplier, electric utility, electric transmission provider, natural gas utility, or a water utility (§ 8(20)).

The state, county, municipality, municipally owned utility, or affiliate, must, however, obtain a permit, pay fees and charges, and fulfill the mapping requirements if it leases or otherwise provides to an unaffiliated telecommunication provider, or it provides telecommunication services to a person other than the state, county, another governmental entity, municipality, municipally owned utility, or its affiliate for compensation (§ 8(20)).

Note that counties, municipalities, or affiliates, must comply with the following (§ 14(1)(a)-(c)):

- Before passing any ordinance or resolution authorizing the construction of telecommunication facilities or to provide a telecommunication or cable modem service provided through a broadband Internet access transport service, a county or

municipality shall conduct at least 1 public hearing, and provide notice of such public hearing as required by law.

- Not less than 30 days before the hearing, the county or municipality must prepare reasonable projections of at least a 3-year cost-benefit analysis identifying and disclosing the total projected direct costs of, and the revenues to be derived from, constructing the telecommunication facilities and providing the telecommunication or cable modem service through a broadband internet access transport service. The costs are determined by using accounting standards developed under the uniform budgeting and accounting act, MCL 141.421 to 141.440a.
- They must prepare and maintain accounting records in accordance with accounting standards developed under the uniform budgeting and accounting act, which are subject to FOIA.

Act 48 also contains provisions designed to ensure “fair play” for those counties or municipalities who provide telecommunication service or cable modem service provided through a broadband Internet access transport service. Counties or municipalities that provide such service cannot adopt an ordinance or a policy that unduly discriminates against another person providing the same service, although they may establish rates different from those of another person providing the same service (§ 14(1)(e)). A

municipality may not employ terms more favorable or less burdensome than it imposes on other providers of the same service within its jurisdiction concerning access to public rights-of-ways (§ 14(1) (f)). A municipality also may not impose or enforce any local regulation regarding public rights-of-way that is not also applicable to the municipality in its provision of a telecommunication or cable modem service provided through a broadband Internet access transport service (§ 14(1)(g)). The municipality may not employ terms more favorable or less burdensome than those that it imposes on other providers of the same service within its jurisdiction concerning access to and rates for pole attachments. The charges for telecommunication service and cable modem services provided by counties and municipalities through a broadband Internet access transport service must include all of the following (§ 14(1)(d)):

- All capital costs attributable to the provision of the service.
- All costs attributable to the provision of the service that would be eliminated if the service was discontinued.
- The proportionate share of costs identified with the provision of 2 or more county or municipal services including telecommunication services.

The foregoing restrictions do not apply, however, to telecommunication facilities used to provide telecommunication service or a cable modem service through a broadband Internet access transport service

that is not provided to any residential or commercial premises. Nor do the restrictions apply to telecommunication facilities that are owned or operated by a county, municipality, or an affiliate for compensation, and that (i) are located within the territory served by the county, municipality or its affiliate that provided a telecommunications service or a cable modem service provided through broadband Internet access transport service before December 31, 2001, or (ii) allowed any third party to use the county's or municipality's telecommunication facilities for compensation before December 31, 2001, to provide such a service (§ 14(2)).

Underserved Areas

Act 48 also includes a waiver for providers that serve "underserved areas." The Act adopts the definition of the term "underserved areas" contained in 2002 PA 49:

> [U]nderserved areas means geographical areas of this state identified by the authority as having the greatest need for broadband development. In identifying underserved areas, the authority shall consider the area's economic conditions, including, but not limited to, family income, affordability of access, lack of options available, low percentage of residents subscribing, and any other criteria considered important by the authority in determining whether an area is underserved.

Therefore, an "underserved area" is one that is identified as such by the Authority.

The Authority may grant a waiver if two-thirds (2/3) of the affected municipalities approve. If the requisite number of affected municipalities approves the granting of a waiver, the amount of the waived fees shall be deducted from the fee revenue to which the affected municipalities would otherwise have been entitled. Therefore, the affected municipalities have a financial disincentive to grant waivers. The waiver is limited to a period of ten (10) years (§ 8(21)). To date, the Authority has not designated any "underserved" areas.

Finally, providers may avoid paying some fees by entering into a "shared use agreement" in accordance with § 9 of Act 48, which entitles participating providers to a 40% discount on their fees. To qualify for discount, each participating provider must:

- To the extent permitted by the safety provisions of the applicable electrical code, occupy and use the same poles, trenches, conduits, ducts, or other common spaces or physical facilities jointly with another provider;
- coordinate the construction or installation of its own facilities with the construction schedules of another provider so that any pavement cuts, excavation, construction, or other activities undertaken to construct or install the facilities occur contemporaneously and do not impair the physical condition, or interrupt the normal uses, of the public rights-of-way on more than 1 occasion; and
- enter into the shared use arrangement after November 1, 2002.

This section places no limit on the number of providers that may enter into a shared use arrangement—it states that "2 or more providers" may enter into the arrangement and receive the 40% discount as long as they meet the requirements for entering into such arrangements.

Because shared use agreements are new, experienced legal counsel should be obtained for the preparation and drafting of such agreements to qualify for the waiver.

Summary of Public Act 48 of 2002

This section contains content that was originally drafted by Loomis Law in response to questions posed by CRT about statewide, regional and local telecommunications regulations.

Metro Authority

A new state agency, known as the METRO Authority, will be created within the Department of Consumer and Industry Services (CIS). The METRO Authority is responsible for coordinating ROW matters with municipalities and for assessing the permit and annual maintenance fees called for in the act. The Authority is allowed to promulgate rules for the implementation and administration of the act.

Statewide Row Standards

Act 48 prohibits local governments from imposing fees that are higher than allowed under the act and from imposing any requirements that are inconsistent with the act. Existing contracts related to the use of public ROW between providers and local governments are not affected by this act.

Permits and Permit Fees

All providers (both CLECs and ILECs) seeking to use the public ROW, including providers that are currently using the Public ROW, must obtain a permit from the municipality and pay the fees required by the act.

COSTS AND DEADLINES FOR PROVIDERS: For providers that own facilities in the ROW but do not have or were not required to obtain a permit

in the past, a permit must be applied for within 180 days of the effective date of the act (by April 29, 2003). The $500 application fee is waived for providers applying for permits under this provision.

STANDARD APPLICATION FORM: All providers will use a standard permit application form, until and unless the METRO Authority develops new forms. The application form is available on the MPSC's Web site (http://cis.state.mi.us/mpsc/comm/rightofway/rightofway.htm).

ROUTE MAPS: Providers must include route maps with their permit applications, showing the location of existing and proposed facilities. The Authority will determine, after input from providers and municipalities, the route map format. Route maps containing confidential information will be exempt from the Freedom of Information Act.

DISPUTE RESOLUTION: Disputes regarding permit issues and access to ROW will be taken to the MPSC, which will appoint a mediator. The MPSC may grant a temporary permit, and parties have the right to appeal the mediator's ruling back to the MPSC.

ISSUANCE DEADLINES FOR MUNICIPALITIES: Municipalities must approve or deny an application within 45 days from the date of filing.

BONDS AND PUBLIC SAFETY ISSUES: Municipalities may require that a bond be posted by the provider that must not exceed the reasonable cost to ensure that the public ROW is returned to its original condition. Municipalities retain the right to review and approve a provider's access to

and ongoing use of a public ROW to ensure and protect the public's health, safety and welfare.

PERMIT CONDITIONS: Any conditions of a permit must be limited to the access and usage of public ROW.

ROW RESTORATION: Providers are required to restore public ROW to their preexisting condition following construction.

Annual Maintenance Fees For LECS

PAYMENT PERIOD AND DUE DATE: The annual period for the maintenance fee is April 1 to March 31, and payments are due by April 29.

FEE BASIS: Providers will pay an annual maintenance fee on each linear foot of public ROW occupied by the provider's facilities within a metropolitan area (municipality).

INITIAL ANNUAL FEE: A 2-cent per linear fee begins on November 1, 2002 and ends on March 31, 2003. (An exception to the 2-cent fee level applies to companies operating in non-Ameritech exchanges. See FEE CAP below.)

NORMAL ANNUAL FEE: After the initial fee period, providers will pay a 5-cent per linear foot fee according to the payment period explained above. (An exception to the 2-cent fee level applies to companies operating in non-Ameritech exchanges. See FEE CAP below.)

Both the 2-cent and 5-cent fees are capped for providers operating in non-Ameritech exchanges. The cap is based on Ameritech's per access line

cost and will result in companies other than Ameritech paying in almost all instances less than 2-cents or 5-cents per foot.

Once Ameritech determines its total estimated and actual costs under the per foot fee, the METRO Authority will divide this amount by Ameritech's total number of access lines. The resulting per access line cost will then be applied by the Authority to providers operating in non-Ameritech exchanges by multiplying it by the provider's total number of access lines.

For example, if Ameritech's total fee obligation (at 5 cents per foot) is $20 million annually and it has 5 million access lines, the annual per access line cost is $4.00. Consequently, a company other than Ameritech with 5,000 access lines in an exchange would multiply that number by $4.00 per access line, which would result in an annual obligation of $20,000 for the exchange. (If that same company had 400 miles of facilities in public ROW, if the fee cap did not apply, it would owe $105,600 at 5 cents per foot.)

Any provider with facilities in a non-Ameritech ILEC's exchange will pay the same capped fee as the ILEC.

GOOD FAITH ESTIMATES AND TRUE UPS: By February 1, 2003, Ameritech must make a good faith estimate of the total number of linear feet of facilities it owns in public ROW if it cannot determine the exact number of feet by that time. Ameritech has 360 days from November 1, 2002, to determine its actual linear foot number.

The Authority will assess fees based on Ameritech's good faith estimate and/or actual linear foot number. If an estimate is used, the Authority will adjust fees once the actual number is known.

Annual Maintenance Fees for CATV Companies

AMOUNT OF FEE: CATV companies will be subject to a 1-cent per linear foot fee for telecommunications (as opposed to cable) facilities owned in public ROW. This fee will be in lieu of any other ROW related fee, except for fees paid under a franchise agreement. If a provider uses its cable facilities to provide telecommunications services, it may be possible for the provider to avoid paying the ROW fee in its entirety.

FEE OFFSET: In addition, A CATV company can avoid the 1-cent per foot fee requirement in its entirety by "certifying" to the METRO Authority that its "aggregate investment in this state, since January 1, 1996, in facilities capable of providing broadband internet transport access service exceeds the aggregate amount of the maintenance fee assessed" under this act.

Entities that are exempt from paying fees and from route map requirements are as follows:

- **Educational institutions** are exempt from the fees and mapping requirements for facilities used to provide services allowed under the MTA.

- **Electric and gas utilities, and affiliates,** are exempt from the fees and mapping requirements for facilities used for internal communications and customer services like load management and billing. Those entities will have to pay the fees for any facilities used to provide non-exempt (i.e. competitive) services.
- **The state, counties, municipalities, municipally owned utilities, and affiliates,** are exempt from the fees and mapping requirements for facilities used for internal communications and customer services like load management and billing. Those entities will have to pay the fees for any facilities used to provide non-exempt (i.e. competitive) services.

The METRO Authority may grant to a provider a waiver of the fee (for not more than 10 years) for facilities owned in “underserved areas” if 2/3 of the affected municipalities approve the granting of the waiver.

Shared Use Discounts

Two or more providers can qualify for a 40% discount of the per-foot fees for each foot of public ROW in which shared use occurs. To qualify for the discount, providers must do all of the following:

- Occupy and use the same poles, trenches, conduits, ducts, or other common spaces or physical facilities jointly with another provider (subject to applicable electrical codes);
- Coordinate construction and installation with other providers so that the public ROW is not impaired or interrupted on more than 1 occasion;
- Enter the shared use arrangement after November 1, 2002.

Allocation of Funds

The Act sets out the formula for the distribution of maintenance fee funds from the METRO Authority to municipalities.

ELIGIBILITY TO RECEIVE FUNDS: Municipalities are only eligible to receive funds from the Authority if they modify any existing fees so they do not exceed those allowed under this act. If a provider pays fees to a municipality that has not modified its fees, the provider can deduct the fees paid from the fee required under this act. A municipality has until January 1, 2004, to adopt a resolution or ordinance modifying its fees.

Provision of Telecommunications Service by Local Government

Counties, municipalities, and their affiliates, seeking to offer competitive broadband services must comply with all of the following:

- Hold at least 1 public hearing before passing a resolution or ordinance authorizing the construction of telecommunications facilities or the provision of a competitive broadband serve.
- Prepare a 3-year cost-benefit analysis of the project prior to the public hearing.
- Prepare and maintain accounting records using the uniform budgeting and accounting act. (These records will be subject to the Freedom of Information Act.)

Include all of the following in charges for services:

- All capital costs attributable to the provision of the service.
- All costs attributable to the provision of the service that would be eliminated if the service was discontinued.
- The proportionate share of costs identified with the provision of 2 or more county or municipal services including telecommunications serves.
- Adopt no policies that discriminate against another person providing the same service.

- Impose no terms more favorable or less burdensome on its own operations than are imposed on other providers for access to ROW.
- Impose no ROW regulations on providers that are not also imposed on its own operations.
- Employ no terms more favorable or less burdensome related to pole attachments on its own operations than are imposed on other providers.

EXEMPTIONS: Local governments that construct and operate broadband facilities that are not provided to any residential or commercial premises are exempt from the provisions outlined above. Also, local governments providing these services prior to December 31, 2001 (Coldwater and Hillsdale) are exempt.

COMPLAINTS: The MPSC will resolve complaints of violations of these provisions.

Summary of Public Act 49 of 2002

Overview

Known as the "Michigan Broadband Development Authority Act," the Act establishes a new state agency in the Department of Treasury to provide low cost financing for new broadband development. The Broadband Authority's focus will be on private sector investment, as strict limitations have been put on its ability to fund public sector projects. The act took effect on March 14, 2002.

Board of Directors

The Broadband Authority will exercise its duties through a board of directors consisting of the following appointees:

- The president and CEO of the Michigan Economic Development Corporation.
- The state treasurer.
- The executive director of the Michigan State Housing Development Authority.
- Eight members from the academic, business, technology, or financial fields appointed by the governor with the advice and consent of the Senate.

The duties of the Broadband Authority may include the following:

- Assist through financing and refinancing the expansion of broadband infrastructure services to customers.
- Authorize the issuance of bonds and notes for the financing.
- Authorize the making of loans and joint venture and partnership arrangements to broadband developers and operators.
- Authorize the imposition of rents, charges and fees for services furnished in conjunction with Broadband Authority financing.
- Enter into joint venture and partnership arrangements to acquire, construct, maintain, and operate broadband infrastructure.
- Assist broadband developers and operators with all other matters necessary to deploy infrastructure.
- Evaluate all types of technologies to encourage the widest broadband deployment.
- Make broadband services to schools and libraries a priority.
- Insure that its financing includes small businesses and that each region of the state has an equal opportunity to receive funding.

Limitations on Financing Public Sector Projects

The Broadband Authority is prohibited from making any loans to, or entering into any joint venture and partnership arrangements, with any governmental entity or nonprofit organization. The only exception to this rule is for cases in which governmental entities are seeking assistance with broadband networks to be used exclusively by governmental entities. In this situation, no portion of the infrastructure financed by the Broadband Authority can be used to serve residential, business, or other commercial customers.

Seed Capital Loan Program

"Seed capital" loans will be available for persons planning to apply for financing from the Broadband Authority. Priority for these loans will be given to "underserved" areas. (Underserved areas are defined as "geographical areas of this state identified by the Broadband Authority as having the greatest need for broadband development.")

During the initial two years of this program, at least $500,000 will be targeted to rural underserved areas and another $500,000 to urban underserved areas. Community economic development programs and small providers will be given preferences for loans under this program.

Small, Minority Owned Business and Community Outreach Plans

Applicants for Broadband Authority assistance must file a participation plan for small and minority owned businesses, as well as a community-wide outreach plan to educate the public of the availability of broadband services.

The Broadband Authority may not provide loans or enter into new partnerships after December 31, 2008, except to the extent necessary to maintain, improve, complete, or expand within the defined service area an already acquired or financed project.

Potential Public Funding Sources

This section discusses potential tax credits and governmental funding sources for broadband development. In addition to the discussion contained herein, the section titled "Summary of Public Act 49 of 2002", contains information regarding low cost financing provided by the Broadband Authority.

Distance Learning Grants and Loans

The Distance Learning and Telemedicine Program (DLT) is administered by the Rural Utilities Service (RUS), which is an agency of the United States Department of Agriculture (USDA). The DLT program is designed specifically, through loans, grants, and loan and grant combinations, to provide enhanced learning and health care opportunities for rural residents. For fiscal year 2002, the USDA made available $17,000,000 for grants, $200,000,000 million for loans, and $110,000,000 for combination loan and grants ($100 million in loans paired with $10 million in grants, i.e., a $10/$1 loan/grant ratio). The RUS gives priority to areas that are economically challenged, costly to serve, and experiencing outward migration.

The term "distance learning" refers to a telecommunications link to an end user through the use of "eligible equipment" either (i) to provide educational programs, instruction, or information originating in one area

(whether rural or not), to students and teachers who are located in rural areas, or (ii) to connect teachers and students located in one rural area with teachers and students that are located in a different rural area. "Eligible equipment" refers to computer hardware and software, audio or video equipment, computer network components, telecommunications terminal equipment, data terminal equipment, inside wiring, interactive video equipment, or other facilities that would further telemedicine services or distance learning services.

Grants

In order to qualify for a grant, an applicant must:

- Deliver distance learning or telemedicine services;
- Be legally organized as an incorporated organization or partnership, an Indian tribe or tribal organization, or a state or local unit of government, a consortium, or other legal entity, including a private corporation organized on a for profit or not-for profit basis; and
- Operate a rural community facility or be delivering distance learning or telemedicine services to entities that operate a rural community facility or to residents of rural areas at rates calculated to ensure that the benefit of the financial assistance is passed through to such entities or to residents of rural areas.

For fiscal year 2002, the minimum grant request was $50,000, and the RUS set the maximum grant at $500,000. Note that any Applicant receiving

assistance through a telecommunications or electric loan under the Rural Electrification Act of 1936 is not eligible for a grant.

Grants may be used by eligible organizations for distance learning and telemedicine projects to finance up to 70% of the amount designated for approved purposes. At least 30% of the project must be funded by matching contributions. Only projected costs for approved grant purposes are considered in determining the amount of DLT grant eligibility. Funding from Federal sources other than the RUS cannot be used as matching contributions.

The grant applicant's minimum matching contribution generally must be in the form of cash. However, in-kind contributions of non-depreciated or new assets with established monetary values may be substituted for cash. Costs incurred before submission of a completed application are not eligible for in-kind matching contribution, nor are costs incurred for non-approved purposes. Grant funds may only be expended for the costs associated with the initial capital assets associated with the project.

The following list details approved grant purposes:

- Computer hardware and software;
- Audio and video equipment;
- Computer network components;
- Terminal equipment;
- Data terminal equipment;

- Inside wiring;
- Interactive video equipment;
- Any other facilities that further DLT services;
- Acquiring instructional programming; and
- Providing technical assistance and instruction for using eligible equipment

The grant funds cannot, however, be used for the following non-approved purposes:

- Costs of installing or constructing telecommunications transmission facilities, other than those facilities not available and necessary for the completion of the proposed project and not otherwise available;
- Costs of medical equipment not having telemedicine as its essential function;
- Payment of salaries, wages, or employee benefits to medical or educational personnel;
- Payment of salaries or administrative expenses of the applicant or the project;
- Purchase of equipment that will be owned by the local exchange carrier or another telecommunications service provider unless that service provider is the applicant;

- Duplication of facilities providing distance learning or telemedicine services in place or to reimburse the applicant or others for costs incurred prior to RUS' receipt of the completed application;
- Payment of costs of preparing the application package for financial assistance;
- Projects whose sole objective is to provide links between teachers and students or between medical professionals who are located at the same facility;
- Site development and the destruction or alteration of buildings;
- Purchase of land, buildings, or building construction;
- Projects located in areas covered by the Coastal Barrier Resources Act (16 USC 3501 *et seq*.);
- Any purpose that the Administrator has not specifically approved; or
- Cost of recurring or operating expenses for the project (except for leases).

Additionally, funds generally may not be used to finance a project when success of the project depends on the receipt of additional financial assistance from either the DLT or other funding that is not assured.

The RUS scores applications in accordance with the criteria set forth in 7 CFR 1703.126, which includes the following categories: rurality of the project service area, economic need (as estimated by the National School

Lunch Program), ability to leverage resources, innovativeness, cost effectiveness of the system, project participation in enterprise zone and enterprise communities (EZ/ECs) as designated by the USDA, and Champion Communities (communities that were eligible to be EZ/ECs, but whose scores where not high enough).

Regardless of the number of points an application receives, the RUS limits the number of applications selected for projects located in any one state during a fiscal year. It also limits the number of selected applications for a particular project, and it may select an application receiving fewer points than another higher scoring application if there are insufficient funds during a particular funding period to select the higher scoring application. In this latter case, the RUS will provide the applicant with the higher scoring application an opportunity to reduce the amount of its grant request to the amount of funds available.

Note that grants and loans are disbursed to recipients on a reimbursement basis, or with unpaid invoices for the eligible purposes in accordance with RUS timelines. Applicants who receive funds must submit an audit each year, and they must report on the status of their projects until they are complete and all funds are expended. The RUS also reviews fund expenditures to ensure that the applicant has used them for approved purposes. Because the application process is extensive, and federal regulations that govern the DLT program are subject to change, potential

applicants should consider retaining legal counsel and a grant writer for assistance.

Combination Loan/Grant Programs

The same rules outlined above generally apply to the combination loan/grant program. However, unlike the grant program, a combination loan-grant has no matching fund requirement. Eligible organizations for distance learning and telemedicine projects therefore may finance 100% of the cost of approved purposes.

The approved purposes for a combination loan/grant are 1703.131:

- Acquiring eligible equipment by lease or purchase;
- Acquiring instructional programming;
- Providing technical assistance and instruction for using eligible equipment, including any related software, developing instructional programming, providing engineering or environmental studies relating to the establishment or expansion of the phase of the project that is being financed with the combination loan-grant (this purpose must not exceed 10 % of the total requested financial assistance);
- Paying for medical or educational equipment and facilities that are shown to be necessary to implement the project, including vehicles utilizing DLT technology to deliver educational and health care services. The applicant must demonstrate that such items are

necessary to meet the purposes of the DLT program and that financial assistance for such equipment and facilities is not available from other sources at a cost that would not adversely affect the economic viability of the project;

- Providing links between teachers and students or medical professionals who are located at the same facility, provided that such facility receives or provides distance learning or telemedicine services as part of a distance learning or telemedicine network which meets the purposes of this program;
- Providing for site development and alteration of buildings in order to meet the purposes of the DLT program (financial assistance for this purpose must be necessary and incidental to the total amount of financial assistance requested);
- Purchasing land, buildings, or building construction determined by RUS to be necessary and incidental to the project. The applicant must demonstrate that funding from other sources is not available at a cost that does not adversely impact the economic viability of the project as determined by the Administrator. Financial assistance for this purpose must be necessary and incidental to the total amount of financial assistance requested; and
- Acquiring telecommunications transmission facilities, provided that no telecommunications carrier will install such facilities under the

Rural Electrification Act of 1936, 7 USC 901 *et seq*., or through other financial procedures within a reasonable time period and at a cost to the applicant that does not impact the economic viability of the project, as determined by the Administrator.

The RUS will not grant combination loan/grants for the following:

- To pay salaries, wages, or employee benefits to medical or educational personnel;
- To pay for the salaries or administrative expenses of the applicant or the project;
- To purchase equipment that will be owned by the local exchange carrier or another telecommunications service provider unless that service provider is the applicant;
- To duplicate facilities providing distance learning or telemedicine services in place or to reimburse the applicant or others for costs incurred prior to RUS' receipt of the completed application;
- For projects located in areas covered by the Coastal Barrier Resources Act;
- For any purpose that the Administrator has not specifically approved; or
- To pay the cost of recurring or operating expenses for the project (except for leases).

The RUS will approve combination loan/grants on the basis of availability of funds, financial feasibility of the project, project design, costs, and location, and compliance with the DLT regulations. For loans in excess of $100,000, if the recipient is not a unit of government, it must provide evidence of fidelity bond coverage. The loan recipient must execute a

security instrument as required by the RUS and must, before receiving any advance of loan funds, provide security that is adequate, in the opinion of the RUS, to assure repayment. The assurance is generally provided by a first lien on all facilities and equipment financed by the loan, however, the RUS may require additional security, as it deems necessary.

The minimum amount of a combination loan/grant is $50,000. A combination loan/grant is disbursed on a pro rata basis based on the respective amounts of financial assistance provided.

Loan Programs

The foregoing discussion of the combination loan/grant program applies equally to the RUS loan program with regard to approved purposes. In addition, the following are also approved purposes for loans:

- Any recurring or operating expenses (except for salaries and administrative expenses), incurred during the first two years of operation after the financial assistance has been approved, if the applicant shows that financing such costs are necessary for the establishment or continued operation of the project and that financing is not available for such costs elsewhere, including from the applicant's financial resources. Loans will not be made exclusively to finance such costs, and financing for such costs will not exceed 20% of the loan; and

- The costs of facilities and end-user equipment dedicated to providing educational broadcasting to rural areas for distance learning purposes. If the facilities are not 100% dedicated to broadcasting, a portion of the financing may be used to fund such facilities based on a percentage of use factor that approximates the distance learning broadcasting portion of use.

The non-approved loan purposes are the same as for combination loan/grants, with the following additional non-approved purposes:

- The costs incurred after two years from approval of recurring or operating expenses for the project (except for leases); or
- For any purpose that the Administrator has not specifically approved.

Other Rural Utilities Service Grants

In addition to the Distance Learning and Telemedicine Program, the RUS has, in the recent past, administered other grant programs. For example, in 2002, the RUS administered the Community Oriented Connectivity Broadband Program, which was a $20 million pilot grant program for the provision of broadband transmission service in rural communities. The RUS also oversaw the Local Dial-Up Internet Program, which was designed to provide financing to furnish local dial-up Internet access in rural areas where it did not currently exist. At present, it is uncertain when or whether the RUS will offer similar grant programs in the

future. Those interested in such programs will have to await announcements from the RUS.

Michigan Historic Tax Credits

Under the State Historic Preservation Tax Credit Act, businesses (as well as home owners) may receive tax credits against the Michigan personal income tax and the single business tax of up to 25% of the cost for improvements on buildings in historically designated communities. [MCL 206.266; MCL 208.39c.] Owners and long-term lessees (leases of 31.5 years for non-residential property) who rehabilitate or restore qualified historic structures are eligible for up to a 25% tax credit against single business tax or income tax liability for "qualified expenditures" associated with the restoration or rehabilitation. [MCL 206.266(2)]; [MCL 208.39c(2)]. The credits are nonrefundable, however if the credit exceeds the taxpayer's tax liability, the balance of the credit may be carried forward for up to ten years. [MCL 206.266(8)]; [MCL 208.39b(8)].

The federal government also allows a 20% credit for "historic rehabilitations," as well as a non-historic rehabilitation credit of 10% for buildings that are at least 40 years old, and a 10% credit for non-historic buildings which were first placed in service before 1936. [26 USC 47]. Under Michigan law, any available federal tax credits must be claimed before state tax credits may be claimed, and there is a 25% federal and state cap

on historic preservation efforts. [MCL 206.266(2)]; [MCL 208.39c(2)]. Because the maximum federal credit is 20% of approved rehabilitation expenses, Michigan will allow up to an additional 5% credit for additional qualified expenditures. If the project is not qualified for federal tax credits, Michigan allows up to a 25% credit for qualified expenses associated with the rehabilitation or restoration. The federal credit has its own rules and regulations. However, because Michigan allows a credit to the extent that the federal credit is inapplicable, this memo focuses on the Michigan tax credit.

Only "qualified expenditures" are entitled to a credit. Qualified expenditures are the same as those for federal tax credits, defined in the Internal Revenue Code, 26 USC 47(a)(2), generally any project expense for which a straight-line accounting method is used. Qualified expenditures do not include building acquisition costs or building expansion costs. [MCL 206.266(16)(i)]; [MCL 208.39c(16)(i)].

The property must be:

- Individually listed on the national register of historic places or state register of historic sites;
- Located within a historic district listed on the national register of historic places or the state register of historic sites; or

- A contributing resource located within a historic district designated by a local unit pursuant to an ordinance adopted under the Local Historic Districts Act.

In addition, the property must meet one of the following criteria during the tax year in which a credit is claimed:

- It is located in a designated historic district in a local unit of government with an existing ordinance under the Local Historic Districts Act;
- It is located in an incorporated local unit of government that does not have an ordinance under the Local Historic Districts Act, and has a population of less than 5,000; or
- It is located in an unincorporated local unit of government. [MCL 206.266(6); MCL 208.39c(6).]

Applicants must file a Certification Application with the State Historic Preservation Office (SHPO). [MCL 206.266(3)]; [MCL 208.39c(3)]. Historic preservation and restoration plans and activities are subject to final approval, pursuant to published standards, of the SHPO. Further, all project work must conform to the following United States Secretary of the Interior's Standards for Rehabilitation (codified at 36 CFR 67.7):

- A property must be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment;

- The historic character of a property must be retained and preserved. The applicant must avoid removal of historic materials or alteration of features and spaces that characterize a property;
- Each property must be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, must not be undertaken;
- Because most properties change over time; those changes that have acquired historic significance in their own right must be retained and preserved;
- Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property must be preserved;
- Deteriorated historic features must be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features must be substantiated by documentary, physical, or pictorial evidence;
- Chemical or physical treatments, such as sandblasting, that cause damage to historic materials must not be used. The surface

cleaning of structures, if appropriate, must be undertaken using the gentlest means possible;

- Significant archeological resources affected by a project must be protected and preserved. If such resources must be disturbed, mitigation measures must be undertaken;
- New additions, exterior alterations, or related new construction must not destroy historic materials that characterize the property. The new work must be both differentiated from the old and compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment; and
- New additions and adjacent or related new construction must be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Applicants must complete a three-part tax credit application. The first two parts, “Evaluation of Eligibility” and “Description of Rehabilitation,” must be submitted and approved by the SHPO before starting work. The third part, “Request for Certification of Completed Work,” must be submitted to the SHPO upon completion of work to qualify for the tax credit. Therefore, applicants hoping to qualify for the credit will have to do some paperwork

before beginning any restoration, and should retain legal counsel at the inception of the project.

Qualified rehabilitation expenditures must be equal to or greater them 10% of the State Equalized Value of the property. In instances when only part of a resource is being rehabilitated, the qualified rehabilitation expenses must be 5% of the appraised value of the property. [MCL 206.266(15)(j)]; [MCL 208.39c(15)(j)].

If the resource is sold or alterations to the approved plan are made within five years of the tax credit claim, an appropriate percentage of the tax credit will be subject to recapture. [MCL 208.39b(9)]; [MCL 206.266(9)]. In the event that the Historic Preservation Office revokes its certification within five years after the year in which a credit was claimed, the credits are subject to rescission. [MCL 208.39b(10)]; [MCL 206.266(10)].

A partial list of communities with Historic District Commissions pursuant to Michigan's Local Historic Districts Act includes: Adrian, Allegan, Ann Arbor, Battle Creek, Birmingham, Calumet Township, Canton Township, Chelsea, Clarkston, Detroit, East Lansing, Farmington Hills, Flint, Frankenmuth, Franklin, Grand Rapids, Green Oak Township, Grosse Pointe Farms, Hart, Holland, Holly, Jackson, Kalamazoo, Kentwood, Lansing, Lathrup Village, Lexington, Linden, Livonia, Lowell, Mason, Menominee, Midland, Monroe, Muskegon, New Baltimore, Niles, Northville, Oakland Township, Owosso, Plymouth, Pontiac, Portage, Rochester Hills, Royal Oak,

Saginaw, Saline, Saugatuck, Southfield, Tecumseh, Traverse City, Troy, Utica, Vergennes Township, Warren, Washtenaw County, Waterford Township, Ypsilanti.

The historic tax credit would be useful for broadband providers who wish to rehabilitate or restore historic buildings for office or related use. Note that the section allowing a credit against the single business tax was repealed by 2002 PA 531 for tax years that begin after December 31, 2009.

Brownfields Grants and Loans

Under the Small Business Liability Relief and Brownfields Revitalization Act (Brownfields Law), enacted in January 2002 (Public Law 107-118), eligible entities may apply for grants through the EPA. The Brownfields Law also authorizes the EPA to establish a competitive system for the awarding of grants to applicants whose proposals receive the highest rankings. [42 USC 9604(k)(2)]. A *brownfield* is real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. [42 USC 9601(39)]

The EPA funds the following programs:

- Assessment Grant Programs: To inventory, characterize, assess, and conduct planning and community involvement related to brownfields and to test cleanup and redevelopment models;
- Job Training Pilot Programs: To provide training for residents of communities affected by brownfields to facilitate cleanup of brownfields sites and prepare trainees for future employment in the environmental field;
- Revolving Loan Fund Grant Programs (RLF): Grant recipients must use at least 60% of the awarded funds to capitalize a revolving loan fund. Revolving loan funds generally are used to provide no-interest or low-interest loans for brownfields cleanups. An RLF

grant recipient also may use its funds to award subgrants to other eligible entities, including nonprofit organizations. An RLF award requires a 20% cost share, which may be in the form of a contribution of money, labor, material, or services, and must be for eligible and allowable costs (the match must equal 20% of the amount of funding provided by EPA and cannot include administrative costs).

- Cleanup Grants: These provide funding to cleanup activities at brownfield sites. An eligible entity may apply for up to $200,000 per site. These funds may be used to address sites contaminated by petroleum and hazardous substances, pollutants, or contaminants (including hazardous substances co-mingled with petroleum). Cleanup grants require a 20% cost share, which may be in the form of a contribution of money, labor, material, or services, and must be for eligible and allowable costs (the match must equal 20% of the amount of funding provided by EPA and cannot include administrative costs). An eligible entity must own the site for which it is requesting funding in order to qualify. The performance period for these grants generally will be two years.

Only “eligible entities” may receive grants. The following are “eligible entities” as relevant here (42 USC 9604(k)(1)):

- A general-purpose unit of local government;
- A land clearance authority or other quasi-governmental entity that operates under the supervision and control of or as an agent of a general purpose unit of local government;
- A governmental entity created by a State legislature;
- A regional council or group of general purpose units or local government;
- A redevelopment agency that is chartered or otherwise sanctioned by the State;
- A State; or
- An Indian Tribe (other than in Alaska).

Under the Brownfields Law, a local government may use up to 10% of its grant funds for monitoring the health of populations exposed to one or more hazardous substances, pollutants, or contaminants from a brownfield site and monitoring and enforcement of any institutional control used to prevent human exposure to any hazardous substance, pollutant, or contaminant from a brownfield site. [42 USC 9604(k)((4)(C)].

Grant funds generally may not be used for the payment of:

- A penalty or fine;

- A federal cost-share requirement (e.g., a cost share required by other federal funds);
- A response cost at a brownfield site for which the recipient of the grant or loan is potentially liable under CERCLA;
- A cost of compliance with any federal law (excluding the cost of compliance with laws applicable to the cleanup);
- Administrative costs. [42 USC 9604(k)(4)(B).]

The EPA awards grants on a competitive basis, using a two-step proposal selection process. Under the first step, the applicant prepares an initial proposal. The EPA will either issue a rejection or an invitation for a final proposal. Those applicants receiving an invitation proceed to Step 2, which is to submit a final proposal. Congress has authorized $200,000,000 in appropriations for the funding of Brownfields grants through fiscal year 2006. [42 USC 9604(k)(12)].

In addition to the foregoing, the State of Michigan has its own grant and loan programs available, as well as tax incentives, to promote brownfields redevelopment. For example, the Clean Michigan Initiative (CMI) Brownfield Redevelopment Grant provides funding to local units of government for investigation and due care activities at known sites of environmental contamination which will be used for identified economic development projects. An applicant could receive up to $1 million per project. The grant funds cannot benefit a liable party or otherwise relieve a

liable party of responsibility for environmental response activities. Applications are evaluated for:

- Environmental benefit;
- Economic benefit;
- Utilization of existing infrastructure;
- Potential for environmental contamination resulting from the new development;
- Utilization of public and private funding;
- Feasibility of the proposed development;
- Need for the proposed work in relation to the intended use of the property.

Because the Brownfields Law contains various conditions and exclusions, including limiting certain types of property from the definition of a brownfields site, any entity contemplating seeking a brownfield grant should first retain counsel for legal advice on obtaining federal grants, state grants, and tax credits.

The advantage of a brownfield grant is that an eligible entity may use the grant to assess a brownfield site and use federal funds to clean up the site. The City of Lansing recently used assessment demonstration pilot funds to identify, categorize, and prioritize approximately 100 brownfields properties with redevelopment potential. It also redeveloped an abandoned gas station that is now used as a commercial business. In such a way, an

eligible governmental unit might assess and cleanup a brownfield site for telecommunication equipment, such as the placement of towers used for wireless broadband.

Tax Increment Financing Authorities

State government allows various forms of tax increment financing. This mechanism allows for a local government to set aside taxes for a particular use. The State Treasury Department has an excellent website which explains the differences between a Tax Increment Financing (TIF), a Tax Increment Financing Authority (TIFA), a Local Development Financing Authority (LDFA) and a Downtown Development Authority (DDA) (see http://www.michigan.gov/treasury/0,1607,7-121-3218---F,00.html). Below are four questions/answers from this state website.

Question 1: What is the difference between TIF and TIFA?

TIF = tax increment financing = a financing tool.

TIFA = Tax Increment Financing Authority under P.A. 450 of 1980.

Tax increment financing is used by:

- DDA (P.A. 197 of 1975)
- TIFA (P.A. 450 of 1980)
- LDFA (P.A. 281 of 1986).

It is important to know which authority you have, so you know which act applies. If your community has been referring to its DDA as a TIFA, this can cause confusion.

Question 2: What is the difference between an authority district and a plan?

First, the local unit establishes an **authority** (DDA, LDFA, TIFA) with a specific geographic **district**, and appoints an authority board.

Then, the board writes a development plan (and usually a tax increment financing plan to fund it) for a specific geographic area within the district area. There can be more than one plan area in an authority district, but plans may not overlap. (Overlap information does not apply to Brownfields and certified technology parks.) The local unit must adopt the development plan and TIF plan before the plans are valid.

DDA mills are levied within the district boundaries.

DDAs and TIFAs capture property taxes within the plan boundaries. LDFAs capture within each eligible property, or within a certified business park (formerly called a "certified industrial park"), or certified Technology Park.

Question 3: What is capture?

Tax increment financing is often referred to as "capture". Example: If the "initial" year (same as "base" year) value for the plan = $1,000,000 And the second year, the value = $1,250,000 then the authority gets to "capture" the property taxes on the increase in value, i.e., the "tax increment", of $250,000. This means the authority gets to keep the property

taxes on the $250,000 to pay for the plan projects. The taxing units receive the taxes on the $1,000,000.

Current value = 1,250,000

Initial value = $1,000,000

Captured value = $250,000

Question 4: How do we form an authority? How do we amend a plan? Etc?

Some property tax division suggestions for TIF activities:

1. Involve your attorney for all legal matters.

2. Obtain a copy of the latest public act from the State Law Library, 525 W. Ottawa, PO Box 30007, Lansing, MI 48909, phone (517) 373-0630, fax (517) 373-3915, Email: lmlawlib@libofmich.lib.mi.us. There is a small charge for this service.

- Downtown Development Authorities (P.A. 197 of 1975)
- Tax Increment Finance Authorities (P.A. 450 of 1980)
- Local Development Financing Authorities (P.A. 281 of 1986).

3. All agreements should be in writing. If an agreement or resolution is not clear, make it clear. If you're not sure whether you need to meet a given requirement in the law, you probably need to meet it. Cover yourselves legally. Do business in a businesslike manner, in writing. If the authority agrees to do something, be sure the DDA, LDFA, or TIFA authority passes the resolution or signs the agreement, not just the municipality. Remember

that the DDA, LDFA, or TIFA authority and the municipality are two separate legal entities.

Michigan Economic Development Corporation - Summary of Incentives and Services

The Michigan Economic Development Corporation (MEDC) offers a variety of services and incentives to assist businesses to expand and relocate in Michigan. Not all companies will be eligible for the following services and incentives. For additional details and criteria for these incentives and services please contact the Michigan Economic Development Corporation Customer Contact Center at (517) 373-8908.

Job Creation Tax Credits: Companies eligible for a job creation tax credit against the Michigan Single Business Tax (SBT) are those engaged in manufacturing, R&D, wholesale trade or office operations that are financially sound and have solid project proposals. Retail facilities are not eligible. A business may receive an SBT credit for the incremental SBT liability attributable to its expansion or location in Michigan, and a refundable credit equal to the personal income tax attributable to new jobs being created at the site of the expansion or new location. Each credit may be awarded for up to 20 years and for up to 100% of the tax related to the project, subject to Michigan Economic Growth Authority board approval.

Credits are based on the number of jobs created (75 for in-state companies and 150 for out-of-state), average wages (150% of federal

minimum wage), total capital investment, interstate competition (cost differential between competing states), and level of local community financial or economic participation.

High-Tech Job Creation Tax Credits: To promote the development of high-tech businesses in both traditional and emerging industries in Michigan. A business may be eligible to receive a tax credit against their Single Business Tax liability for the incremental SBT liability attributable to its expansion or location in Michigan, and a refundable credit equal to the personal income tax attributable to new jobs being created at the site of the expansion or new location. Each credit may be awarded for up to 20 years and for up to 100% of the tax related to the project, subject to Michigan Economic Growth Authority board approval.

Credits are based on the number of jobs created (minimum 5 in the first year, 25 within 5 years), average wages (400% of federal minimum wage), total capital investment, interstate competition (cost differential between competing states), and level of local community financial or economic participation.

Personal Property Ta Relief in Distressed Communities (PA 328 of 1998): Allows distressed areas (as defined under the Michigan State Housing Development Authority Act) to abate all millage, state and local, on new personal property taxes for eligible economic development projects

including manufacturing, mining, research, and development, wholesale trade, and office operations. Retail businesses and casinos are not eligible.

New personal property is property not previously subject to property taxes in any other jurisdiction in this state. This includes personal property already in Michigan, but exempt for another reason (for example, property that is receiving a PA 198 abatement).

Brownfield Redevelopment: A "qualified taxpayer" may be able to claim a credit against their Single Business Tax liability of up to 10% of the eligible investment. If the total of all credits for the project is greater than $1 million but not more than $30 million, a credit is available for a percentage of eligible investment to be determined by the Michigan Economic Growth Authority (MEGA), but not to exceed 10% of the eligible investment. Certain location restrictions apply to these credits.

Obsolete Property Rehabilitation (PA 146 of 2000): Provides an exemption for ad valorem property taxes for up to 12 years on real property improvements made to commercial property and commercial housing property that is a "facility" (contaminated), "blighted", or "functionally obsolete". Property must be located in a qualified local governmental unit (Core Community) and in an obsolete property rehabilitation district. The sunset for granting exemption is December 31, 2010.

Economic Development Job Training (EDJT): The EDJT program, administered by the Michigan Economic Development Corporation, seeks to ensure that Michigan employers have the highly trained technical workers they need to compete in the global economy. Existing Michigan businesses and their workers receive the most benefit from this program through an ongoing competitiveness program. However, the MEDC also expedites grant awards throughout the year to local education and training organizations in cases where significant numbers of new jobs are being created by a business location or expansion.

Renaissance Zones: Regions of the state (139 geographic areas) set aside as virtually tax-free for any business or resident presently located in or moving to one of the zones. The taxes that companies and residents do not pay are nearly all the state and local taxes levied on business activity. These include: Single Business Tax, State Personal Income Tax, 6-Mill State Education Tax, Local Personal Property Tax, Local Real Property Tax, Local Income Tax, Utility Users Tax.

Michigan Community Development Block Grant (CDBG) Program: A federal program involving funds to be used as either grants or loans to eligible counties, cities, villages, and townships, usually with a population of less than 50,000 for economic and community development projects. Funds are typically used for critical public infrastructure needs directly related to a for-profit private business location or expansion that will

result in the creation and/or retention of permanent jobs, with at least 51% of the jobs held by low- and moderate-income people.

Industrial Development Revenue Bond Program (IDRB): IDRBs are an attractive source of capitol for manufacturing projects, not-for-profit corporations projects, and solid waste facilities projects in Michigan due to their “tax-exempt” nature. Typically the cost of capital (including the cost of letters of credits, remarketing fees, etc.) is on average 75-85% of prime. Maximum capital investment per manufacturing project per municipality is $10 million.

SBA 504 Loan Program: Provides small- to medium-sized businesses with long-term, fixed-rate financing for the acquisition or construction of fixed assets. The Small Business Administration offers an up-front commitment to finance a project. Participating private lenders provide interim financing, advancing the full amount of project funds during the construction or acquisition period and upon completion of the project, the SBA reimburses, or “takes out,” the participating lender by the amount of the original loan commitment. Typical project sizes range from $250,000 to $2 million.

Property Tax Abatements: Local property taxes on new investments in plants, machinery, and equipment can be reduced by local units of government by up to one-half for up to 12 years. Also, investments to rehabilitate existing plants, machinery, and equipment can be completely

exempted from local property taxes for up to 12 years by local units of government.

Summary of Federal Grant & Loan Programs

The following list highlights some funding opportunities available from the Federal government that could either provide direct funding to a provider, it's customers, communities and not-for-profit organizations. We at e-Copernicus can help you in determining how these and other federal programs can help you achieve your goals and expand opportunities.

If you need more information, contact glr@e-copernicus.com or call E-Copernicus at 202.742.4274.

Rural Utilities Service (more fully discussed above)

Broadband Loan Program – The objective is to assist high-speed providers with broadband deployment in communities of up to 20,000 population.

Basic Infrastructure Program – Objective is to assist telecommunications providers with deployment of broadband capable plants in communities of up to 5,000 population.

Community Facilities Program – Objective is to help nonprofit organizations fund rural telecommunications projects and projects in places with high unemployment.

Distance Learning and Telemedicine Program – Objective is to provide grants and loans for the purposes of enhanced educational and health care opportunities for rural residents through the use of advanced telecommunications technologies.

NOAA Weather Radio Transmitter Program – Objective is to assist communities with NOAA weather radio dead spots gain coverage.

National Telecommunications and Information Administration

Technology Opportunity Program – Objective is to assist digital network technologies that promote public safety efforts, support lifelong learning, enhance delivery of health care services and foster communication and economic development.

Department of Homeland Security

State Homeland Security Grant Program – Objective is to assist first responders with equipment purchases that enhance security measures; a key component includes interoperable communications equipment.

Urban Areas Security Initiative – Objective is to assist 30 most populated cities' first responders with equipment purchases that enhance security measures; a key component includes interoperable communications equipment.

Department of Education

Community Technology Center Program – Objective is to assist community technology centers service disadvantaged residents of economically distressed rural and urban communities with access to information technology and related training.

Department of Health and Human Services

Advancement of Telehealth Grant – Objective is to increase access to quality health care services for the underserved by promoting use of advanced telecommunications technologies across rural America.

Network Development Grant – Objective is to assist rural health providers in partnerships that focus on integrating clinical, information, administrative, financial and technological functions across their organizations.

Rural Health Network Planning Grant – Objective is to assist rural communities in the development of an integrated healthcare network geared toward improving coordination of health services and strengthening overall health care system.

Rural Health Outreach Program – Objective is to encourage development of integrated health care delivery systems or networks in rural areas and regions.

Internet Tools

LinkMBS Website

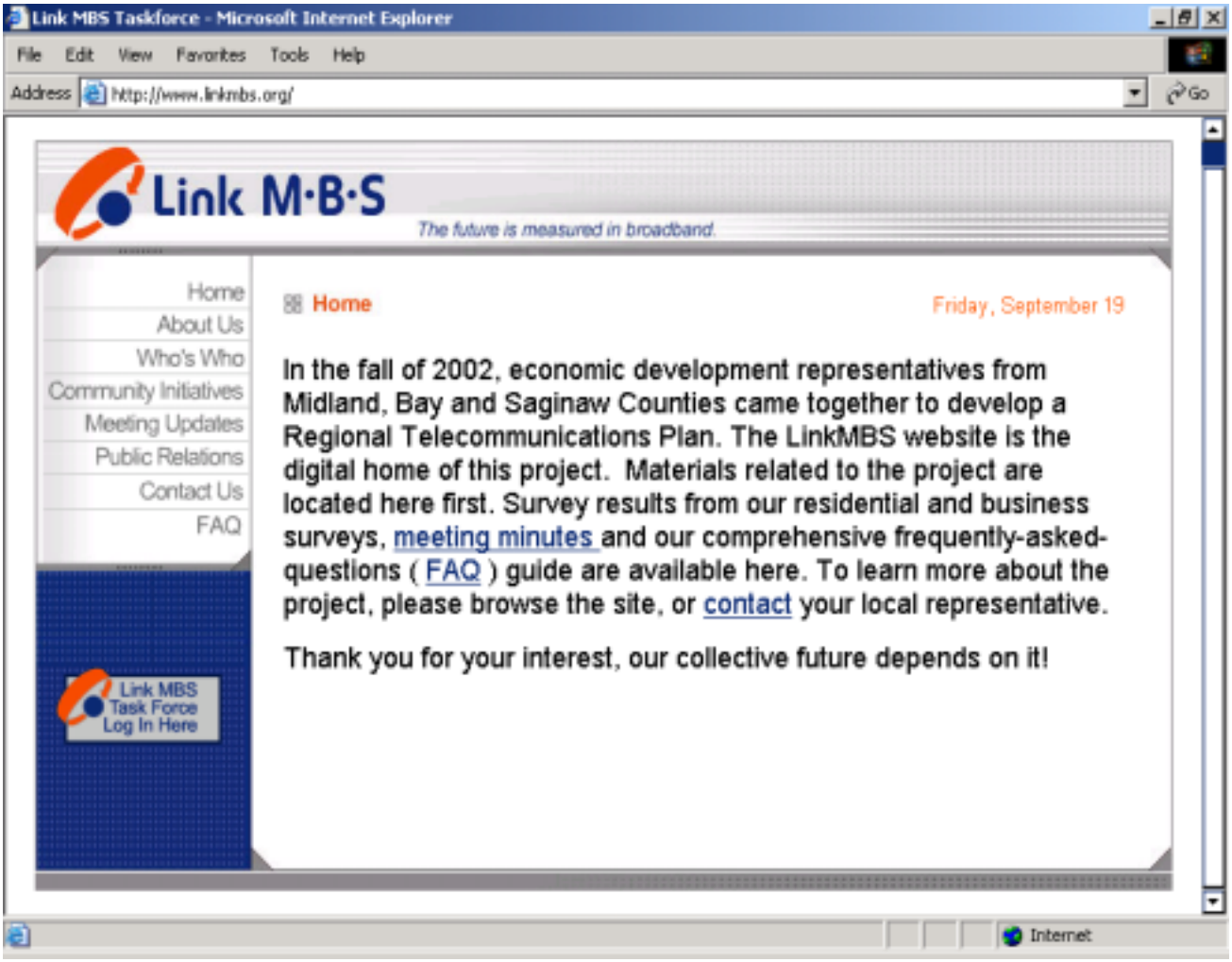
The Link MBS Taskforce requested a fully functional public website that would be used to coordinate their planning efforts and enable mass communication across multiple counties within the state. The system was created in order to allow for an efficient and user-friendly site design.

The main objectives of the Planning Effort website are listed below:

- Provide accurate communication channels
- Meeting coordination/Scheduling/Minutes
- Document Control
- Support of Education & Outreach Efforts.

The web application serves as the central repository for all of the information related to the Link MBS planning effort and facilitates easy, secure access to documentation and other information from any location at any time via the Internet. The Planning Effort public website is accessible at the following URL: www.linkmbs.org.

The public interface is an important mechanism in providing public information about Link MBS to stakeholders and members of the community alike. The public website is accessible via a standard Internet browser (I.E. 5.0+ and Netscape 6.0+). Please note that all public entities, including stakeholders, team members, community partners and the general public can access this public website at any time.



Link MBS Home Page Display

The public website includes the following areas:

Main Page Navigation	2nd Level Navigation	Page Description
Home Page	None	Default page displays when users visit the public website.
About Us	Overview	Displays an overview of MBS and the purpose of the tri-county initiative.
	Mission Statement	Displays the MBS Mission Statement text.
Who's Who	MBS Taskforce	Displays the taskforce members, including brief descriptions and logos, if available.
	Contributors	Displays the contributors to the project, including brief descriptions and logos, if available.
	Partners	Displays the partners involved in the project, including brief descriptions and logos, if available.
Community Initiatives	None	Displays text explaining community initiatives within the three counties.
Meeting Updates	Meeting Minutes	Displays all of the meeting minutes that have been posted through the Admin tool. PDF documents will be used.
	Meeting Schedules	Displays the meeting schedules. PDF documents will be used.
Public Relations	None	Displays advertising and PR materials, as identified by Link MBS taskforce. Can be text or images.
Contact Us	None	Displays a list of contact information.
FAQ	None	Displays the FAQ's related to the Link MBS project. Will be developed during project duration.

Note that the website was designed for and is currently hosted on a Windows platform. An MS SQL 2000 database is utilized to store data and allow the dynamic site content to be modified by authorized users.

On the public pages that display PDF documents, links have been placed on the page that will allow users to access *Adobe*, if necessary, to read the reports/documents.

Appendix A – Residential Survey Results Per County

Bay County Residential Survey Results

[INSTRUCTIONS TO PHONE BANK IN CAPS, BRACKETS]

[INTRODUCTION]

Hello, I'm calling from Public Sector Consultants in Lansing, Michigan. We are conducting a survey in the tri-county area about how residents use information technology in their daily lives, and about the types of Internet connections that people use from their homes. The survey is not being conducted for any candidate, political party, or business.

[IF THE RESPONDENT ASKS FOR MORE INFORMATION ABOUT THE SURVEY SPONSOR: "The survey is being conducted for the LinkMBS Team, an organization that promotes economic development in Midland, Bay, and Saginaw Counties."]

[RANDOM SELECTION OF RESPONDENT AT HOUSEHOLD LEVEL]

Are you 18 years of age or older and a resident of Michigan?

Yes ..... Continue
No ..... Terminate

Are you a resident of Midland, Bay, and Saginaw County?

Yes ..... Continue
No ..... Terminate

Before we begin, let me tell you that this interview is completely voluntary. If we come to any question that you don't want to answer, just let me know and we'll go on to the next question. Let me also assure you that all your responses will remain confidential.

1) To begin the survey, would you please tell me how many phone lines you have in your house? Please include all phone, fax, and computer lines, but do *not* include cellular telephones. [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
1	77	67.0%
2	26	22.6%
3	4	3.5%
4	4	3.5%
5	2	1.7%
6+	1	0.9%
Don't know [VOLUNTEERED]	0	0.0%
Refused/Other [VOLUNTEERED]	1	0.9%[27]

Use of the Internet

2) Have you yourself **ever** used the Internet?

	N	Valid %
a) Yes	78	67.2%
b) No	38	32.8%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

[27] Percentages may not = 100% due to rounding.

3) [ASK ONLY IF Q2 = 2] Which of the following reasons best describes why you have not used the Internet? [ROTATE; SKIP TO QUESTION 10 WHEN COMPLETE]

	N	Valid %
a) No access to the Internet	14	37.8%
b) Too complicated/don't understand the Internet	9	24.3%
c) Not worth the time, hassle, or expense	11	29.7%
d) It's difficult to read information on the Internet	0	0.0%
e) Don't know [VOLUNTEERED]	0	0.0%
f) Refused/other [VOLUNTEERED]	3	8.1%

4) Which of the following statements best describes how often you usually use the Internet? Do you usually use the Internet …

	N	Valid %
a) About once a year	3	3.9%
b) At least once a year but less than once a month	5	6.5%
c) At least once a month but less than once a week	6	7.8%
d) At least once a week but less than once a day	14	18.2%
e) At least once a day	48	62.3%
f) Don't know [VOLUNTEERED]	0	0.0%
g) Refused/other [VOLUNTEERED]	1	1.3%

5) Do regularly use the Internet from somewhere other than your home?

	N	Valid %
a) Yes	32	41.0%
b) No	46	59.0%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

6) Have you **ever** purchased anything over the Internet?

	N	Valid%
a) Yes	50	64.9%
b) No	27	35.1%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

7) Have you **ever** used the Internet to trade a stock, pay a bill, or conduct online banking?

	N	Valid %
a) Yes	30	38.5%
b) No	48	61.5%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

8) Have you **ever** connected to the Internet **without** using a personal computer? That is, have you ever connected to the Internet using a PDA, cellular phone, other handheld device, or game console?

	N	Valid %
a) Yes	4	5.2%
b) No	73	94.8%
Don’t know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

9) [ASK ONLY IF QUESTION 8 = 1] How often do you connect to the Internet using one of these devices? [READ RESPONSES]

	N	Valid %
a) About once a year	1	20.0%
b) At least once a year but less than once a month	0	0.0%
c) At least once a month but less than once a week	3	60.0%
d) At least once a week but less than once a day	0	0.0%
e) At least once a day	0	0.0%
f) Don't know [VOLUNTEERED]	1	20.0%
g) Refused/other [VOLUNTEERED]	0	0.0%

Household Computers

10) How many computers are currently in use in your household? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	36	31.3%
1	60	52.2%
2	8	7.0%
3	5	4.3%
4	2	1.7%
5	1	0.9%
6	0	0.0%
7	1	0.9%
8	0	0.0%
9	0	0.0%
10	0	0.0%
11	1	0.9%
Refused/Other [VOLUNTEERED]	1	0.9%

11) [ASK ONLY IF Q10 = 0] Which of the following statements best describes why you do not have a computer at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
a) I have no time to use a computer at home	6	16.7%
b) I can use a computer somewhere else	1	2.8%
c) I do not want a computer at home	9	25.0%
d) A home computer is too expensive	10	27.8%
e) Computers are too hard to learn and use	1	2.8%
f) Don't know [VOLUNTEERED]	5	13.9%
g) Refused/other [VOLUNTEERED]	4	11.1%

12) How many computers in your household are connected to the Internet? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	12	15.2%
1	52	65.8%
2	11	13.9%
3	2	2.5%
4	0	0.0%
5	1	1.3%
6	0	0.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused [VOLUNTEERED]	1	1.3%

13) [ASK ONLY IF QUESTION 12 = 0] You indicated that you do not have Internet access at home. Which of the following is the primary reason that you have chosen not to have Internet access at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
a) A hardware or software problem	0	0.0%
b) Not sure how to use the Internet	1	8.3%
c) Internet access is not worth the price (too expensive)	6	50.0%
d) Lack of Internet availability or coverage	0	0.0%
e) Do not need to access the Internet from home	4	33.3%
f) Use the Internet at work or at school	0	0.0%
g) Combination [VOLUNTEERED]	0	0.0%
h) Don't know [VOLUNTEERED]	0	0.0%
i) Refused/other [VOLUNTEERED]	1	8.3%

Household Internet Usage and Connection Type

14) When you use the Internet at home, is it primarily to complete a work or school assignment, for recreation, or about equally for work and recreation?

	N	Valid %
a) Complete a work or school assignment	2	2.9%
b) Recreation	37	54.4%
c) About equal work and recreation	27	39.7%
d) Don't know [VOLUNTEERED]	1	1.5%
e) Refused/other [VOLUNTEERED]	1	1.5%

15) Next, I will read you several ways people connect to the Internet from home. Which of these types of connections do you use **most often** to connect to the Internet from your home?

	N	Valid %
a) Dial-up modem	30	45.5%
b) DSL	2	3.0%
c) Cable modem	29	43.9%
d) Fixed wireless	1	1.5%
e) Satellite	1	1.5%
f) Some other type of connection [RECORD RESPONSE]	0	0.0%
g) Don’t know / Refused [VOLUNTEERED]	3	4.5%

Dial-up Connection Detail

16) You indicated that you do not have a high-speed Internet connection at home. Which of the following is the primary reason that you have chosen not to have high-speed Internet access at home? [ROTATE]

	N	Valid %
a) hardware or software problem	0	0.0%
b) Not sure how to use the Internet	0	0.0%
c) High-speed Internet access is not worth the price (too expensive)	15	51.7%
d) Lack of high-speed Internet availability or coverage	4	13.8%
e) Don't need high-speed access to the Internet from home	3	10.3%
f) Use high-speed Internet at work or at school	0	0.0%
g) Combinations [VOLUNTEERED]	3	10.3%
h) Don't know [VOLUNTEERED]	2	6.9%
i) Refused/other [VOLUNTEERED]	2	6.9%

17) [ASK ONLY IF QUESTION 16 = 4] Do you plan on purchasing high-speed Internet access when it becomes available in your area? [SKIP TO QUESTION 20 WHEN COMPLETE]

	N	Valid %
a) Yes	1	20.0%
b) No	2	40.0%
c) Don't know [VOLUNTEERED]	2	40.0%

High-speed Connection Detail

18) When did you have your high-speed Internet connection installed? [RECORD FREE RESPONSE DATE. IF ONLY MONTH AND YEAR ARE GIVEN, SET THE DATE TO THE 1st OF THE MONTH. RECORD IN MM/DD/YYYY FORMAT. RECORD DON'T KNOW = 1/1/1911; REFUSED/OTHER = 2/2/1911]

	N	Valid %
1997	1	3.7%
1998	1	3.7%
1999	2	7.4%
2000	4	14.8%
2001	5	18.5%
2002	13	48.1%
2003	1	3.7%
Don't Know/ Refused [VOLUNTEERED]	7	6.0%

19) [ASK ONLY IF QUESTION 18 IS 9/1/2002 OR LATER] Was your high-speed Internet connection installed on time by the provider?

	N	Valid %
a) Yes	3	100.0%
b) No	0	0.0%

Additional Connection Detail

20) Would you mind telling me about how much you pay, on a monthly basis, for the Internet connection and e-mail service from your home? [RECORD RAW AMOUNT IN DOLLARS AND CENTS. RECORD ALL ANSWERS WITH TWO DECIMAL PLACES. CODE DON'T KNOW = $888.88; REFUSED/OTHER = $999.99]

Type of Connection		Cost					
		.01–14.99	15.00–19.99	20.00–34.99	35.00–49.99	50.0–Highest	Total
Dial-up	Count	11	1	14	0	0	26
	%	42.3%	3.8%	53.8%	0.0%	0.0%	100.0%
Broadband	Count	1	1	5	12	4	23
	%	4.3%	4.3%	21.7%	52.2%	17.4%	100.0%

21) Would you please tell me the name of your Internet service provider at your home? [CODE FREE RESPONSE BASED ON THE OPTIONS IN ALPHABETICAL ORDER BELOW. **DO NOT READ THE LIST OF OPTIONS.** IF RESPONSE IS NOT LISTED USE CODE 19 (OTHER) AND RECORD NAME]

	N	Valid %
a) ACD.net	0	0.0%
b) America OnLine (or AOL)	10	15.4%
c) Arialink	0	0.0%
d) AT&T (or AT&T Broadband, AT&T WorldNet, Comcast)	2	3.1%
e) Charter	25	38.5%
f) CompuServe	0	0.0%
g) Corecomm/Voyager	0	0.0%
h) EarthLink	0	0.0%
i) Juno/NetZero (United Online)	2	3.1%
j) Mercury.net	0	0.0%
k) Millennium (or Millennium Digital)	0	0.0%
l) MSN (or Microsoft Network)	5	7.7%
m) Qwest	0	0.0%
n) RoadRunner	0	0.0%
o) SBC/Prodigy/Yahoo (or Ameritech)	1	1.5%
p) Speednet	3	4.6%
q) TDS Metrocomm	0	0.0%
r) Verizon	0	0.0%
s) Other [See 'Additional Info' for Company Name]	10	15.4%
t) Don't know [VOLUNTEERED]	2	3.1%
u) Refused/other [VOLUNTEERED]	5	7.7%

22) Thinking about the services you receive from your Internet service provider, are you very satisfied, somewhat satisfied, neutral, somewhat unsatisfied, or very unsatisfied with … [ROTATE. CODE VERY SATISFIED = 1, SOMEWHAT SATISFIED = 2, NEUTRAL = 3, SOMEWHAT UNSATISFIED = 4, VERY UNSATISFIED = 5, DON'T KNOW = 6, REFUSED/OTHER = 7]

a. the monthly fee for your Internet connection?

b. the speed of your Internet connection?

c. the service quality of your Internet connection?

d. the customer service at your Internet service provider?

e. your choice of providers (that is, that there are multiple companies competing for your business)?

	Monthly fee for your Internet connection		Speed of your Internet connection		Service quality of your Internet connection		Customer service at your Internet service provider		Your choice of providers	
	N	Valid %	N	Valid %	N	Valid %	N	Valid %	N	Valid %
Very Satisfied	28	44.4%	23	35.9%	33	51.6%	33	51.6%	28	44.4%
Somewhat Satisfied	15	23.8%	21	32.8%	23	35.9%	17	26.6%	13	20.6%
Neutral	8	12.7%	3	4.7%	3	4.7%	5	7.8%	11	17.5%
Somewhat Unsatisfied	6	9.5%	12	18.8%	2	3.1%	1	1.6%	4	6.3%
Very Unsatisfied	4	6.3%	3	4.7%	2	3.1%	2	3.1%	3	4.8%
Don't Know	1	1.6%	1	1.6%	1	1.6%	6	9.4%	4	6.3%
Refused	1	1.6%	1	1.6%	0	0.0%	0	0.0%	0	0.0%

Demographics

To conclude the survey, I just have a few more questions for you.

23) What is your ZIP code? [RECORD ZIP CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999]

24) In what county do you live? [CODE WITH FIPS CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999. VALID RESPONSES ARE MIDLAND, BAY, AND SAGINAW COUNTY]

25) Do you currently have children of school age (K–12) or younger?

	N	Valid %
a) Yes	33	28.7%
b) No	81	70.4%
c) Refused/other [VOLUNTEERED]	1	0.9%

26) In what year were you born? [FREE RESPONSE, RECORD AS FOUR-DIGIT YEAR, CODE REFUSED/OTHER AS 9999]

	N	Valid %
a) >25	8	7.5%
b) 25-34	18	16.8%
c) 35-44	17	15.9%
d) 45-54	18	16.8%
e) 55-64	22	20.6%
f) 65-74	17	15.9%
g) 75+	7	6.5%
h) Refused [VOLUNTEERED]		0.0%

27) What is the highest level of education you have completed?

	N	Valid %
a) Less than high school	21	18.1%
b) High school graduate	28	24.1%
c) Some college or technical degree	42	36.2%
d) College graduate	12	10.3%
e) Postgraduate study or degree	7	6.0%
f) Refused [VOLUNTEERED]	6	5.2%

28) Gender [BY OBSERVATION ONLY. CODE MALE = 1, FEMALE = 2]

	N	Valid %
Male	48	41.7%
Female	67	58.3%
		100%

Additional Info – Other Answers to Question 21

(Some respondents may have more than one provider; provider may be identified by more than one name.)

Response	Frequency
BREFMAN	1
CONCENTRIC	1
HIGH STREAM.NET	1
JOURNEY COMMUNICATION	1
MERIT	1
MICHCOM	1
PEOPLE PC	1
TIGER COMMUNICATIONS	1
TOAST NET	1
VOYAGER	1
XO	1

Midland County Residential Survey Results

[INSTRUCTIONS TO PHONE BANK IN CAPS, BRACKETS]

[INTRODUCTION]

Hello, I'm calling from Public Sector Consultants in Lansing, Michigan. We are conducting a survey in the tri-county area about how residents use information technology in their daily lives, and about the types of Internet connections that people use from their homes. The survey is not being conducted for any candidate, political party, or business.

[IF THE RESPONDENT ASKS FOR MORE INFORMATION ABOUT THE SURVEY SPONSOR: "The survey is being conducted for the LinkMBS Team, an organization that promotes economic development in Midland, Bay, and Saginaw Counties."]

[RANDOM SELECTION OF RESPONDENT AT HOUSEHOLD LEVEL]

Are you 18 years of age or older and a resident of Michigan?

Yes..... Continue
No.....Terminate

Are you a resident of Midland, Bay, and Saginaw County?

Yes..... Continue
No.....Terminate

Before we begin, let me tell you that this interview is completely voluntary. If we come to any question that you don't want to answer, just let me know and we'll go on to the next question. Let me also assure you that all your responses will remain confidential.

1) To begin the survey, would you please tell me how many phone lines you have in your house? Please include all phone, fax, and computer lines, but do *not* include cellular telephones. [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
1	54	73.0%
2	15	20.3%
3	2	2.7%
4	1	1.4%
5	0	0.0%
6+	0	0.0%
Don't know [VOLUNTEERED]	1	1.4%
Refused/Other [VOLUNTEERED]	1	1.4%[28]

Use of the Internet

2) Have you yourself **ever** used the Internet?

	N	Valid %
a) Yes	59	80.8%
b) No	14	19.2%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

[28] Percentages may not = 100% due to rounding.

3) [ASK ONLY IF Q2 = 2] Which of the following reasons best describes why you have not used the Internet? [ROTATE; SKIP TO QUESTION 10 WHEN COMPLETE]

	N	Valid %
a) No access to the Internet	6	42.9%
b) Too complicated/don't understand the Internet	1	7.1%
c) Not worth the time, hassle, or expense	3	21.4%
d) It's difficult to read information on the Internet	3	21.4%
e) Don't know [VOLUNTEERED]	0	0.0%
f) Refused/other [VOLUNTEERED]	1	7.1%

4) Which of the following statements best describes how often you usually use the Internet? Do you usually use the Internet …

	N	Valid %
a) About once a year	3	5.1%
b) At least once a year but less than once a month	3	5.1%
c) At least once a month but less than once a week	9	15.3%
d) At least once a week but less than once a day	10	16.9%
e) At least once a day	34	57.6%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

5) Do regularly use the Internet from somewhere other than your home?

	N	Valid %
a) Yes	26	44.1%
b) No	33	55.9%
c) Don't know [VOLUNTEERED]	0	
d) Refused/other [VOLUNTEERED]	0	

6) Have you **ever** purchased anything over the Internet?

	N	Valid %
Yes	32	54.2%
No	27	45.8%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

7) Have you **ever** used the Internet to trade a stock, pay a bill, or conduct online banking?

	N	Valid %
Yes	19	32.2%
No	40	67.8%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

8) Have you **ever** connected to the Internet **without** using a personal computer? That is, have you ever connected to the Internet using a PDA, cellular phone, other handheld device, or game console?

	N	Valid %
a) Yes	5	8.5%
b) No	54	91.5%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

9) [ASK ONLY IF QUESTION 8 = 1] How often do you connect to the Internet using one of these devices? [READ RESPONSES]

	N	Valid %
a) About once a year	0	0.0%
b) At least once a year but less than once a month	1	20.0%
c) At least once a month but less than once a week	3	60.0%
d) At least once a week but less than once a day	0	0.0%
e) At least once a day	1	20.0%
f) Don't know [VOLUNTEERED]	0	0.0%
g) Refused/other [VOLUNTEERED]	0	0.0%

Household Computers

10) How many computers are currently in use in your household? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	14	19.4%
1	45	62.5%
2	9	12.5%
3	2	2.8%
4	1	1.4%
5	0	0.0%
6	0	0.0%
7	1	1.4%
8	0	0.0%
9	0	0.0%
10	0	0.0%
11	0	0.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused/Other [VOLUNTEERED]	0	0.0%

11) [ASK ONLY IF Q10 = 0] Which of the following statements best describes why you do not have a computer at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
I have no time to use a computer at home	2	14.3%
I can use a computer somewhere else	2	14.3%
I do not want a computer at home	8	57.1%
A home computer is too expensive	2	14.3%
Computers are too hard to learn and use	0	0.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

12) How many computers in your household are connected to the Internet? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	9	15.5%
1	43	74.1%
2	3	5.2%
3	1	1.7%
4	1	1.7%
5	0	0.0%
6	0	0.0%
7	1	1.7%
Don't know [VOLUNTEERED]	0	0.0%
Refused [VOLUNTEERED]	0	0.0%

13) [ASK ONLY IF QUESTION 12 = 0] You indicated that you do not have Internet access at home. Which of the following is the primary reason that you have chosen not to have Internet access at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
A hardware or software problem	1	11.1%
Not sure how to use the Internet	0	0.0%
Internet access is not worth the price (too expensive)	3	33.3%
Lack of Internet availability or coverage	0	0.0%
Do not need to access the Internet from home	2	22.2%
Use the Internet at work or at school	3	33.3%
Combination [VOLUNTEERED]	0	0.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

Household Internet Usage and Connection Type

14) When you use the Internet at home, is it primarily to complete a work or school assignment, for recreation, or about equally for work and recreation?

	N	Valid %
Complete a work or school assignment	4	8.0%
Recreation	24	48.0%
About equal work and recreation	22	44.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

15) Next, I will read you several ways people connect to the Internet from home. Which of these types of connections do you use **most often** to connect to the Internet from your home?

	N	Valid %
Dial-up modem	31	62.0%
DSL	2	4.0%
Cable modem	15	30.0%
Fixed wireless	0	0.0%
Satellite	0	0.0%
Some other type of connection [RECORD RESPONSE]	0	0.0%
Don’t know / Refused [VOLUNTEERED]	2	4.0%

Dial-up Connection Detail

16) You indicated that you do not have a high-speed Internet connection at home. Which of the following is the primary reason that you have chosen not to have high-speed Internet access at home? [ROTATE]

	N	Valid %
A hardware or software problem	1	3.2%
Not sure how to use the Internet	0	0.0%
High-speed Internet access is not worth the price (too expensive)	12	38.7%
Lack of high-speed Internet availability or coverage	3	9.7%
Don't need high-speed access to the Internet from home	9	29.0%
Use high-speed Internet at work or at school	1	3.2%
Combinations [VOLUNTEERED]	3	9.7%
Don't know [VOLUNTEERED]	1	3.2%
Refused/other [VOLUNTEERED]	1	3.2%

17) [ASK ONLY IF QUESTION 16 = 4] Do you plan on purchasing high-speed Internet access when it becomes available in your area? [SKIP TO QUESTION 20 WHEN COMPLETE]

	N	Valid %
Yes	3	100.0%
No	0	0.0%
Don't know [VOLUNTEERED]	0	0.0%

High-speed Connection Detail

18) When did you have your high-speed Internet connection installed? [RECORD FREE RESPONSE DATE. IF ONLY MONTH AND YEAR ARE GIVEN, SET THE DATE TO THE 1st OF THE MONTH. RECORD IN MM/DD/YYYY FORMAT. RECORD DON'T KNOW = 1/1/1911; REFUSED/OTHER = 2/2/1911]

	N	Valid %
1997	0	0.0%
1998	0	0.0%
1999	0	0.0%
2000	0	0.0%
2001	4	23.5%
2002	7	41.2%
2003	1	5.8%
Don't know/ refused [VOLUNTEERED]	5	29.4%

19) [ASK ONLY IF QUESTION 18 IS 9/1/2002 OR LATER] Was your high-speed Internet connection installed on time by the provider?

	N	Valid %
Yes	3	100.0%
No	0	0.0%

Additional Connection Detail

20) Would you mind telling me about how much you pay, on a monthly basis, for the Internet connection and e-mail service from your home? [RECORD RAW AMOUNT IN DOLLARS AND CENTS. RECORD ALL ANSWERS WITH TWO DECIMAL PLACES. CODE DON'T KNOW = $888.88; REFUSED/OTHER = $999.99]

Type of Connection		Cost					
		.01 – 14.99	15.00 – 19.99	20.00 – 34.99	35.00 – 49.99	50.0 – Highest	Total
Dial-up	Count	5	4	12	1	0	22
	%	22.7%	18.2%	54.5%	4.5%	0.0%	100.0%
Broadband	Count	0	1	3	4	1	9
	%	0.0%	11.1%	33.3%	44.4%	11.1%	100.0%

21) Would you please tell me the name of your Internet service provider at your home? [CODE FREE RESPONSE BASED ON THE OPTIONS IN ALPHABETICAL ORDER BELOW. **DO NOT READ THE LIST OF OPTIONS.** IF RESPONSE IS NOT LISTED USE CODE 19 (OTHER) AND RECORD NAME]

	N	Valid %

ACD.net	0	0.0%
America OnLine (or AOL)	16	33.3%
Arialink	0	0.0%
AT&T (or AT&T Broadband, AT&T WorldNet, Comcast)	0	0.0%
Charter	12	25.0%
CompuServe	0	0.0%
Corecomm/Voyager	0	0.0%
EarthLink	0	0.0%
Juno/NetZero (United Online)	4	8.3%
Mercury.net	3	6.3%
Millennium (or Millennium Digital)	0	0.0%
MSN (or Microsoft Network)	1	2.1%
Qwest	0	0.0%
RoadRunner	0	0.0%
SBC/Prodigy/Yahoo (or Ameritech)	2	4.2%
Speednet	1	2.1%
TDS Metrocomm	0	0.0%
Verizon	0	0.0%
Other [See 'Additional Info' for Company Name]	5	10.4%
Don't know [VOLUNTEERED]	2	4.2%
Refused/other [VOLUNTEERED]	2	4.2%

22) Thinking about the services you receive from your Internet service provider, are you very satisfied, somewhat satisfied, neutral, somewhat unsatisfied, or very unsatisfied with … [ROTATE. CODE VERY SATISFIED = 1, SOMEWHAT SATISFIED = 2, NEUTRAL = 3, SOMEWHAT UNSATISFIED = 4, VERY UNSATISFIED = 5, DON'T KNOW = 6, REFUSED/OTHER = 7]

a) the monthly fee for your Internet connection?

b) the speed of your Internet connection?

c) the service quality of your Internet connection?

d) the customer service at your Internet service provider?

e) your choice of providers (that is, that there are multiple companies competing for your business)?

	Monthly fee for your Internet connection		Speed of your Internet connection		Service quality of your Internet connection		Customer service at your Internet service provider		Your choice of providers	
	N	Valid %	N	Valid %	N	Valid %	N	Valid %	N	Valid %
Very Satisfied	20	42.6%	15	31.3%	24	50.0%	26	54.2%	19	39.6%
Somewhat Satisfied	14	29.8%	23	47.9%	16	33.3%	13	27.1%	10	20.8%
Neutral	4	8.5%	2	4.2%	5	10.4%	4	8.3%	8	16.7%
Somewhat Unsatisfied	3	6.4%	5	10.4%	2	4.2%	1	2.1%	2	4.2%
Very Unsatisfied	2	4.3%	2	4.2%	1	2.1%	0	0.0%	2	4.2%
Don't Know [VOLUNTEERED]	3	6.4%	1	2.1%	0	0.0%	4	8.3%	7	14.6%
Refused [VOLUNTEERED]	1	2.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Demographics

To conclude the survey, I just have a few more questions for you.

23) What is your ZIP code? [RECORD ZIP CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999]

24) In what county do you live? [CODE WITH FIPS CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999. VALID RESPONSES ARE MIDLAND, BAY, AND SAGINAW COUNTY]

25) Do you currently have children of school age (K–12) or younger?

	N	Valid %
Yes	31	43.1%
No	40	55.6%
Refused/other [VOLUNTEERED]	1	1.4%

26) In what year were you born? [FREE RESPONSE, RECORD AS FOUR-DIGIT YEAR, CODE REFUSED/OTHER AS 9999]

	N	Valid %
>25	6	8.6%
25–34	16	22.9%
35–44	17	24.3%
45–54	8	11.4%
55–64	13	18.6%
65–74	4	5.7%
75+	6	8.6%
Refused [VOLUNTEERED]	0	0.0%

27) What is the highest level of education you have completed?

	N	Valid %
Less than high school	7	9.5%
High school graduate	28	37.8%
Some college or technical degree	17	23.0%
College graduate	12	16.2%
Postgraduate study or degree	9	12.2%
Refused [VOLUNTEERED]	1	1.4%

29) Gender [BY OBSERVATION ONLY. CODE MALE = 1, FEMALE = 2]

	N	Valid %
Male	36	50.0%
Female	36	50.0%
	72	100.0%

Additional Information – Other Answers to Question 21

(Some respondents may have more than one provider.)

Response	Frequency
CENTRAL MICHIGAN UNIVERSITY	1
COGNISURF	1
FAMILY VIDEO	1
FAMILY VIDEO (FAM VID)	1
MINDNET	1
QUIK	1
WALMART CONNECT	1

Saginaw County Residential Survey Results

[INSTRUCTIONS TO PHONE BANK IN CAPS, BRACKETS]

[INTRODUCTION]

Hello, I'm calling from Public Sector Consultants in Lansing, Michigan. We are conducting a survey in the tri-county area about how residents use information technology in their daily lives, and about the types of Internet connections that people use from their homes. The survey is not being conducted for any candidate, political party, or business.

[IF THE RESPONDENT ASKS FOR MORE INFORMATION ABOUT THE SURVEY SPONSOR: "The survey is being conducted for the LinkMBS Team, an organization that promotes economic development in Midland, Bay, and Saginaw Counties."]

[RANDOM SELECTION OF RESPONDENT AT HOUSEHOLD LEVEL]

Are you 18 years of age or older and a resident of Michigan?

Yes ..... Continue
No ..... Terminate

Are you a resident of Midland, Bay, and Saginaw County?

Yes ..... Continue
No ..... Terminate

Before we begin, let me tell you that this interview is completely voluntary. If we come to any question that you don't want to answer, just let me know and we'll go on to the next question. Let me also assure you that all your responses will remain confidential.

1) To begin the survey, would you please tell me how many phone lines you have in your house? Please include all phone, fax, and computer lines, but do *not* include cellular telephones. [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
1	144	67.6%
2	43	20.2%
3	13	6.1%
4	5	2.3%
5	5	2.3%
6+	2	1.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	1	0.0%[29]

Use of the Internet

2) Have you yourself **ever** used the Internet?

	N	Valid %
a) Yes	122	57.5%
b) No	90	42.5%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

[29] Percentages may not = 100% due to rounding.

3) [ASK ONLY IF Q2 = 2] Which of the following reasons best describes why you have not used the Internet? [ROTATE; SKIP TO QUESTION 10 WHEN COMPLETE]

	N	Valid %
No access to the Internet	18	19.8%
Too complicated/don't understand the Internet	9	20.9%
Not worth the time, hassle, or expense	30	33.0%
It's difficult to read information on the Internet	8	8.8%
Don't know [VOLUNTEERED]	9	9.9%
Refused/other [VOLUNTEERED]	7	7.7%

4) Which of the following statements best describes how often you usually use the Internet? Do you usually use the Internet …

	N	Valid %
About once a year	1	0.8%
At least once a year but less than once a month	11	9.0%
At least once a month but less than once a week	17	13.9%
At least once a week but less than once a day	19	15.6%
At least once a day	73	59.8%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	1	0.8%

5) Do regularly use the Internet from somewhere other than your home?

	N	Valid %
a) Yes	58	47.5%
b) No	64	52.5%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

6) Have you **ever** purchased anything over the Internet?

	N	Valid %
a) Yes	75	61.5%
b) No	47	38.5%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

7) Have you **ever** used the Internet to trade a stock, pay a bill, or conduct online banking?

	N	Valid %
a) Yes	46	37.7%
b) No	76	62.3%
c) Don't know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

8) Have you **ever** connected to the Internet **without** using a personal computer? That is, have you ever connected to the Internet using a PDA, cellular phone, other handheld device, or game console?

	N	Valid %
a) Yes	13	10.7%
b) No	109	89.3%
c) Don’t know [VOLUNTEERED]	0	0.0%
d) Refused/other [VOLUNTEERED]	0	0.0%

9) [ASK ONLY IF QUESTION 8 = 1] How often do you connect to the Internet using one of these devices? [READ RESPONSES]

	N	Valid %
About once a year	2	15.4%
At least once a year but less than once a month	2	15.4%
At least once a month but less than once a week	5	38.5%
At least once a week but less than once a day	1	7.7%
At least once a day	3	23.1%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	0	0.0%

Household Computers

10) How many computers are currently in use in your household? [RECORD RAW NUMBER. CODE DON'T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	72	33.8%
1	95	44.6%
2	32	15.0%
3	10	4.7%
4	3	1.4%
5	0	0.0%
6	0	0.0%
7	0	0.0%
8	0	0.0%
9	0	0.0%
10	0	0.0%
11	0	0.0%
11	0	0.0%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other[VOLUNTEERED]	1	0.5%

11) [ASK ONLY IF Q10 = 0] Which of the following statements best describes why you do not have a computer at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
I have no time to use a computer at home	2	2.7%
I can use a computer somewhere else	9	12.3%
I do not want a computer at home	29	39.7%
A home computer is too expensive	20	27.4%
Computers are too hard to learn and use	6	8.2%
Don’t know [VOLUNTEERED]	3	4.1%
Refused/other [VOLUNTEERED]	4	5.5%

12) How many computers in your household are connected to the Internet? [RECORD RAW NUMBER. CODE DON’T KNOW = 888; REFUSED/OTHER = 999]

	N	Valid %
0	25	17.7%
1	88	62.4%
2	18	12.8%
3	6	4.3%
4	2	1.4%
5	0	0.0%
6	0	0.0%
Don’t know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	2	1.4%

13) ASK ONLY IF QUESTION 12 = 0] You indicated that you do not have Internet access at home. Which of the following is the primary reason that you have chosen not to have Internet access at home? [ROTATE. SKIP TO QUESTION 23 WHEN COMPLETE]

	N	Valid %
A hardware or software problem	1	4.2%
Not sure how to use the Internet	3	12.5%
Internet access is not worth the price (too expensive)	6	25.0%
Lack of Internet availability or coverage	1	4.2%
Do not need to access the Internet from home	8	33.3%
Use the Internet at work or at school	2	8.3%
Combination [VOLUNTEERED]	2	8.3%
Don't know [VOLUNTEERED]	1	4.2%
Refused/other [VOLUNTEERED]	0	0.0%

Household Internet Usage and Connection Type

14) When you use the Internet at home, is it primarily to complete a work or school assignment, for recreation, or about equally for work and recreation?

	N	Valid %
Complete a work or school assignment	10	8.8%
Recreation	46	40.4%
About equal work and recreation	50	43.9%
Don't know [VOLUNTEERED]	2	1.8%
Refused/other [VOLUNTEERED]	6	5.3%

15) Next, I will read you several ways people connect to the Internet from home. Which of these types of connections do you use **most often** to connect to the Internet from your home?

	N	Valid %
Dial-up modem	67	58.3%
DSL	7	6.1%
Cable modem	24	20.9%
Fixed wireless	0	0.0%
Satellite	3	2.6%
Some other type of connection [RECORD RESPONSE]	0	0.0%
Don’t know /refused [VOLUNTEERED]	14	12.2%

Dial-up Connection Detail

16) You indicated that you do not have a high-speed Internet connection at home. Which of the following is the primary reason that you have chosen not to have high-speed Internet access at home? [ROTATE]

	N	Valid %
A hardware or software problem	3	4.5%
Not sure how to use the Internet	0	0.0%
High-speed Internet access is not worth the price (too expensive)	23	34.3%
Lack of high-speed Internet availability or coverage	8	11.9%
Don't need high-speed access to the Internet from home	15	22.4%
Use high-speed Internet at work or at school	4	6.0%
Combinations [VOLUNTEERED]	5	7.5%
Don't know [VOLUNTEERED]	5	7.5%
Refused/other [VOLUNTEERED]	4	6.0%

17) [ASK ONLY IF QUESTION 16 = 4] Do you plan on purchasing high-speed Internet access when it becomes available in your area? [SKIP TO QUESTION 20 WHEN COMPLETE]

	N	Valid %
Yes	6	85.7%
No	1	14.3%
Don't know [VOLUNTEERED]	0	0.0%

High-speed Connection Detail

18) When did you have your high-speed Internet connection installed? [RECORD FREE RESPONSE DATE. IF ONLY MONTH AND YEAR ARE GIVEN, SET THE DATE TO THE 1st OF THE MONTH. RECORD IN MM/DD/YYYY FORMAT. RECORD DON'T KNOW = 1/1/1911; REFUSED/OTHER = 2/2/1911]

	N	Valid %
1997	0	0.0%
1998	0	0.0%
1999	0	0.0%
2000	1	2.9%
2001	8	23.5%
2002	16	47.0%
2003	5	14.7%
Don't know/refused [VOLUNTEERED]	4	11.7%

19) [ASK ONLY IF QUESTION 18 IS 9/1/2002 OR LATER] Was your high-speed Internet connection installed on time by the provider?

	N	Valid %
Yes	7	100.0%
No	0	0.0%

Additional Connection Detail

20) Would you mind telling me about how much you pay, on a monthly basis, for the Internet connection and e-mail service from your home? [RECORD RAW AMOUNT IN DOLLARS AND CENTS. RECORD ALL ANSWERS WITH TWO DECIMAL PLACES. CODE DON'T KNOW = $888.88; REFUSED/OTHER = $999.99]

Type of Connection		Cost					
		.01–14.99	15.00–19.99	20.00–34.99	35.00–49.99	50.0–Highest	Total
Dial-up	Count	19	9	27	0	1	56
	%	33.9%	16.1%	48.2%	0.0%	1.8%	100.0%
Broadband	Count	0	1	8	10	5	24
	%	0.0%	4.2%	33.3%	41.7%	20.8%	100.0%

21) Would you please tell me the name of your Internet service provider at your home? [CODE FREE RESPONSE BASED ON THE OPTIONS IN ALPHABETICAL ORDER BELOW. **DO NOT READ THE LIST OF OPTIONS.** IF RESPONSE IS NOT LISTED USE CODE 19 (OTHER) AND RECORD NAME]

	N	Valid %

ACD.net	0	0.0%
America OnLine (or AOL)	27	27.0%
Arialink	0	0.0%
AT&T (or AT&T Broadband, AT&T WorldNet, Comcast)	5	5.0%
Charter	21	21.0%
CompuServe	2	2.0%
Corecomm/Voyager	0	0.0%
EarthLink	0	0.0%
Juno/NetZero (United Online)	3	3.0%
Mercury.net	0	0.0%
Millennium (or Millennium Digital)	0	0.0%
MSN (or Microsoft Network)	8	8.0%
Qwest	0	0.0%
RoadRunner	0	0.0%
SBC/Prodigy/Yahoo (or Ameritech)	8	8.0%
Speednet	1	1.0%
TDS Metrocomm	0	0.0%
Verizon	0	0.0%
Other [See Additional Info for Company Name]	18	18.0%
Don’t know [VOLUNTEERED]	5	5.0%
Refused/other [VOLUNTEERED]	2	2.0%

22) Thinking about the services you receive from your Internet service provider, are you very satisfied, somewhat satisfied, neutral, somewhat unsatisfied, or very unsatisfied with … [ROTATE. CODE VERY SATISFIED = 1, SOMEWHAT SATISFIED = 2, NEUTRAL = 3, SOMEWHAT UNSATISFIED = 4, VERY UNSATISFIED = 5, DON'T KNOW = 6, REFUSED/OTHER = 7].

a) the monthly fee for your Internet connection?

b) the speed of your Internet connection?

c) the service quality of your Internet connection?

d) the customer service at your Internet service provider?

e) your choice of providers (that is, that there are multiple companies competing for your business)?

	Monthly fee for your Internet connection		Speed of your Internet connection		Service quality of your Internet connection		Customer service at your Internet service provider		Your choice of providers	
	N	Valid %	N	Valid %	N	Valid %	N	Valid %	N	Valid %
Very Satisfied	39	38.6%	23	22.8%	35	34.7%	45	45.0%	35	34.7%
Somewhat Satisfied	27	26.7%	36	35.6%	48	47.5%	37	37.0%	30	29.7%
Neutral	10	9.9%	10	9.9%	9	8.9%	9	9.0%	14	13.9%
Somewhat Unsatisfied	9	8.9%	17	16.8%	6	5.9%	2	2.0%	6	5.9%
Very Unsatisfied	6	5.9%	8	7.9%	0	0.0%	2	2.0%	3	3.0%
Don't Know [VOLUNTEERED]	9	8.9%	7	6.9%	3	3.0%	5	5.0%	13	12.9%
Refused [VOLUNTEERED]	1	1.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Demographics

To conclude the survey, I just have a few more questions for you.

23) What is your ZIP code? [RECORD ZIP CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999]

24) In what county do you live? [CODE WITH FIPS CODE. CODE DON'T KNOW = 88888, REFUSED/OTHER = 99999. VALID RESPONSES ARE MIDLAND, BAY, AND SAGINAW COUNTY]

25) Do you currently have children of school age (K–12) or younger?

	N	Valid %
Yes	59	28.0%
No	148	70.1%
Refused/other [VOLUNTEERED]	4	1.9%

26) In what year were you born? [FREE RESPONSE, RECORD AS FOUR-DIGIT YEAR, CODE REFUSED/OTHER AS 9999]

	N	Valid %
>25	18	9.3%
25–34	21	10.8%
35–44	34	17.5%
45–54	42	21.6%
55-64	35	18.0%
65–74	23	11.9%
75+	21	10.8%
Don’t know [VOLUNTEERED]	0	0.0%
Refused/ other [VOLUNTEERED]	0	0.0%

27) What is the highest level of education you have completed?

	N	Valid %
Less than high school	37	17.5%
High school graduate	81	38.2%
Some college or technical degree	58	27.4%
College graduate	23	10.8%
Postgraduate study or degree	10	4.7%
Don't know [VOLUNTEERED]	0	0.0%
Refused/other [VOLUNTEERED]	3	0.0%

28) Gender [BY OBSERVATION ONLY. CODE MALE = 1, FEMALE = 2]

	N	Valid %
a) Male	110	52.1%
b) Female	101	47.9%
	211	100%

Additional Information - Other Answers to Question 21

(Some respondents may have more than one provider.)

Response	Frequency
CENTURY	1
CENTURY TEL	5
CENTURYTEL	1
CENTURYTELL	1
CHARTER	1
DIAMOND	2
DIAMONDS COMMUNICATION	1
EDZONE	1
FAMILY EXPLORER	1
FAMILY VIDEO	1
MICHNET	1
TURBO NET	1
USOL	1
X AND O COMMUNICATIONS	1
XO COMMUNICATIONS OR CONCENTRIC.NET	1

Appendix B - Background Research

All of the following documentation is accessible from the CD-ROM that contains the Link MBS final deliverable document. The following list encompasses articles and postings found through written publications and/or on various websites.

1. Legislature of the State of Michigan: *Michigan Telecommunications Act* – 11/21/2001
2. FCC Website: *FCC Consumer Facts* – 02/12/2002
3. Brookings Institution Report: *What the IT Revolution Means for Regional Economic Development* – 02/2003
4. Cnn.com: *Schools look to Wi-Fi to boost learning* – 04/22/2003
5. e.prairie.com: *Skirting Usual Suspects, Chicago Jumpstarts Wireless Communities* - 4/24/2003
6. The National Journal: *Power Lines To The People* – 05/03/2003
7. wired.com: *Verizon Launches Wi-Fi Hot Spots* – 05/13/2003
8. Wired.com: *Tiny Seaside Town Goes Wi-Fi* - 05/20/2003
9. BusinessWeek Online: *Is a Wi-Fi Bubble Building?* - 05/22/2003
10. The Chicago Sun-Times: *SBC to expand broadband here* - 05/23/2003
11. wired.com: *Trailer Parks Convert to Wi-Fi* – 05/27/2003
12. e.Prairie.com: How *to Snag a Piece of the Proliferating Wi-Fi Pie* – 05/29/2003
13. The Detroit Free Press: Wireless learning helps kids be better students – 06/02/2003
14. Michigan Public Service Commission: *Report on the Status of Competition in Telecommunication Service in Michigan* – 06/2003
15. The McKinsey Quarterly: *Making sense of broadband* – 06/03/2003
16. e.Prairie.com: *Public, Private Partnerships Vital For Widespread Wireless Adoption* – 06/05/2003
17. e.Prairie.com: *Regional Bells Vow to Fatten Fiber Networks* – 06/05/2003
18. The Chicago Tribune: *Wireless Internet with a few strings attached* – 06/05/2003

19. Wired.com: *FCC: More Spectrum for Wireless?* – 06/10/2003

20. The Chicago-Sun Times: *Injunction ends winning streak for SBC in Illinois* – 06/11/2003

21. The Chicago Tribune: *SBC's rivals strike pay dirt with legal play* – 06/11/2003

22. ePrairie.com: *Chicago Strives to Get Wi-Fi Right, Not First* – 06/12/2003

23. Triennial Review Implementation Process Task Force of the National Association of Regulatory Utility Commissions (NARUC), http://www.naruc.org/programs/trip/tro_summary.pdf. Summary of the FCC Triennial Report & Order, August 23, 2003

24. Rural Utility Service Broadband Loan and Loan Guarantee Program see http://www.usda.gov/rus/telecom/broadband.htm

25. Rural Broadband Coalition see www.ruralbroadbandcoalition.net

26. Pew Internet & American Life Project, www.pewinternet.org

27. Michigan Economic Development Corporation – Smartzones Summary, www.medc.michigan/orgsmartzones/szsum

28. Michigan Broadband Development Authority, www.broadbandauthority.org

29. FCC Broadband Information page, www.fcc.gov/broadband.html

30. Intelligent Community forum of World Teleport Organization, www.intelligentcommunity.org

31. Bay-Arenac ISD, www.baisd.net/internet.htm

32. Midland County Training website, www.mitechplus.org

33. Michigan's Online Local Government Report, www.cyber-state.org

34. Internet 2 Information, www.internet2.edu

35. National Science Foundation Cyber Infrastructure Report www.cise.nsf.gov/evnt/reports/toc.htm

36. One Gigabit or Bust, A Broadband Vision for California Gartner Report http://www.cenic.org/NGI/Gartner/index.htm

37. Public Act 281 of 1986 regarding MEDC Smartzones, http://www.michiganlegislature.org

38. Safiya Mosley, IT Curriculum Professional Development Specialist, Saginaw Public Schools, regarding the two-way video conferencing and video streaming project between the Saginaw Public Schools and Carnegie Mellon University, Kansas State and the University of North Carolina; telephone 989-399-6763.

39. Columbus, Ohio Wi-Fi HotSpot in the Easton Town Center
http://www.hotspotsnews.com/publications/page207-611854.asp

Appendix C – Glossary of Terms

This glossary was distributed by American Megacom, Inc. for use in the LinkMichigan Regional Planning Grant Process.

802.11	Refers to a family of specifications developed by the IEEE for wireless LAN technology. 802.11 specifies an over-the-air interface between a wireless client and a base station or between two wireless clients.
Access Point (AP)	A hardware device that acts as a communication hub for users of a wireless device to connect to a wired local area network. Provides a bridge between Ethernet wired LANs and the wireless network. Access Points are the connectivity point between Ethernet wired networks and devices equipped with a wireless LAN adapter card.
Antenna	The equipment that sends and/or receives signals from a satellite.
Asymmetric Digital Subscriber Line (ADSL)	A new technology that allows more data to be sent over existing copper telephone lines. ADSL supports data rates of 1.5 to 9 Mbps when receiving data (known as the *downstream* rate) and from 16 to 640 Kbps when sending data (known as the *upstream* rate).
***Asynchronous Transfer* Mode (ATM)**	A high-speed telecommunication technology with a unique multiplexing and switching method utilizing fixed-length cells of 53 octets to support multiple types of traffic.
Broadband	Lines with information carrying capability in excess of 200 Kbps in both directions simultaneously.
Cable Modem	Data service over a cable network. Internet access through your cable TV network at more than one million bits per second.
Cable Modem Termination System (CMTS)	A system of devices located in the cable head-end that allows cable television operators to offer high-speed Internet access to home computers. The CMTS sends and receives digital cable modem signals on a cable network, receiving signals sent upstream from a user's cable modem, converting the signals into IP packets and routing the signals to an Internet Service Provider for connection to the Internet.

Carriers/providers	A company that provides broadband communications transmission services.
Channel	The path for electronic communications between two facilities.
Competitive Local Exchange Carriers (CLECs)	Hardwired telecommunication carriers/providers that have entered the market since divestiture.
Customer Premises Equipment (CPE)	Communications equipment that resides on the customer's premises. Can include such equipment as wireless antenna, transceiver, and broadband modem.
Digital Subscriber Line (DSL)	A generic name for a family of digital lines - ADSL (Asymmetric Digital Subscriber Line), HDSL (High Bit Rate Digital Subscriber Line) and SDSL (Single Pair Symmetrical Services). DSL lines typically operate on one pair of wires like a normal analog phone line.
Digital Subscriber Line Access Multiplexer (DSLAM)	A device used in a variety of DSL technologies, a DSLAM serves as the point of interface between a number of subscriber premises and the carrier network. The DSLAM generally is positioned in the carrier's Central Office.
Direct-Sequence Spread Spectrum (DSSS)	A transmission technology used in LAWN (local area wireless network) transmissions where a data signal at the sending station is combined with a higher data rate bit sequence, or chipping code, that divides the user data according to a spreading ratio.
Distribution Hub	The hub is the interchange point between the regional fiber network and the cable plant. At the hub, the cable modem termination system (CMTS) coverts data from a wide area network (WAN) protocol into digital signals that are modulated for transmission over HFC plant, and then demodulated by the cable modem in the home or business.
Fiber Node	The location where the fiber optic transport cable is converted to the coaxial cable, which runs to the residence and/or business site.
Fixed Wireless	A network service in which wireless devices or systems are situated in fixed, stationary locations (such as an office or home) and data is transmitted via large antennas (as opposed to wireless mobile devices, such as cell phones or PDAs).
Fractional T1	A digital transmission system standardized by AT&T for short and medium distance transmission. The user can lease access to specified numbers of the 24

	channels supported by T1 technology. Typical increments include: 1 channel, 64 Kbps; 2 channels, 128 Kbps; 3 channels, 384 Kbps and 6 channels, 768 Kbps.
Frame Relay	An interface protocol for statistically multiplexed packet-switched data communications in which transmission rates are usually between 56 kb/s and 1.544 Mb/s (the T-1 rate).
Frequency-Hopping Spread Spectrum (FHSS)	A transmission technology used in LAWN (local area wireless network) transmissions where the data signal is modulated with a narrowband carrier signal that "hops" in a random but predictable sequence from frequency to frequency as a function of time over a wide band of frequencies.
Geosynchronous	Refers to the orbit in which the speed of a satellite's orbit is synchronized with the speed of the earth's rotation so that they are always positioned above the same spot on the earth. For this to occur, the satellite must be in orbit 22,300 miles over the equator.
High bit rate Digital Subscriber Line (HDSL)	HDSL provides for sending and receiving high-speed symmetrical data streams over a single pair of copper wires at rates between 192 kbps and 2.31 Mbps. HDSL was developed to incorporate the features of other DSL technologies, such as ADSL and SDSL and will transport T1, E1, ISDN, ATM and IP signals.
IDSN Digital Subscriber Line (ISDL)	Provides DSL technology over existing ISDN lines. Even though the transfer rates for IDSL are about the same as ISDN (144kbps v. 128kbps), and IDSL circuits typically only carry data (not voice), the major benefits of switching to IDSL from ISDN are always-on connections, thus eliminating call setup delays; flat rate billing, instead of per minute fees; and transmission of data over the data network, rather than the PSTN.
Incumbent Local Exchange Carriers (ILECs)	Companies that provided local telephone services before divestiture.

Integrated Services Digital Network (ISDN)	An international standard that provides end-to-end digital connectivity to support a wide range of voice, data, and video services. It uses a single communications channel for all forms of information transfer.
Instructional Television Fixed Service (ITFS)	Microwave-based, high frequency television used in educational program delivery.
Inter-exchange Carriers (IXCs)	Long distance carriers that provide services between Local Access and Transport Areas (LATA).
Line of Sight (LOS)	A clear and unobstructed path between an access point and a customer antenna.
Local Multipoint Distribution Service (LMDS)	A fixed wireless technology that operates in the 28 GHz band and offers line-of-sight coverage over distances up to 3-5 kilometers. It can deliver data and telephony services to 80,000 customers from a single node.
Multichannel Multipoint Distribution Service (MMDS)	A wireless method of remotely sending conventional cable TV service to rural areas or over long distances using microwave radio frequencies.
NPA-NXX	The first six digits of a North American telephone number; the area code and exchange.
Point of Presence (POP)	A telecommunication center and switching facility within a Local Access and Transport Area (LATA) at which a carrier establishes itself for the purpose of obtaining LATA and internet access and to which the local exchange carrier provides access services.

Radio Frequency (RF)	Any frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space. Many wireless technologies are based on RF field propagation.
Regional Cable Headend	Serves as the local data network operations center. A carrier-class IP switch or router interfaces with a backbone data network offering connectivity to remote content servers, as well as the global Internet. Content and application servers are typically at the regional cable headend, as are network management and operations support systems.
Resellers	A company that redistributes the services of a commercial carrier and retails the services to the public.
Satellite	A telecommunications service provided via one or more satellite relays and their associated uplinks and downlinks
Satellite Hub	The central earth station satellite transmission facility that is the focal point for communicating to remote locations within a satellite communications network.
Symmetric Digital Subscriber Line (SDSL)	A new technology that allows more data to be sent over existing copper telephone lines. SDSL supports data rates up to 3 Mbps and works by sending digital pulses in the high-frequency area of telephone wires. Since these high frequencies are not used by normal voice communications, SDSL can operate simultaneously with voice connections over the same wires.
Synchronous Optical NETwork (Sonet)	A family of fiber optic transmission rates from 51.84 million bits per second to 39.812 gigabits per second, created to provide the flexibility needed to transport many digital signals with different capacities, and to provide a design standard for manufacturers.
T1	A digital transmission system standardized by AT&T for short and medium distance transmission. Total bit rate 1.544 Mbps on 24 channels.

T3	A digital transmission system standardized by AT&T for short and medium distance transmission. Total bit rate 44.736 Mbps on 672 channels.
Uplink	The transmission of information from an earth station to a geostationary communications satellite.
Wireless Fidelity (Wi-Fi)	Another name for IEEE 802.11b. Products certified as Wi-Fi by WECA (Wireless Ethernet Compatibility Alliance) are interoperable with each other even if they are from different manufacturers. A user with a Wi-Fi product can use any brand of access point with any other brand of client hardware that is built to the Wi-Fi standard.
Wireless Internet Service Provider (WISP)	A provider of Internet service using fixed wireless technology.
WLL (wireless local loop)	A term used to encompass all of the equipment used in a fixed wireless network.

Appendix D – Town Hall Meeting Notes

Overview

A series of town hall meetings were conducted in April in each of the respective counties. Meetings were held in Midland on the 15th and in Coleman on the 22nd of April. Saginaw's Town Hall Meetings took place on the 14th in Bridgeport, and on the 16th in Saginaw. A business forum was held in Bay City on March 19th, and Town Hall Meeting was held on April 15th.

108 people attended five Town Hall meetings in the month of April 2003. These meetings uncovered a variety of frustrations that many businesses and residents had with regards to high-speed broadband service.

In general, there was frustration because it was so difficult to determine where broadband was available. While some rural residents reported that they had DSL, most of the rural residents seemed to feel left out in the cold. This was especially true in the area of Freeland, West Midland and Hemlock. There was also a general perception that broadband service was questionable north of the Midland Mall. In Frankenmuth, broadband was indeed available; however the residents participating in the Town Hall meeting were unaware of it. This situation was echoed in the meeting in Bridgeport as well.

On the business side, most everyone recognized the importance of broadband. One businessperson attending the Town Hall meeting in

Coleman said “without broadband, I will be forced to move my business.” A realtor attending the Midland Town Hall meeting reported that it was now mandatory to know and advise potential homebuyers with regards to broadband availability. This development makes it even more important that broadband providers make their service areas and prices readily available and easy to understand.

Additional advice for broadband providers came from the Town Hall Meeting in Bay City; “providers need to get input from economic developers on where they put their splice points” said one such local policy maker. Referring to fiber optic lines, this advice begs for more coordination between fiber optic providers and economic developers.

Finally, educational training opportunities, which can arise from video conferencing, were discussed in Bay City. Beth McQueen, from the Bay County Public Libraries, expressed the need for more fiber optics and high-speed broadband so that more locations throughout Bay County can receive video conferencing. Ms. McQueen suggested that residents would benefit from videoconferencing seminars, training sessions and virtual field trips. Ms. McQueen had taken a virtual field trip to the Library of Congress and could see the educational value and potential this technology offered. She suggested that a virtual field trip that allowed students and adults to interact with Authors would be of great interest and value.

Overall, the fact that over one hundred residents turned out for these Town Hall meetings is an indication that people in the LinkMBS region are very much interested in Broadband availability and the Internet in general. Many contacts were made, much information was shared and these forums proved to be a valuable exchange of information. It is our opinion that residents would like more of these gatherings to occur in the future.

Candlelite Banquet Center Town Hall Meeting Details

Bridgeport, MI - April 14, 2003 – 6:00 P.M.

9 attendees

Meeting Highlights & Points of Concern:

- All 9 of the attendees have high-speed access at work.
- 6 of the attendees have high-speed access at home.
- Cost is the primary concern for non-broadband users at home.
- Local students do use email and Internet technologies for communication with teachers.
- All attendees are satisfied with Internet technologies currently available at their offices.
- Demand for electronic delivery of documents is driving technology upgrades and advancements.
- Information on broadband availability is difficult to obtain.
- Definitive answers on when broadband will be available in underserved communities are not available.
- It would be nice if the private sector brought broadband into underserved communities, but if that doesn't happen, local government should play a financial role in doing so.
- The consensus was that if local government pays for infrastructure, the private industries that profit from the infrastructure need to pay that "debt" back to the municipalities.

Ashman Court Hotel Town Hall Meeting Details

Midland, MI - April 15, 2003 - 8:00 A.M.

32 Attendees

Meeting Highlights & Points of Concern:

- Prices for Internet connections are too high.
- The rural area residents in attendance described themselves as satisfied with DSL service.
- Most participants have cable modem access.
- A few participants have DSL access - all received within the last 12 months.
- Two participants have Fixed Wireless access.
- One participant has satellite access.
- Over half of the participants did their own installation.
- 6 current high-speed subscribers said they need/want faster Internet access.
- Approximately 20 people stated that they have used the Internet to conduct a financial transaction, or to download music.
- 20 people stated that they have more than 1 PC connected at home.
- 5 people stated that they have a game device hooked up at home.
- One rural resident, 2 miles off of M47, complained that they used Wireless and Satellite but that both provided spotty service.

- Another resident, 5 miles off of Midland Rd., said that he wasn't willing to pay the rates charged for high-speed.
- An employee at Dow Corning suggested that they have and are happy with Dial-up access, and that DSL access was not an option for him. Also, there is a lack of competition in the Freeland area; lack of need for seniors, e.g. his mother doesn't need it, unless the price point came down substantially.
- Almost everyone who had cable modem access stated that they upgraded from Dial-up within the last 2 years.
- There was a complaint about Charter's access being too slow.
- Residential Uses include: submitting homework for college, research and for teachers downloading lesson plans.
- One member of the group who was unemployed said that cable modem rates were simply too high.
- One K-12 employee responded that seniors are forced to drop or not subscribe to high-speed Internet access because the rates are too high for fixed/ltd income residents; ALSO they use Merit, that its reliable because they pay for that quality of service; ALSO didn't understand why the SBC fiber ring in Midland failed to deliver DSL service, if Sanford is covered, why isn't it available elsewhere?
- 20 people stated that they have T1 access at work.
- 9 have both T1 access and dial-up or some other backup service.

- 4 have had their T1 installed in the last 30 days.
- One Integrator reported that there were limited options North of the Midland Mall and that their clients couldn't afford a fiber connection to their Midland Dow Corning Plant.
- One Integrator spoke of a client using a fixed wireless solution.
- A participant complained that his Church couldn't receive affordable service. Charter was treating them as a business, even though they have only two computers. The Charter rep addressed this after the meeting.
- There were multiple requests for a comprehensive resource educating consumers on the options, prices and the technology.
- Word of mouth appeared to be the most effective marketing that was represented among the customers present.
- A realtor suggested that local realtors were starting to use the Internet as a tool to educate buyers, and that when he was relocating businesses, he was required to advise clients of Internet Infrastructure.
- 10 participants considered Internet access a utility.
- 20 participants stated that they believe that students must have access to the Internet.

- One recently transplanted university employee selected their home location in part based on the availability of high speed Internet access.
- One ISP representative stated that clients don't want to pay for backup/redundant services, but that they do offer those services; clients were more concerned with the price threshold that they were in for their existing service and backup was just not as critical yet.

Monitor Township Hall Town Hall Meeting Details

Bay City, MI - April 15, 2003 - 7:00 P.M.

5 attendees

Meeting Highlights & Points of Concern:

- A large need to increase speed and videoconferencing in libraries. Will open up opportunities for citizens in this county they would never have before.
- One participant recently took a virtual field trip of the Library of Congress. "How do we take this virtual field trip in to our own public libraries?" "How can we have interactive talks with authors?"
- One participant stated that they know there is an abundance of things to do; they just don't have the facility. The facility thru the BAISD is not always available.
- One participant stated "We can use it as a teaching tool. There is not a place in Mid-Michigan for people to come together to better themselves, expand their knowledge."
- Upgrading telephone system in Hemlock schools. They would like phones in every classroom. The provider said they could fulfill this. Now the provider has backed out of the contract saying in fact they are unable to come thru.
- Discussed Internet access thru power lines. Participants also inquired about technology being used in Nova Scotia.

- Discussed the pattern of building interchanges to cable. (Referring to splice points.)
- The engineers are making decisions about where the splice points are placed without input from economic developers.
- Participants questioned what services are available at what locations and how can we take advantage of what's out there?
- Area libraries – what role do they have in helping with the planning effort?
- One participant respects the fact that cable and fiber is important to long term planning for economic growth. Saginaw Valley has fallen behind and continues to. There's a great need for extraordinary penetration.
- Library representative currently uses flyers and word of mouth to get people to attend Internet classes at the Bay county libraries. Typically people attending Internet classes at the library are 40 years old or older.
- It seems people want high speed because they are impatient…they do not want to wait.
- One participant offered the following example of sporadic Internet access availability: "My dad has Internet access at work. However, he does not have it at home. He had a hard time finding what they could get at their home. Two houses away, they do have high-speed access, but they couldn't get it at their home."

- There is a lack of computers for every student. There is also a lack of in-classroom instruction for children on computers. The teaching staff is not prepared to handle a computer per child.
- Most young children are way ahead of adults when it comes to computers; high schools are more prepared to handle technology but elementary school teachers are not prepared. Schools are ready for more technologies in the classrooms.
- Charter offers university students and some alumni a reduced rate for high-speed access.
- One participant says she uses DSL because it's the same price as dial up ($29.95 a month). She also likes DSL because it doesn't tie up the phone line.
- No one in the group has experience with wireless companies.
- DSL questions: "I already have a phone line in my home, so why am I paying an additional fee for DSL service? You already have the wires…did someone else come in add more wires? As a consumer…if I have cable running, what is costing more for this service?"
- One participant expressed concern about what's going in to his home. He is a parent of a 16 year old and 10 year old. Unlimited access to the Internet when parents are not around concerns him immensely.
- One participant believes that technology is "fabulous in its appropriate place but we don't need it everywhere".

Horizons Center Town Hall Meeting Details

Saginaw, MI - 4/16/2003 - 8:00 A.M.

30 attendees

Meeting Highlights & Points of Concern:

- Common complaints about participants' current service:
  - Unreliable
  - Too much down time
  - Too slow
  - Very slow during peak times (i.e., after school).
- Several people are doing business over the Internet. 50% of people polled rely on the Internet for customer service and business transactions (taking customer orders).
- Most participants felt the need for more technology in the classroom. Suggested a laptop for each student.
- The cons associated with providing a laptop for each student:
  - Expensive to maintain (breakdown of equipment)
  - Technology always changing
  - Fear of leaving students responsible for equipment
- School doesn't only teach facts, it teaches you how to think.
- Technology somewhat Inhibits the learning process.
- Students don't have to think because most information is just a click away.

- Computers should be used strictly as a learning aid.
- Public is unaware of the multiple Internet choices available in their area.
- Even though DSL service is available to many people, a very small percentage of people use it.
- According to a Charter representative in attendance, 90% of the homes serviced by cable have cable Internet available to them.
- Price is the limiting factor to high-speed Internet hookup.
- The cost to connect different locations of the same company is cost prohibitive.
- Video conferencing is very expensive.
- Companies that use video conferencing use it to conduct sales meetings and training.
- City of Frankenmuth feels that they are beyond the “last mile”.
- Charter made Frankenmuth aware that cable Internet is available in Frankenmuth but still, most people are not aware of it.

Coleman Public Library Town Hall Meeting Details

Coleman, MI - April 22, 2003 – 5:00 P.M.

32 attendees

Meeting Highlights & Points of Concern:

- One local businessman said that he does not see the ROI on broadband for his business.
- Another local businessman disagreed, saying that without broadband, he will be forced to move his business.
- A local resident asked, "When would we be happy? Everything these days needs to be faster. But does it really?"
- A representative from a broadband carrier said that "take rates" for DSL in local communities has been very low.
- A technology consultant commented that broadband dead zones in communities like Hemlock, West Midland and Freeland have put businesses and schools there behind the curve and that there are serious concerns about retaining business and students.

The following poll was conducted by CRT:

"At your place of employment, how many of you use?":

DSL – 4

Cable – 4

Wireless – 0

T1 – 5

Don't know – 5

“At your home, how many of you use?”

DSL – 3

Cable – 10

Wireless – 0

T1 – 1 (This response came from the IT Director for Huhtamaki in Coleman).

“At your place of employment, how many of you are dissatisfied with Internet service?”

9 replied they were unhappy. The two reasons given were slow speeds and unreliability. These respondents were both dialup users.

“At home, how many of you are dissatisfied with Internet service?”

10 replied they were dissatisfied. Again, slow speeds and unreliability were the two reasons given.

“For what do you use the Internet at work?”

Email – Everyone responded yes.

To conduct business – All responded yes.

“For what do you use the Internet at home?”

To work – 22 responded yes

Education & entertainment – 9 responded yes

“How many of you have children in the home that use the Internet for school (communicate with teachers and other students)?”

Yes - 22 responded

“How many of you communicate with your children’s’ teachers via the Internet?”

Yes - 9 responded

“How many of you see a need for enhanced uses for the Internet for students?”

Yes - 7 responded.

“How many of you think free laptops for students is a good thing?”

Yes - 19 responded.

No - 2 responded (Their fear was that students would misuse them.)

“How many of you feel you need more broadband options in your area?”

11 responded they need more options. 6 responded that they did not. 3 did not know.

“How many of you would pay double what you pay now for much faster speeds?”

Yes - 7 responded.

Stakeholder Focus Groups

In addition, an educational stakeholder focus group was held in Saginaw, with technology coordinators from the Saginaw ISD, the City of Saginaw Public Schools, Delta College and Saginaw Valley State University. Private meetings were held with educational representatives from schools and institutions in Midland and Bay counties, respectively. Numerous private meetings were held with technology coordinators from technology, insurance and health care companies and institutions. CRT also represented the LinkMBS Task Force at civic and municipal meetings including the Vision2020 High Tech Growth Advisory Council, The Vision Tri-County quarterly meeting, and several other county specific meetings and networking events.

Appendix E – Under Performing Schools & Subsidized Housing

The following schools were identified as schools that failed to meet adequate yearly progress requirements and are facing sanctions:

Saginaw School District:

Central Middle School

Havenrich

Jerome

Longfellow

Nelle Haley Elementary

North Middle

Jessie Loomis School

Jones School

Webber Elementary

Webber Middle School

Buena Vista School District:

A.A. Claytor Elementary School

This list represents those housing developments that are located in close proximity to the schools referenced above:

Public housing developments in close proximity to underperforming schools

Development Name	Address	City	Zip
BANCROFT/EDDY	107 S WASHINGTON	SAGINAW	48607
PINEWOOD MANOR	2715 S JEFFERSON	SAGINAW	48601
ELMWOOD MANOR	2814 E GENESEE	SAGINAW	48601
ROSIEN TOWERS	310 S HARRISON ST	SAGINAW	48602
VISTA VILLA	3622 HESS AVENUE	SAGINAW	48601
ESSEX MANOR	4000 HAROLD	SAGINAW	48603
MAPLEWOOD MANOR	535 SOUTH WARREN	SAGINAW	48607

A complete list of State subsidized housing developments in the MBS region follows.

Name	County	Street	City	Zip	Admin Agency
HEATHER DOWNS APTS	BAY	174 MALL STREET	AUBURN	48611	Rural Housing
AUBURN SQUARE APTS	BAY	4813, 4815, 4817 S GARFIELD	AUBURN	48611	Rural Housing
WOOD APTS	BAY	302 PARK	AUBURN	48611	Rural Housing
BRAMBLEWOOD COOP	BAY	3262 KIESEL ROAD	BAY CITY	48706	HUD
BANGOR DOWNS	BAY	3325 ALARIE DRIVE	BAY CITY	48706	MSHDA
COUNTRY MEADOWS	BAY	3799 STATE STREET RD	BANGOR TWP	48706	MSHDA
RIVERWALK MEADOWS	BAY	505 GERMANIA STREET	BAY CITY	00000	Other
PINE TOWERS	BAY	306 S WALNUT	BAY CITY	48706	Public Housing
GARFIELD MANOR	BAY	1104 FITZHUGH	BAY CITY	48708	Other
BAY CITY PUBLIC HSG	BAY	SCATTERED SITES	BAY CITY	48706	Public Housing
MALONEY MANOR	BAY	210 S FITZHUGH	BAY CITY	48706	Public Housing
SMITH MANOR	BAY	600 N VAN BUREN	BAY CITY	48706	Public Housing
BAYTOWN	BAY	1114 N JACKSON	BAY CITY	48708	MSHDA
MAPLEWOOD MANOR	BAY	1200 N MADISON AVE	BAY CITY	48706	HUD
BRADLEY HOUSE	BAY	100 FIFTEENTH ST	BAY CITY	48706	HUD
PINEVIEW APARTMENTS	BAY	854 PINE ROAD	ESSEXVILLE	48732	HUD
TRADEWINDS EAST	BAY	501 TRADEWINDS DRIVE	ESSEXVILLE	48732	MSHDA
CENTER RIDGE ARMS	BAY	798 N. PINE STREET	ESSEXVILLE	48732	Public Housing
HOWARD APARTMENTS	BAY	310 S FIFTH ST	LINWOOD	48634	Rural Housing
PINCONNING SR APTS	BAY	300 NORTH ST	PINCONNING	48650	Rural Housing
WHISPERING PINES	BAY	144 WHISPERING PINES	PINCONNING	48650	Rural Housing
WHISPERING PINES II	BAY	144 WHISPERING PINES	PINCONNING	48650	Rural Housing
PARKSIDE APTS	MID	3RD and MONROE	COLEMAN	48618	Rural Housing
BRACKEN WOODS	MID	5301 DUBLIN AVE	MIDLAND	48642	MSHDA
STRATFORD PLACE	MID	4835 E. PATRICK RD	MIDLAND	48642	Other
WASHINGTON WOODS	MID	821 CAMBRIDGE	MIDLAND	48640	Public Housing
CHARTER SQUARE	MID	6100 N JEFFERSON AVE	MIDLAND	48640	MSHDA
FOREST GLEN	MID	400 ALPINE WAY	MIDLAND	48640	MSHDA

Name	County	Street	City	Zip	Admin Agency
GREEN HILL	MID	1010 EAST LAWN	MIDLAND	48640	MSHDA
CLEVELAND MANOR	MID	2200 CLEVELAND AVE	MIDLAND	48640	HUD
NORTHWIND FOREST	MID	5220 HEDGEWOOD DR	MIDLAND	48640	HUD
COUNTRY VIEW APTS	SAG	12555 CHURCH STREET	BIRCH RUN	00000	Rural Housing
NORTHFIELD CENTER	SAG	5465 NORTHFIELD CT	SAGINAW	48601	MSHDA
THE CROSSINGS AT BUENA VISTA	SAG	HESS RD AND GENESEE AVE	SAGINAW	48601	Other
VISTA VILLA	SAG	3622 HESS AVENUE	SAGINAW	48601	MSHDA
STERLING CREST	SAG	1300 TITTABAWASSEE RD	CARROLLTON TWP	48604	Other
CARROLLTON VILLAGE	SAG	3955 N MICHIGAN AVENUE	SAGINAW	48603	MSHDA
CARROLLTON VLG II	SAG	3955 N MICHIGAN AVE	SAGINAW	48603	MSHDA
LONE ROCK APTS	SAG	4TH STREET	CHESANING	48616	Rural Housing
SHOWBOAT MANOR	SAG	845 BENTLEY	CHESANING	48001	Rural Housing
MEADOW WOOD VILLAGE	SAG	150-156 MEADOW WOOD LAKE	CHESANING	48616	Rural Housing
MEADOW WOOD VILLAGE II	SAG	MEADOW WOOD LANE	CHESANING	48616	Rural Housing
HERITAGE VILLAGE II	SAG	328 W GENESEE ST	FRANKENMUTH	48734	Rural Housing
BELLS OF BAVARIA	SAG	435 WEST SCHEIER STREET	FRANKENMUTH	48734	Rural Housing
MEADOWS APTS	SAG	8321 WEBSTER	FREELAND	48623	Rural Housing
BRISTOL COURT	SAG	NORTH SAGINAW	GENESEE TWP	00000	Other
NORTHGATE APTS.	SAG	1200 N HEMLOCK ROAD	HEMLOCK	48626	Rural Housing
PARK PLACE	SAG	430 PARKSIDE LANE	HEMLOCK	48626	Other
JOAN MANLEY WOLFE APTS	SAG	4235 MCCARTY RD	SAGINAW	48603	HUD
COUNTRY WAY APTS	SAG	113 PARKSIDE COURT	SAGINAW	48601	HUD
DAVENPORT MANOR	SAG	2811 DAVENPORT AVE	SAGINAW	48602	Public Housing
BROOKWOOD PARK	SAG	CORNER RAY AND HESS RD	SAGINAW	00000	Other
BIRCH PARK	SAG	300 BIRCH PARK DR.	SAGINAW	48601	MSHDA

Name	County	Street	City	Zip	Admin Agency
MAPLEWOOD MANOR	SAG	535 SOUTH WARREN	SAGINAW	48607	Public Housing
LAKESIDE VILLAGE	SAG	4370 LAKESIDE CIRCLE	SAGINAW	48073	HUD
BANCROFT/EDDY	SAG	107 S WASHINGTON	SAGINAW	48607	MSHDA
ROSIEN TOWERS	SAG	310 S HARRISON ST	SAGINAW	48602	Public Housing
TOWN and GARDEN TERRACE	SAG	1135 FINDLEY STREET	SAGINAW	48601	Public Housing
ST PAULS TOWNHOUSE VILLAGE	SAG	359 VESTRY DRIVE	SAGINAW	48601	HUD
ESSEX MANOR	SAG	4000 HAROLD	SAGINAW	48603	HUD
ELMWOOD MANOR	SAG	2814 E GENESEE	SAGINAW	48601	Public Housing
PINEWOOD MANOR	SAG	2715 S JEFFERSON	SAGINAW	48601	Public Housing
SAGINAW HOUSING COMMISSION	SAG	SCATTERED SITES	SAGINAW	00000	Public Housing
WESTCHESTER VILLAGE NORTH	SAG	3200 DALE ROAD	SAGINAW	48603	HUD
SAGINAW POINTE	SAG	SCHUST RD BETWEEN MACKINAW AND BAY RDS	SAGINAW	00000	Other
WESTCHESTER VILLAGE SOUTH	SAG	4055 W MICHIGAN	SAGINAW	48603	HUD
SOUTH COLONY I/II	SAG	180 SOUTH COLONY DR	SAGINAW	48603	MSHDA
WATERSIDE II	SAG	4070 GREEN ISLE WAY	SAGINAW	48603	MSHDA
SUMMER RIDGE APTS	SAG	12218 WEST ITHICA	ST CHARLES	48655	Rural Housing
ARBOR GLEN	SAG	120 NORTH STREET	ST. CHARLES	48655	Rural Housing
SWANHAVEN MANOR	SAG	300 KENNELY ROAD	THOMAS TWP	48609	MSHDA

Examples of Low-income Housing Broadband Projects

The following list of broadband projects was extracted from www.one-economy.com/company/localprograms/default-noflash.asp.

Atlanta

The Annenberg Foundation supports One Economy's work in collaboration with The Enterprise Foundation to use technology to improve interactions between Paul L. Dunbar Elementary School, an Annenberg challenge grant school, and parents and students in the Mechanicsville neighborhood.

Baltimore

One Economy is developing a digital inclusion strategy for the Housing Authority of Baltimore City (HABC) to connect the residents of the 14,000 units of housing stock owned by HABC to computers and Internet access.

Battle Creek

One Economy is working with the Kellogg Foundation to incorporate technology into the foundation's Neighborhood Transformation Project for the community of Battle Creek.

Boston

One Economy's key partner in Boston is, Inquilinos Boricuas En Accion (IBA), a locally based nonprofit community development organization working in a predominately Puerto Rican community in Boston's South End.

Chicago

One Economy has been working in Chicago in 2002 at various levels

simultaneously with the city, the schools, public housing stock, and in the neighborhoods with community development corporations.

Los Angeles

The Annenberg Foundation supports One Economy's work in the Boyle Heights neighborhood to improve linkages and interactions between Breed Street Elementary School, an Annenberg challenge grant school, and parents.

New York

One Economy's work in New York City focuses on two major initiatives -- one in partnership with the JPMorgan Chase Foundation, and one in partnership with the Comprehensive Community Revitalization Program (CCRP, Inc.)

Philadelphia

In Philadelphia, One Economy is working in partnership with community-based nonprofit agencies and top-of-market private sector entities to execute a digital inclusion strategy for low-income residents.

Portland

Portland is currently one of One Economy's "Digital Communities" -- locations where they demonstrate the comprehensive nature of their work. The Portland program focuses on three key areas: access, content, and providing residents and nonprofit organizations with technology training and support.

Sacramento

One Economy is working with the Community Services Planning Council to build the Sacramento Beehive.

San Francisco Bay Area

One Economy is working with four of the largest nonprofit housing developers in the Bay Area who together own and manage more than 12,000 units of housing to bring technology and local content to existing and new housing developments, and to create organization-wide technology strategies.

Seattle

One Economy is working with a locally based nonprofit organization, the Low-income Housing Institute (LIHI), to help the organization implement a technology strategy in its more than 3,000 units.

Washington, DC

Columbia Heights and Shaw neighborhoods encompass One Economy's "Digital Community" in Washington, D.C. Digital Communities are locations where One Economy has built learning environments that demonstrate the comprehensive nature of their work.

Appendix F- Job Creation

Post wiring of existing MSHDA housing projects will create jobs, of which it is reasonable to assume that 51% or greater will be made available to low to moderate income people.

The LinkMichigan Report issued on November 20, 2001 by the Michigan Economic Development Corporation (see www.medc.michigan.org) predicted that a fully robust broadband infrastructure would create 497,000 additional jobs in Michigan by the year 2010 compared to a job sector in the state without a robust broadband infrastructure. Overall, this represented a 1.07% growth in jobs within the state. This projection is broken out into the following sectors:

- Utilities, including communications – 6,070 jobs
- Manufacturing – 114,501 jobs
- Wholesale trade – 26,575 jobs
- Retail trade – 75,973 jobs
- Transportation & warehousing – 7,621 jobs
- Information – 22,835 jobs
- Finance & Insurance – 30,085 jobs
- Professional, scientific & technical services – 36,029 jobs
- Management – 17,175 jobs
- Admin, support, waste mgmt & remediation services – 29,599 jobs

- Educational services – 7,144 jobs
- Health care and social assistance – 69,091 jobs
- Arts, entertainment & recreation – 4,623 jobs
- Accommodation & food services – 33,373 jobs
- Other services (except public administration) – 16,543 jobs

Of all of the above listed sectors, job creation is best positioned for health care (69,091), retail (75,973) and manufacturing (114,501). These industries, according to this study, are best positioned to create new jobs based on a robust broadband infrastructure that would require high volumes of information. However, it is likely that all industries see job growth based on the influence of the Internet and the way that business habits are evolving. Certainly, the telecommunications sector offers a likelihood that at least 51% of the jobs being created would be available to low and moderate income people. For example, as manufacturing facilities upgrade their plants with wireless communications networks, it would be probable that many of those upgrades would be contracted out to specialized firms that can perform those services at the least cost. Hence, it is reasonable to conclude that the result would be tremendous job opportunities for people skilled in wired or wireless broadband technology. Furthermore, it is likely that over half of these jobs would be made available to low and moderate income people.

Two websites that focus on telecommunications career opportunities are listed below:

www.jobslide.com/directory/Telecommunications

www.pinnacle-telecom.com

Appendix G - Telecommunications Providers & Pricing Information

The table below lists broadband telecommunications providers that serve Midland, Bay and Saginaw counties. T1 Pricing is established on a case-by-case basis, and therefore is not included in the price comparison.

Residential Price Listing

Provider	Service	Monthly	Installation and/or Equipment	Net Monthly*
Air Advantage	Best Effort Wireless	$40.00	$150.00	$52.50
Century Tel	Best Effort DSL	29.95 first 3 months, $49.99 thereafter	$120.00	$54.98
Charter Communications	384/128k 2Mbps/256	$29.95 $42.95	$0-$5 for modem $0	$29.95 $42.95
Comcast	Best Effort Cable	$32.99/ first 6 months $60.00 thereafter	$0.00	$46.50
Hughes Network Systems	Best Effort Satellite	$59.99	$579.98	$108.32
InfoSat	Best Effort Satellite	$149.00	$1595.00 $ 95.00 $ 650.00	$214.00
Island Telephone				

Provider	Service	Monthly	Installation and/or Equipment	Net Monthly*
SBC				
SpeedNet	Best Effort Wireless	$39.95	$99.95	$48.20
Starband	Best Effort Satellite	$69.99	$499.99	$111.66
Tachyon				
Verizon Communications	Best Effort DSL	1st month Free, 2nd & 3rd month $29.95, $34.95 thereafter	$0.00	$31.20

*Net Monthly is the pro-rated amount of any special promotions and installation costs added to the monthly fee

Business Price Listing

Provider	Service	Monthly	Installation and/or Equipment	Net Monthly*	Static IP
Air Advantage	Best Effort Wireless	$55.00	$250.00	$75.83	
Century Tel	Best Effort DSL	$79.99	$75.00 $280.00	$109.57	$30.00
Charter Communications	384/128k	Basic $54.00 Advanced $79.00 Premium $99.00	$250.00		Premium includes 1 static IP

Provider	Service	Monthly	Installation and/or Equipment	Net Monthly*	Static IP
Charter Communications	768/256k	Basic $99.00 Advanced $124.00 Premium $144.00	$250.00		Premium includes 1 static IP
Charter Communications	1.5M/384k	Basic $159.00 Advanced $184.00 Premium $204.00	$250.00		Premium includes 1 static IP
Charter Communications	2.0M/512k	Basic $224.00 Advanced $249.00 Premium $269.00	$250.00		Premium includes 1 static IP
Comcast	None				
Hughes Network Systems	Best Effort Satellite	$89.99	$579.98 $100.00	$146.66	
InfoSat	Best Effort Satellite	$149.00	$1595.00 $ 95.00 $ 650.00	$214.00	
Island Telephone					
SBC					
SpeedNet	Best Effort Wireless	$75.00	$200.00	$91.67	
Starband	Best Effort Satellite	$799.00	$129.99	$196.57	
Tachyon					
Verizon Communications	1.5M/ 128K DSL	$59.95	$25.00	$62.03	$30.00/Mo
Verizon Communications	384K/384K DSL	$79.99	$25.00	$82.03	$30.00/Mo

Provider	Service	Monthly	Installation and/or Equipment	Net Monthly*	Static IP
Verizon Communications	1.5M/384K DSL	$89.95	$25.00	$92.03	$30.00/Mo
Verizon Communications	768K/768K	$129.95	$25.00	$132.03	$30.00/Mo
Verizon Communications	192K SHDSL	$149.95	$60.00	$154.00	Included
Verizon Communications	384K SHDSL	$179.95	$60.00	$184.95	Included
Verizon Communications	768K SHDSL	$249.95	$60.00	$254.95	Included
Verizon Communications	1.1M SHDSL	$299.95	$60.00	$304.95	Included
Verizon Communications	1.5M SHDSL	$369.95	$60.00	$374.95	Included

Provider Contact Listing

Air Advantage/Zimco:

Scott Zimmer, Owner
465 N. Franklin Street
Frankenmuth, MI 48734
Phone: 866-877-1AIR
www.airadvantage.com

CenturyTel:

Michael Clement, Area Operations Mgr.
144 South Saginaw Street
Chesaning, MI 48616
Phone: 989-879-7100
www.centurytel.com

Charter Communications:

Christopher Shannon, Commercial Sales NE MI Group
Charter Communications
1480 S. Valley Center Dr.
Bay City, MI 48706
989-671-5253
www.charter.com

Comcast:

Shannon VanSach, Administrator
29777 Telegraph Road
Suite 4400B
Southfield, MI 48034
Phone: 248-233-6735
www.comcast.com

Hughes Network Systems:

Public Relations Department
11717 Exploration Lane
Germantown MD 20876
Phone: 301-428-5500

Infosat Telecommunications USA:

David Orton, Director of Business Development and Marketing
PO Box 2268
Blaine, WA 98231
Phone: 604-523-4116
www.infosat.com

Island Telephone Company:

Chuck Skelton, Associate Manager of Quality
343 W. Saginaw
PO Box 78
Sandford, MI 48657
Phone: 765-522-0144
www.tdstelecom.com

McLeod USA:

Phone: 1-800-909-3012
www.mcleodusa.com

Merit Networks:

4251 Plymouth Road #2000
Ann Arbor, MI 48105
Phone: 734-764-9430
www.merit.edu

Mercury Networks:

2525 Bay Area Blvd #690
Houston, TX 77058
Phone: 281-282-9261
www.mercury.net

Norlight Communications:

Chris Devine
612 W. Lake Lansing Road
East Lansing, MI 48823
Phone: 517-324-5965
www.norlight.com

New Edge Networks:

3000 Columbia House Blvd, #106
Vancouver, WA 98661
Phone: 360-693-9009
www.newedgenetworks.com

Speednet, LLC:

David Kowalewsky, Director of Operations & Technology
US 23 South
Alpena, MI 49707
Phone: 989-354-2900
www.speednetllc.com

SBC:

Jon Peterson, SBC Michigan External Affairs
2600 Camino Ramon
San Ramon, CA 94583
Phone: 586-469-9945
www.sbc.com

Starband:

Sheila Blackwell, Director of Corporate Communications
1760 Old Meadow Road
McLean, VA 22102
Phone: 517-347-7100
www.starband.com

Sprint:

300 Galleria Center
Southfield, Mi
Phone: 248-204-0577
www.sprint.com

Verizon Communications:

Paul Fuglie, Assistant Vice President of Public Relations
124 West Allegan
Suite 602
Lansing, MI 48933
Phone: 517-484-3689
www.verizon.com

(Dial-up providers are not included in this list)

Appendix H - Project Participants

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