

Technology Needs & Market Study

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Prepared for:



Door County Economic Development Corporation

Prepared by:



Abacus Technologies LLC

Eric S. Groene, Co-Founder
414-856-9587 608-220-4690 Cell
Michael J. Kawleski, Co-Founder
608-839-8090 608-220-4634 Cell
www.abacus-tech.com

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Summary

The Door County Economic Development Corporation (DCEDC) sought consulting services to perform a Technology Needs and Market Study relating to broadband communications in the Door County area. Simply defined, broadband is an advanced telecommunications system that can deliver multiple channels of information (video, voice & data services, i.e., Internet access, cable television, telephone, etc.) through a single portal. According to the Federal Communications Commission, broadband is a data transport service in which the upstream or downstream paths each must support rates of at least 200 kilobits per second (Kbps).

The common broadband technologies and their current maximum data rates are:

- Satellite – up to 0.5 Mbps
- Cable modem – up to 30 Mbps
- DSL (Digital Subscriber Line) – up to 52 Mbps
- Wireless – up to 622 Mbps
- Fiber optics – up to 100,000 Mbps (100 Gbps)

A prior technology assessment established the current situation in Door County; sadly, broadband infrastructure is expensive, scarce or nonexistent, depending where in the county one is located:

- There is limited fiber optics, but none serving the industrial park in Sturgeon Bay.
- DSL (digital subscriber line) is not available in the county.
- Cable modems are available, but on a limited basis (three communities).
- Advanced high-speed services are not available.
- Multiple ISPs serve the county, but most residents and businesses can only purchase dial-up service, which is not a broadband technology.

Another major detriment is that none of the telephone companies serving Door County have true redundancy in their networks. Service outages have occurred in the past when the main fiber optic cable route was severed and this could logically occur in the future.

Abacus Technologies LLC, a telecommunications consulting and engineering firm, surveyed Door County businesses on DCEDC's behalf to gauge their interest in, and need for, broadband services. Numerous entities banded together to fund this market study and should be credited for their foresight. They include the City of Sturgeon Bay; Door County; Sturgeon Bay Utilities; Wisconsin Public Service Corporation; and the State of Wisconsin through its Community Development Block Grant Program.

SIDEBAR

It should also be noted that Power Line Carrier (PLC) is a new technology being tested worldwide as a means to deliver high speed Internet and other services. PLC uses a high frequency signal to carry Internet (or other service) on a utility power line. PLC offers 25-45Mbps of bandwidth per substation with individual subscriber speeds of around 2 Mbps.

The main advantage to PLC is that existing power line infrastructure reaches nearly every customer including rural customers. With an appropriate power line interface, Internet would be

available at the customer premises anywhere there is a power plug. Another advantage to PLC is that it is somewhat scalable and the upload and download speeds can be symmetrical. PLC speeds are comparable to DSL or cable modems (~1Mbps). Additional applications for PLC will include voice over IP (telephone) and streaming video (cable television).

The biggest PLC challenge is that the equipment is not yet in commercial production. Because of this, target hardware costs cannot be reached until adequate quantities are manufactured and tested in adverse utility environments. This leaves a big question of whether or not PLC will be cost effective.

The technical challenges surrounding PLC include:

- Some technologies require repeater every 500 to 2,000 feet.
- Power line noise may interfere with PLC signal.
- Will 45Mbps per substation be enough and will 2Mbps per customer be enough in the mid- to long-term?
- Regulatory issues regarding electro-magnetic emissions and radio frequency interference.

Currently there are about 75 utilities worldwide testing PLC with pilots involving a few hundred to a few thousand customers. In the United States, there are a handful of pilots involving small numbers or retail customers. Current Technology, based in Maryland, has pilots underway with PEPCo and Cinergy. Main.net, based in Israel, has multiple pilots overseas and a pilot in the City of Manassas, VA. Amperion, based in Massachusetts, is doing a beta test with AEP in Dublin, Ohio. Ambient Corporation, bases in Massachusetts, is doing a beta test with Con Edison. Current Technologies seems to be the closest to commercialization, followed by Amperion and Main.net.

Market Study

To prepare this study, Abacus Technologies carried out the following:

Broadband Presentations to Business Community

The DCEDC and its Technology Council implemented widespread written, personal and media communication to inform businesses about the timing and purpose of the upcoming market study and to recruit their support and participation in it. This up-front information process was critical and paid dividends when Abacus began surveying businesses: most businesses knew about the survey in advance and were not hesitant to share the information needed to create a successful survey.

Abacus, with the assistance of the Technology Council, prepared a PowerPoint presentation outlining broadband technologies and how businesses can effectively utilize broadband to help make their business more efficient and successful. The presentation, given at two public information seminars and broadcast on local public access television, further explained the market study project. Abacus assisted the Technology Council in making the presentation and answering questions.

Business Interviews

Abacus prepared a detailed survey to analyze the business community's interest level in using broadband services in the Door County area. In order to get the most accurate information and best response from the business community, Abacus conducted face-to-face interviews whenever possible. When a face-to-face interview could not be scheduled or was not desired by the business, Abacus either did a telephone interview or mailed/faxed/e-mailed the survey to the business.

Working from a list of businesses compiled by DCEDC, Abacus was able to interview 62 companies, giving the survey a strong sample on which to base its conclusions and recommendations. When preparing the list, DCEDC was careful to include a wide variety of business types as well as businesses from numerous locations around the county. Interviews lasted as long as 1 hour to fully discuss telecommunications issues and needs with each business representative. As a result, the report is reflective of the wishes of many communities and business classifications.

The survey asked general demographic questions as well as broadband-specific questions, such as:

- What is your main business?
- How many locations do you have? Where are they located?
- Are these locations connected by a data network?
- Do you have a dedicated (private) telephone network interconnecting your various locations?
- Who is your local telephone provider? How many telephone lines do you have? What is the overall impression of your local telephone provider?
- Who is your long distance provider? What is your overall impression of your telephone long distance provider?
- Who is your data network service provider?
- What is your overall impression of your data network provider?
- Who is your Internet Service Provider (ISP)? What is your overall impression of your ISP?
- Please rank the following from 1-3, in the order you think is most important to you in selecting a telecommunications vendor or service provider: Reliable, Customer Support, Cost
- Do you think Door County needs another telecommunications provider?

Please see *Attachment A* for the complete survey.

Consulting Report

As the final step in the market study, Abacus is presenting this comprehensive report of the above action items to the Door County Economic Development Corporation or any other entity that DCEDC specifies. This report includes:

- Compiled survey results
- Breakdown of survey questions.
- Conclusions and recommended next steps Door County could take based on the survey results.

Survey Results

The following sections contain an in-depth summary of the data and opinions gathered from Door County businesses by Abacus Technologies. When percentages are used, totals may not always add up to 100 percent due to rounding of numbers.

Local Area Network

Nearly all of the businesses in the Door Area surveyed have a Local Area Network. Out the businesses surveyed, 95 percent have a local area network. The Local Area Networks ranged from 2 computers to as many as 500 computers networked together.

Multiple Locations

Among the businesses surveyed, 47 percent have multiple locations. Of the businesses with multiple locations, 44 percent have multiple locations in the Door County area.

Wide Area Network

Among the businesses with multiple locations, 78 percent have a wide area network between their locations. Out of the businesses with one location, 16 percent have a wide area network connection to a corporate office, affiliate, parent company, etc.

Dedicated (Private) Telephone Network

Of the businesses with wide area networks, 31 percent utilize a wide area network for dedicated (private) telephone service.

Wide Area Network Providers

There are numerous wide area network providers that offer services in the Door County area. Wide Area Network services usually consist of T1 circuits or fractional T1 circuits. A T1 circuit is a digital line that uses the telephone companies copper wire and has 24 channels at 64Kbps for a maximum bandwidth of 1.544Mb. The cost of a T1 circuit is based on the distance between the two locations and contract length. For example, a T1 circuit between two locations within Sturgeon Bay costs around \$170-\$250 per month, whereas a T1 circuit between Sturgeon Bay and Milwaukee is \$1,600 per month.

Following is a list of companies providing T1 circuits to the businesses surveyed. Some of the businesses have corporate headquarters located outside of the Door County area; for these businesses, the T1 circuits are ordered and maintained by corporate headquarters. Larger businesses with multiple locations usually have one vendor provide all the circuits so the business gets a larger discount. Providers also give bigger discounts to companies that also subscribe to Internet and/or long distance service.

Corporate	9 Businesses
SBC	7 Businesses
BadgerNet (State of WI)	2 Businesses
Charter	3 Businesses
Norlight	3 Businesses

Sprint	1 Business
AT&T	2 Businesses
WorldCom	1 Business

Many of the businesses are satisfied with their T1 service; however, they all expressed the need for redundancy. Many businesses today are dependent on their T1 circuits for communication to corporate headquarters for billing, accounting, customer orders, etc. For example, one business located in Sturgeon Bay is so dependent on its T1 circuit to its corporate headquarters that if it goes down for an extended period of time, the company would have to shut down operations. It claimed that redundancy might be needed in order to keep the Sturgeon Bay facility open and not moved to another location.

Of course, there are businesses that are not satisfied or have problems with their T1 circuits. Many had problems getting their T1 circuit installed and working properly. For one company, it took over six months to get the T1 circuit up and running. Other companies are having problems with the T1 circuit going up and down. One particular company's T1 circuit goes down, for a short period of time, about every 15 days.

Local Telephone Companies

Different local telephone companies serve the Door County area, based on location in the county. The southern area of the county (Forestville, Brussels, Little Sturgeon Bay) is served by CenturyTel. The midsection of the county (Sturgeon Bay) is served by SBC (Ameritech) as well as some CLECs (Competitive Local Exchange Carriers), McLeod, AT&T and Global Com. The northern section of the county (Sister Bay, Baileys Harbor, Egg Harbor, Washington Island) are served by Verizon.

SBC

SBC currently serves 20 (53%) of the businesses surveyed in the Sturgeon Bay area. Out of these businesses only three were not satisfied with the service or have an average impression of the service. One company in particular complained about scratchy phone lines. Sturgeon Bay is the only area in which business customers have a choice in local telephone service. Out of the businesses surveyed in Sturgeon Bay, SBC serves only 53 percent of the businesses. The other businesses have chosen a CLEC over SBC.

McLeod

McLeod currently serves 15 (39%) of the businesses surveyed in the Sturgeon Bay area. Out of these businesses, only 3 had an average impression with the service. Many of the businesses that switched to McLeod claimed they saved money. However two businesses are having problems with hang-ups (phone rings and no one is on the other end), static and misdirected calls. Another business thought customer service could be improved.

GlobalCom

GlobalCom currently serves two (5%) of the businesses surveyed in the Sturgeon Bay area. Both businesses are satisfied with its services.

AT&T

AT&T currently serves 1 (3%) of the businesses surveyed in the Sturgeon Bay area. The business is currently satisfied with the service.

Verizon

Verizon serves 22 (100%) of the businesses surveyed in northern Door County. Out of these businesses, four are not satisfied with the service and five have a neutral or average impression of the service. Businesses are having problems with dropped and scratchy lines. The biggest problem: When trying to make a phone call, businesses get an “all circuits are busy” error message.

Century Tel

Century Tel serves two of the businesses surveyed in southern Door County. Both businesses are satisfied with its services.

Long Distance Service

There are numerous long distance providers offering service in the Door County area. The following is a list of providers used by surveyed businesses:

McLeod	10 Businesses
SBC	6 Businesses
AT&T	5 Businesses
Corporate	2 Businesses
Verizon	2 Businesses
MCI	2 Businesses
Sprint	2 Businesses
Qwest	3 Businesses
Norlight	1 Business
PowerNet	1 Business
Global Crossing	1 Business
OneCom	1 Business
Broadwing	1 Business
Urbia	1 Business

The vast majority of the businesses are satisfied with the long distance services. Their biggest complaint is billing issues.

Cellular Service

Cellular service is offered from four different cellular providers in the Door County area: CellCom, US Cellular, Sprint, and Nextel.

CellCom

CellCom offers cellular service throughout the entire county and serves 36 (58%) of the businesses surveyed. Out of these, five are not satisfied with the service and two consider the service to be average. Most of the businesses have complaints on the cell coverage and claim there are numerous dead spots. Other businesses have had problems using cellular service outside the Door County area, in other states in particular.

US Cellular

US Cellular offers cellular service throughout the entire county and serves six (10%) of the businesses surveyed. Out of these, one business is not satisfied with the service and one business

considers the service to be average. The businesses, even those that are satisfied with the service, would like to see better coverage and newer technology.

Sprint

Sprint offers cellular throughout the southern and midsection of the county and serves one of the businesses surveyed. The business is satisfied with the service.

Nextel

Nextel offers cellular service in the Sturgeon Bay area and serves one of the businesses surveyed. The business is satisfied with the service.

Internet Service

Internet service in the Door County area is offered by a variety of Internet Service Providers. Internet service is available by dial-up, satellite, cable modem and T1 circuits. Many businesses in Door County get their Internet over their Wide Area Network connections to their corporate headquarters. The businesses that were surveyed use the following Internet services:

Corporate WAN	13 Businesses (22%)
T1/Frac T1 Internet	11 Businesses (18%)
Cable Modem	14 Businesses (23%)
Dial-Up	22 Businesses (37%)

Of the businesses surveyed using dial-up Internet service, seven of them would like to upgrade to a high-speed Internet connection. Five of the seven businesses cannot get high-speed cable modems and cannot afford a T1 circuit. If high-speed Internet choices were more available, other businesses would look to upgrade as well. However, four businesses feel that dial-up Internet is sufficient for their needs.

The following are providing Internet services to the businesses surveyed:

T1 Internet Service

Norlight Telecommunications
WiscNet
AT&T

Cable Modem Internet Service

Charter Communications and Charter Business Networks

Satellite Internet Service

Door Peninsula Internet

Dial-Up Internet Service

DCWis (RickNet, Online Door County)
Door Peninsula Internet
Infinity Technologies

Alternative high-speed Internet services are coming to the Door County area. DCWis is going to be implementing a high-speed wireless Internet service this coming summer. The high-speed wireless Internet is comparable to DSL and cable modem speeds. Its wireless Internet service utilizes line of sight technology; therefore, it will not be available to everyone because of obstructions from trees, hills and buildings.

Web Sites

Businesses were surveyed on how they were currently using their web sites and what they have planned for the next three years. Of the businesses surveyed, 49 (79%) have a company web site.

Of the businesses with web sites, this is how those web sites are currently being used:

<u>Currently</u>	
Marketing/Advertising	100%
Online Sales	32%
Customer Support	64%
Chat Groups	2 %
Customer Login	13%
Employee Login	23%
Business-to-Business	4%

Of all the businesses surveyed, the following is how businesses are planning to upgrade/create web sites to provide the following:

<u>Next Three Years</u>	
Marketing/Advertising	5%
Online Sales	19%
Customer Support	5%
Chat Groups	5%
Customer Login	12%
Employee Login	11%
Business-to-Business	2%

Internet Usage

Businesses were surveyed on how they use the Internet for business. Of the businesses surveyed, only one does not use the Internet for its operation. Of the businesses that use Internet, the following shows how businesses currently utilize Internet tools:

Email	100%
Web Browsing	95%
Online Purchasing	70%
Virtual Private Network	
Business	13%
Employees	9%
Video Conferencing	13%
Research	72%
News Groups	9%
Training	39%
Telephone (Voice over IP)	-

File Transfer	54%
Business-to-Business	7%

The following shows how many businesses are looking to expand Internet usage in the next three years:

Email	-
Web Browsing	-
Online Purchasing	4%
Virtual Private Network	
Business	11%
Employees	13%
Video Conferencing	25%
Research	-
News Groups	-
Training	16%
Telephone (Voice over IP)	11%
File Transfer	-
Business to Business	-

The survey shows that, in the next couple of years, businesses would like utilize VPN technology, video conferencing, training and Voice over IP, all which will require a high-speed Internet connection.

Sector Analysis

The following tables are the survey results broken up into different business categories. The businesses surveyed have been divided up into the following categories:

- Manufacturing
- Public Sector
- Resorts
- Service
- Education
- Retail
- Medical
- Performing Arts

	Manufacturing	Public Sector	Resorts	Service	Educational	Retail	Medical	Performing Arts
Makeup of Total Surveys	20%	12%	8%	30%	2%	20%	3%	5%
Data by Sector								
Multiple Locations	50%	86%	0%	39%	0%	63%	50%	33%
LAN	100%	86%	100%	94%	100%	92%	100%	100%
Dedicated Telephone	25%	20%	0%	8%	100%	8%	50%	100%
Internet Service								
WAN	25%	13%	20%	17%	0%	36%	0%	0%
T1	25%	50%	0%	11%	100%	0%	50%	0%
Cable	8%	0%	40%	44%	0%	18%	0%	33%
Dial-up	42%	38%	40%	28%	0%	46%	50%	67%
Web Site Uses – Current (Of Those w/Web Sites)								
Marketing	100%	75%	100%	94%	100%	100%	50%	100%
Online Sales	9%	25%	0%	38%	100%	44%	0%	67%
Customer Support	36%	50%	20%	63%	100%	78%	0%	67%
Chat Groups	9%	0%	0%	6%	0%	0%	0%	0%
Customer Login	9%	13%	20%	38%	0%	0%	50%	0%
Employee Login	36%	25%	0%	13%	100%	22%	0%	0%
Business-to-Business	0%	0%	0%	0%	0%	11%	0%	0%
Web Site Uses – Future (Of Those w/Web Sites)								
Marketing	9%	0%	0%	6%	0%	0%	0%	0%
Online Sales	46%	0%	60%	0%	0%	11%	0%	0%
Customer Support	9%	0%	0%	13%	0%	0%	0%	0%
Chat Groups	0%	0%	0%	6%	0%	0%	0%	33%
Customer Login	18%	0%	0%	6%	100%	0%	50%	33%
Employee Login	18%	0%	0%	6%	0%	11%	0%	0%
Business-to-Business	9%	0%	0%	0%	0%	0%	0%	0%

	Manufacturing	Public Sector	Resorts	Service	Educational	Retail	Medical	Performing Arts
Internet Services – Current Uses								
E-mail	100%	100%	100%	100%	100%	100%	100%	100%
Web Browsing	100%	86%	100%	100%	100%	91%	100%	100%
Online Purchasing	67%	86%	100%	61%	100%	55%	50%	67%
VPN – Business	17%	14%	0%	11%	0%	9%	0%	0%
VPN – Employees	17%	14%	0%	11%	0%	0%	0%	0%
Video Conferencing	17%	0%	0%	6%	100%	0%	50%	0%
Research	83%	86%	20%	78%	100%	27%	100%	67%
News Groups	25%	0%	0%	11%	0%	0%	0%	0%
Training	42%	43%	0%	56%	100%	18%	0%	0%
Vo/IP	0%	0%	0%	0%	0%	0%	0%	0%
File Transfer	58%	29%	40%	67%	100%	46%	100%	0%
Business-to-Business	0%	0%	0%	11%	0%	0%	0%	0%
Internet Services – Future Uses								
E-mail	0%	0%	0%	100%	0%	0%	0%	0%
Web Browsing	0%	0%	0%	100%	0%	0%	0%	0%
Online Purchasing	8%	0%	0%	100%	0%	18%	0%	0%
VPN – Business	8%	14%	0%	11%	0%	9%	50%	0%
VPN – Employees	17%	43%	0%	28%	0%	0%	50%	0%
Video Conferencing	33%	29%	0%	56%	0%	27%	0%	67%
Research	0%	0%	0%	0%	0%	0%	0%	0%
News Groups	0%	0%	0%	0%	0%	0%	0%	0%
Training	25%	29%	40%	6%	0%	18%	50%	0%
Vo/IP	17%	14%	0%	17%	0%	0%	0%	0%
File Transfer	0%	0%	0%	0%	0%	0%	0%	0%
Business-to-Business	0%	0%	0%	0%	0%	0%	0%	0%

Services They Use

Since videoconferencing is a prototypical use of broadband technology, businesses were asked if they used it, as a litmus test for how much broadband technology was being used. As expected, 14 percent said they used videoconferencing, and this was limited to firms who had a high-speed WAN and/or more than one business location. Some interviewees said they would like to use videoconferencing in the future, but were currently limited by the availability and cost of broadband services.

Businesses were also asked whether they had contracts with providers and the length of those contracts. Understandably, the answers were all over the board since the types of service needed and available varied greatly between businesses. In general, however, local and long distance services are purchased on a month-to-month basis; Internet service is usually month-to-month, but can be purchased annually at a cost savings; cellular service is usually a one- or two-year contract; and wide area network services are sold with at least a one-year contract and can be as long as a five-year contract.

Businesses were asked to rank three characteristics as they applied to selecting a telecommunications vendor – reliability, customer support and cost. They were asked to rank the most important characteristic as “1,” the second most important characteristics as “2,” etc. Using the sum of the rank method to score responses, “Reliability” was ranked the most important, with an average rank of 1.13; “Cost” followed with an average rank of 2.18; and “Customer Support” ranked last at 2.45.

Based on Abacus Technologies experience with other market surveys, this outcome is the norm; although businesses tend to be cost-conscious, they are willing to pay for “good service,” whether this means reliability, good technical support, friendly staff, a local office or numerous other characteristics. Although reliability was judged the most important characteristic of telecommunications providers, this didn’t necessarily mean the businesses surveyed were willing to pay more to get this reliability (see *The Redundancy Issue* below).

Businesses were also asked to rank their reliance upon different telecommunications services; much like the question about contract length, the answers varied widely based on each individual business, making compilation difficult at best. However, the general conclusion can be made that any services used by businesses were highly ranked and those services that were not important to some businesses were not used by those businesses.

The Need for More Providers

There was overwhelming positive response from those surveyed that Door County needs additional telecommunications providers. Of those answering this question, 77 percent said yes, 19 percent said no and 4 percent said they didn’t know or had no opinion.

High speed Internet service was mentioned most often as the service that Door County needed more providers for, followed by local telephone service and cellular telephone service. Compiling all the answers, the breakout is as follows:

Local Telephone Service	26%
Long Distance Telephone Service	5%
High Speed Internet Service	44%
Cellular Service	17%
Other (Cable TV)	<u>7%</u>
	100%

There were several reasons businesses thought there should be more providers. From the standpoint of their individual businesses, an important one was their wish that competition would provide 1) more service choices, 2) lower prices and 3) better quality service. From the standpoint of Door County as a whole, they mentioned the need for more bandwidth (“faster service”) and redundancy.

Businesses were asked what upgrades they were planning in telecommunications services over the next three years; less than a quarter noted any changes, probably due to the lack of service options. The service mentioned most often was Internet service, with several interviewees noting they had dial-up service currently and were hoping cable modem, DSL or other high speed Internet services would be coming to their areas in the next three years.

Regarding market potential, providers looking to serve the Door County area with broadband services will have 19,587 residential housing units to potentially serve according to the US Census 2000. In addition, providers will have 1,250 employers to serve, according to the Wisconsin Department of Workforce Development. Based on earlier studies Abacus has performed, on average, it costs service providers \$1,500 per customer to provide broadband services. For the Door County area, that average may be higher due to the large area to serve. Thus, if a provider were to build a network to serve 30 percent of the residential and business customers, it would cost at least an estimated \$9.5 million to construct. Because potential customers are spread out across the entire county, the cost of building the network could perhaps double or triple. However, with fiber to the home networks being approved and deployed nationwide, the cost of the electronics, fiber and installations are quickly coming down in price.

In return, depending on the technology implemented, the provider would be able to provide wide area network services, local telephone service, long distance telephone service, high-speed Internet service, cable television services and other services. Based on Abacus experience, the average revenue for providing Internet, local telephone and cable television services to residential customers is \$115/customer/month. Potential revenue is as follows:

High-Speed Internet

- Average service revenue is around \$45/month.
- Additional revenues can be generated with web hosting, enhanced email features and faster speed packages.

Local Telephone Service

- Average revenue is around \$25/month.
- Additional revenues can be generated with enhanced features such as voice mail, caller ID, three way calling, etc.
 - Additional revenue can also be generated from providing long distance service. Residential long distance service averages around 5-8 cents per minute

Basic Cable Television Service

- Average service revenue is around \$45/month.
- Additional revenues can be generated with premium movie channels, pay-per-view movies and expanded channels.

If a provider were to provide telephone, Internet and cable television service to the following percentage of residential customers, the minimum revenue achievable would be:

# of Customers	Internet – \$45/month	Telephone - \$25/month	Cable - \$45/month	Total Monthly Revenue
10% (1,959)	\$88,155	\$48,975	\$88,155	\$225,285
20% (3,917)	\$176,265	\$97,925	\$176,265	\$450,455
30% (5,876)	\$264,420	\$146,900	\$264,420	\$675,740

For businesses, the average revenue for services varies on the size of businesses, services needed and contract terms. Since few businesses subscribe to cable television service, revenues are only based on providing voice and data/Internet services. Potential revenue is as follows:

High-Speed Internet

- For a small business, the average service revenue for DSL (768Kbps/128Kbps) is around \$75/month.
- For a medium-sized business (DSL, cable modem, fractional T1), the average service revenue is around \$300/month.
- For a large business (T1 Circuit -1.54Mbps/1.5Mbps), the average service revenue is around \$700/month
- Additional revenues can be generated with web hosting, enhanced email features and faster speeds.
- For point-to-point wide area network connections to areas within the Door County area, revenues will vary based on distance, speed and contract terms.

Local Telephone Service

- Average revenue is around \$25/telephone line.
- Additional revenues can be generated with enhanced features such as voice mail, caller ID, three way calling, Centrex, etc.
- Additional revenue can also be generated from providing long distance service. Business long distance service averages around 4-8 cents per minute for switched service and 2-6 cents per minute for dedicated service.

If a provider were to provide telephone and Internet service to the following percentage of business customers, the minimum revenue achievable would be:

# of Customers	Internet	# of telephone lines	Telephone - \$25/line	Total Monthly Revenue
12% Small Bus (150)	\$11,250	5 = \$125	\$15,625	\$26,875
7% Medium Bus (88)	\$26,400	15 = \$375	\$33,000	\$59,400
1% Large Bus (12)	\$8,400	25 = \$625	\$7,500	\$15,900
Total	\$46,050		56,125	\$102,175

Based on a 20 percent residential and business customer penetration, the minimum average revenue that could be generated would be:

Residential -	\$450,455
Business -	<u>\$102,175</u>
Total	\$552,630

Due to the high costs of network build-outs, providers may be reluctant to proceed based on available revenues. Door County area municipalities, the county and businesses may need to work together to build a broadband network across which providers can provide services.

The Redundancy Issue

An impetus of the survey was the lack of redundant routes for fiber optic cable supplying telephone and Internet service to Door County. Businesses were asked about the cost of service interruptions, which have occasionally occurred when the main fiber optic link serving Door County was cut, causing telephone and Internet outages. Not enough data was provided by interviewees to calculate an accurate per-business average. For some businesses, a service interruption was not a crucial issue; even for those who rely heavily upon telecommunications services, many had not thought about how much intermittent service interruptions cost them as a business.

However, those that tried to calculate a cost figure did so in a variety of ways:

- Daily telephone or Internet sales lost
- Hourly wage of idled employees
- Cost of manufacturing slowdowns
- Number of customers not serviced
- Delays in specifying/ordering raw materials
- Combination of the above

Those businesses that mentioned a dollar figure were in the range of \$5,000 per day to nearly \$100,000 per day; at the very least, most said “thousands per day.”

Businesses were also asked if they would be willing to pay more for true redundancy and, if so, how much. Of those answering this question, 44 percent said they would be willing to pay more, and a few were specific about which services were most important, such as Internet, wide area network (WAN) links, cellular service and telephone service. Over half (54 percent) who said they might pay more for redundancy stressed that this decision would be based on the “value per

dollar” they received for the new, redundant services. As to how much more they would be willing to pay, most didn’t volunteer a figure, but responses ranged from \$10/month to \$50/month more.

Another 42 percent said they would be willing to pay no more than they are currently paying to receive redundancy, citing that “redundancy should be a given” and that they already expect this from their telecommunications providers. The final 14 percent said they felt that lower cost service was more important than redundancy.

Impression of DCEDC

When asked for their general impression of the Door County Economic Development Corporation, the majority of respondents (64%) said they felt positively toward the organization. 32 percent of the interviewees felt neutral, neither positive nor negative, toward DCEDC. Only 4 percent said they had a negative impression of the organization.

All were aware of DCEDC, with some interviewees having served or currently serving on the board or Technology Council. Very few said they would like more information about the organization or would be interested in serving on the Technology Council.

Businesses were also asked about the concept of the Door County Economic Development Corporation forming partnerships to help offer telecommunications services, perhaps even as part of a public-private venture. Indeed, in some areas of the country, municipal units build broadband infrastructure and, in some cases, also provide services. About 66 percent felt positively toward such an arrangement, with 5 percent negative and 29 percent not sure or neutral about how they felt.

Many who felt positive about DCEDC being involved in some fashion mentioned that the organization could be a focal point and liaison between entities involved in bringing broadband to Door County (i.e., governmental entities, utilities, service providers). Most, however (especially those less supportive of DCEDC involvement), felt that it would be most appropriate for a private entity to provide the services, citing government inefficiency and the lack of experience in the broadband arena.

Interviewee Characteristics

All businesses interviewed were asked three questions to determine some of their demographics:

- Type of business
- Number of employees
- Annual gross sales

Regarding business types, most interviewees fell into the “Service” category, followed by those that characterized themselves as “Retail” and “Industrial.” The percentage breakout was:

Service	36%
Retail	23%
Industrial	18%
Education	7%
Hospitality	5%
Health/Medical	5%

Government	<u>5%</u>
	99%

As far as the size of businesses in terms of employees, most had 1-10 employees, followed by a tie between the categories of 10-25 employees and 50-100 employees. The percentage breakout was:

1 to 10	27%
10-25	20%
25-50	15%
50-100	20%
100-250	7%
250-500	9%
500+	<u>2%</u>
	100%

Since tourism is such an important component of Door County's economy, had this survey taken place in mid-summer, no doubt the employee categories may have shifted higher owing to the number of seasonal staff hired during the summer season.

Although some interviewees were reluctant to share gross revenue figures (even after assurances that these would not be publicly linked to their to firm), well more than half (58 percent) presented their businesses estimated annual revenues. Of those that did so, 77 percent characterized their organizations as for-profit; the remaining 23 percent characterized themselves as non-profit organizations and did not share detailed budget numbers. The percentage breakout of those giving revenue figures was:

\$0-\$100,000	0%
\$100,000-\$500,000	3%
\$500,000-\$1.5 M	21%
\$1.5M-\$5M	6%
>\$5M	<u>70%</u>
	100%

Comparisons

Comparison to Wisconsin

Abacus Technologies attempted to see how Door County's situation compares with Wisconsin as a whole. The following compares Door County's Internet and telephone service costs with those across the state.

Internet Services

Type of Service	Average Cost WI	Competitive Areas*	Average Door County Cost
T1 Circuit	\$700	\$500	\$1,000+
DSL	\$50-\$80	\$50-\$80	N/A
Cable Modem	Varies	Varies	Varies
Dial-Up	\$9.95-\$24.95	\$9.95-\$24.95	\$9.95-\$24.95

* In areas of the state where there is competition, service providers offer promotions that provide additional savings to customers.

Telephone Services

Type of Service	Average Cost WI	Competitive Areas*	Average Door County Cost
Local Business Line	\$15-\$25	\$8-\$25	\$25
Enhanced features	Extra or included	Included	Extra
Long Distance	2-7 cents	2-7 cents	2-7 cents

* In areas of the state where there is competition, service providers offer promotions that provide additional savings to customers.

If a service provider can package multiple services together, it offers discounts on services. For example, in the major markets in Wisconsin, service providers may package telephone, long distance and Internet all together over a T1 line to the customer. In this scenario, the customer is only responsible for paying the services they use and not the T1 line, a considerable cost savings.

Comparison to Other Communities

Green Bay, Wisconsin

Abacus also compared Door County to several specific communities, such as Green Bay. Most of the telecommunications providers in Door County are connected to Green Bay in some way, such as it being the source of Internet content for ISPs.

Unlike Door County, Green Bay has plenty of competition for telecommunications services. It has two cable television providers; at least three cellular providers; more than 10 ISPs; and at least a dozen companies selling local and/or long distance phone service. As one can imagine, this has a positive effect on prices that customers pay. The following are typical monthly rates; actual rates vary depending on the number of services and contract length:

- Local Dial Tone - Business \$15 to \$25
- Centrex \$11 to \$20
- DSL \$50 to \$80
- ISDN - BRI \$30 to \$45/line
- ISDN - PRI \$375 to \$800
- Intra-City Data T1 \$200 to \$350
- Carrier Access T1 \$150 to \$250 (carrier discounts apply)
- Intra-City T3 \$1,500 to \$3,000 (plus fiber construction)
- Carrier Access T3 \$1,500 to \$3,000 (plus fiber construction)
- OC3/OC12/OC48 SONET Individual case based

Manitowoc, Wisconsin

As in Door County, a majority of Manitowoc businesses (56 percent) were supportive of that city gaining potential new telecommunications providers. The service they were most interested in was high speed Internet, similar to the responses by Door County businesses. Another parallel was that they were quite satisfied with their voice services. Asked what the most important characteristic for choosing a telecommunications provider, Manitowoc also echoed Door County by choosing “Reliability” over “Customer Support” and “Cost.” And the city would like to partner with private service providers to bring broadband to its businesses, an arrangement under consideration in Door County.

But Door County and Manitowoc have differences, as well. Manitowoc has a population of 34,000 concentrated in one city alone, compared to Door County’s 28,000 residents who are spread over a wider area. Manitowoc is connected by one interstate highway and two U.S. highways, something Door County does not have. And Manitowoc also has more choices of telecom providers:

- Four companies provide local telephone service.
- At least 10 companies provide long distance telephone service.
- At least 18 companies provide Internet service, including five that sell digital subscriber line (DSL) services; at least five that offer ISDN lines; one that offers wireless Internet service; and at least eight that provide T1 services.

To better serve its businesses, Manitowoc is currently building a fiber optic network throughout the city to connect its municipal facilities and provide connectivity to those customers who need high bandwidth services. Also under consideration is building a wireless network on the fiber to provide mobile Internet connectivity to police and other city vehicles, as well as wireless Internet services to businesses and residents.

Algoma, Wisconsin

Algoma (3,400 population) is still larger than most of Door County’s communities, but is good for comparison purposes since it’s just over the border in Kewaunee County and is influenced by the same large community nearby (Green Bay). In the telecommunications arena, it is served by

many of the same providers as Door County. It has similar type businesses and relies on tourism for a large segment of its economy.

Algoma businesses were sent a survey similar to that used with Door County businesses. Although just a few responded, their answers were strikingly similar to those offered by Door County businesses. Algoma businesses also wanted additional telecom providers, especially for high-speed Internet service; most had no other choice but dial-up service, unless their company needed to have and was willing to pay for T1 service; and they chose "Reliability" as most important in choosing providers. Anecdotally, there has also been increased discussion in the City of Algoma about telecommunications, according to a municipal source.

Marquette, Michigan

Marquette, Michigan, is home to 20,714 residents located on Lake Superior's southern shore in Michigan's Upper Peninsula. Marquette is the county seat for Marquette County (population 64,383), Michigan's largest county in geographical size, covering 1,841 square miles. It is served by U.S. Highway 41, as well as Michigan Highways 26, 492, 500 and 553.

Like Door County, Marquette County's economic support comes from diverse sources. These include iron ore mining, metal fabrication, medical and human resource services, education, small business and tourism. Marquette is the site of Northern Michigan University and, like Sturgeon Bay, is the largest community in the county (as well as the U. P.).

There are eight providers offering Internet service, everything from dial-up at \$9.99/month, DSL (starting from \$29.95/month for 320k download, 128k upload), T1 and satellite. Three providers offer cellular telephone service, while at least four offer local or long distance telephone service. Charter provides cable television service.

In 2001, the City of Marquette announced the unveiling of the new Institutional Network, or "I-Net" intended to facilitate data transfer among governmental departments. This fiber optic backbone network replaces the dial-in telephone service previously used by outlying departments to communicate with City Hall. Besides the high-speed rate of transfer, one of the most popular advantages the I-Net allows is access to the Internet.

The I-Net enables access for all city departments and outlying services (such as the marinas, tourist park, etc.). The network also allows for direct communication with County offices enabling the sharing of law enforcement, tax information and land management data. Another feature is the connection with the library, which opens the door for the potential of virtually unlimited information sharing.

I-Net was the result of collaboration between the City of Marquette, County of Marquette and Charter Communications, Inc. All parties shared responsibility for the design and construction of the network. Costs for equipment and installation supporting the approximately one mile of fiber optic cabling were also shared.

An arrangement between the City and County Information Systems departments saved money by sharing in the cost of equipment and services for the Internet connection. The Marquette County Information Systems Department funded security components for the network and the City provided the e-mail server, which both City and County share. The web server was purchased by the City and hosts the City's Web site. This web site was constructed primarily to facilitate

communication and to provide another information bridge between the public and City government. The domain name (mqctcy.org) is used for e-mail by both city and county employees.

The I-Net also connects the computers at the City's Lakeview Learning Center. This room serves as the training center for employees to learn specific applications (such as assessment software), increasing efficiency in government operations. The County provides a trainer in exchange for use of the facility. The Learning Center is also available for businesses and organizations to use on a rental basis.

Houghton, Michigan

Houghton, Michigan, is the county seat of Houghton County and the largest city in the "Copper Country." It is served by U.S. Highway 41 and Michigan Highway 26. As of the 2000 census, there are 7,010 people, 2,114 households, and 877 families residing in the city. The median income for a household in the city is \$21,186, and the median income for a family is \$41,779.

The business base is similar to that of Marquette, Michigan, and somewhat to that of Door County. Houghton also is the home of Michigan Technological University, which offers undergraduate and graduate degrees in many engineering disciplines, including mechanical, electrical, civil, metallurgical, chemical and environmental.

Given this educational emphasis on technology, Houghton has a variety of telecom providers, including six cellular phone providers, at least six Internet service providers (for price comparison, 384k cable modem service is available for \$29.99/month), and six telephone service providers.

In the late 1960s, the City of Houghton, like other communities in the region, was suffering from the loss of its economic base. With a deteriorating infrastructure in need of improvements, the city participated in the HUD 701 planning program. Houghton focused on the "traditional" infrastructure, improving the water, sewer and transportation network, central business and Portage Lake waterfront. However, its continuing planning effort has evolved into a development process through the formation of public/private partnerships.

Conclusions and Recommendations

Abacus Technologies is basing its recommendations on the conclusions drawn from the market study, such as those below:

Conclusions

The feedback from businesses in the market study clearly confirms the issues identified in a telecommunications inventory study performed in May 2002. Door County businesses have problems with existing services and have limited telecommunications choices. The need for redundancy, additional choices and high-speed Internet were apparent, with 77 percent of the businesses responding positively to potential new telecommunications providers. In particular, 44 percent of these businesses would like alternative high-speed Internet services and 26 percent would like alternative local telephone service.

The availability of high-speed Internet service is an issue throughout the entire county. Currently businesses can only subscribe to expensive T1 circuits or cable modems, which are offered only in limited areas. Many times businesses have an Internet connection over its wide area network connection (T1 circuit) to its corporate headquarters. Some of these businesses would like the option to have a separate local high-speed Internet connection to free up the T1 circuit for critical data transfer to corporate headquarters. Out of the businesses that currently do not have a high-speed Internet connection, 33 percent would like to have a high-speed connection and almost all of these businesses cannot get cable modem service. Only four (7%) of the businesses considered dial-up to be sufficient for its business needs.

Businesses in the Sturgeon Bay area are, for the most part, satisfied with the local telephone services. Businesses have a choice of four local telephone providers. The incumbent local telephone provider, SBC, only serves about half (53%) of the businesses surveyed. The businesses in the southern part of Door County only have one choice for service, CenturyTel, and are satisfied with the service. CenturyTel has made recent upgrades in the past couple of years that made service better, but also more expensive.

The businesses in the northern part of Door County only have one choice for local telephone service, Verizon, and give mixed reviews of the service. Among businesses with Verizon's local services, almost half (45%) of businesses have either a negative or neutral/average impression of the service. Businesses are having problems with dropped lines and static. Getting an "all circuits are busy" error message is the biggest problem businesses have when trying to make a phone call.

When it comes to telecommunication services, many businesses in the Door County area have an "its the way of life in Door County" attitude. Some seem to have a high tolerance for service issues and are willing to deal with those issues to be able to be located and live in Door County. However, others feel "left in the dark" and would like to see improvements in service quality and service options. This same philosophy is true when it comes to redundancy. Many businesses consider service outages as more of an inconvenience than mission critical. For some businesses, if the phone service is down, they believe the customer will just call back the next day. Many retail businesses have problems with credit card phone lines going down. But some of these businesses simply fill out paper forms or have the customers use cash for purchases.

On the other hand, many businesses feel that Door County has neither enough technology choices nor the redundancy needed for businesses operations. Of the businesses surveyed, 44 percent would be willing to pay more for certain services if they were to have true redundant services. These businesses (such as those with a wide area network connection to their corporate headquarters) are relying on telecommunication services for business operations.

Businesses are also using the Internet for critical company/customer communications. Among the businesses surveyed, all but one company uses the Internet for business functions and 82 percent of the businesses have a company web site. Many of the businesses currently have an interactive web site that provides online sales and customer/employee login sections. Other businesses are looking to add interactive features to their web sites in the next couple of years. Businesses are also looking to use the Internet for Virtual Private Networks (VPNs) and video conferencing. These applications will require redundant high-speed Internet connections in order to be successful.

In some areas of the country, municipal and local units build broadband infrastructure to help provide services to its businesses and residents. Many of the businesses supported the idea of DCEDC forming local partnerships to help offer new enhanced telecommunications services. Out the businesses surveyed, 66 percent responded positively to the idea, while 29 percent were unsure or neutral on the idea, not knowing the details. Only 5 percent of businesses were against the idea. Many businesses felt it may be the only way to bring new services to the area while others felt it should be up to the private sector to bring the services to the area.

Recommendations

Based on market survey results, Abacus Technologies recommends that the DCEDC Technology Council consider the following:

Multiple Network Paths – Redundancy

In order for any service from any provider in the Door County area to be similar to services offered elsewhere, multiple network paths (“redundancy”) are needed. These multiple paths typically add more data capacity for providers, and at lower costs.

But perhaps the biggest issue caused by lack of redundancy is a potential service interruption. For example, a typical Internet service provider (ISP) in Green Bay has multiple connections to the Internet over separate networks, perhaps even from several vendors. If one of its connections to the Internet is disrupted, the ISP can still receive Internet content via its other connections. In the Door County area, the same ISP could also have multiple connections to the Internet; however, it will be across one network until it reaches Green Bay. Any problems with the network would cause the ISP (and all other service providers on the network) to have service interruptions.

DCEDC’s first priority should be to continue working to bring redundant network paths to the Door County area. It should continue strongly promoting the need for redundancy with the current owners of fiber networks in Door County, SBC and Charter. Those companies need to be aware of the needs and desires of their customers regarding redundancy. In addition, DCEDC should continue to discuss the redundancy issue with the Wisconsin Public Service Commission

(PSC). The results of this report and past reports should be shared with the PSC to make them aware of the telecom situation in Door County and its impact on the areas citizens.

It is crucial to communicate to the PSC and providers the economic impact to Door County of not having redundancy. The lack of redundancy, and the uncertainty it creates, may cause potential businesses to choose not to locate in the area or may cause existing businesses to relocate, which has been documented by this study.

Another option is to persuade a new provider (CLEC/ISP) to build a fiber network into the Door County area. In order for this to happen, it will be crucial for that provider to realize what potential customers and revenues it could gain in the area. Therefore, the information from this report should be shared with potential providers.

There may also be providers that are interested in serving Door County, but don't have the resources to build a network to the area. In order to attract new providers it may be necessary for the DCEDC/local party and/or another party to build a redundant fiber network and lease network capacity to CLECs and ISPs that are interested in providing services in Door County. In essence, any fees earned from this arrangement would be used to partially offset the cost of building the network.

There are numerous companies that already own and operate fiber optic networks around the Green Bay area that could potentially build into Door County if they were persuaded of the need to do so. Those companies include: Lightpoint, Norlight, Nsight, Midwest Fiber Network, Wisconsin Independent Network and US Signal. Potentially, one or more of these companies could build the fiber network to Door County and lease network capacity or fiber strands to a new provider or DCEDC/local party if an appropriate business case was presented to them.

Sturgeon Bay Business Park

Currently, the businesses in the business park have no options for high-speed Internet services except for T1 circuits. DSL is not offered and cable modems are not available in the business park.

Charter has been working with the DCEDC on finding a possible solution to bring cable modem service to the park. The issues for Charter are the costs associated to bring cable modem service to the park. DCEDC should continue to work with Charter on finding a way to come up with the funds needed. Local telephone providers have talked about deploying DSL however no action has been taken.

Another option is for DCEDC to work with the local ISPs, such as DCWis, on deploying wireless Internet service for the Business Park. Wireless Internet service would be comparable to DSL and cable modem services.

Just recently the cost of T1 Internet has dropped. Businesses in Sturgeon Bay can now get a full T1 of Internet for \$599/month from providers such as AT&T. This is the same cost whether you live in Milwaukee, Green Bay or Madison. The new T1 pricing however does not solve the problems for businesses looking for DSL or cable modem type services.

New Service Providers

Bringing in new service providers to offer services in Door County will not only expand the number and variety of services offered to area residents and businesses, but will also force providers to offer quality services that are price competitive. In the Green Bay area, for example, competing telephone providers now offer integrated services by installing a T1 circuit to a small- to medium-sized business and providing both telephone and high-speed Internet services to that customer across the T1 circuit. Among the advantages to the customer is that it does not have to pay for the T1 circuit and only has to pay for its telephone lines and Internet access used on the circuit. Another advantage is the T1 circuit does not have a distance limitation compared to DSL. Unfortunately, this scenario cannot be duplicated in Door County since a provider would still need multiple paths out of Door County for redundancy.

DCEDC should work with existing and potential providers by sharing the information from this report (and past and future reports) that explain why they should either provide more services or begin serving the Door County area. It will be important to regularly make existing and potential service providers aware of future developments in Door County, both business and residential, as well as potential businesses that are considering locating or relocating in the area.

Potential providers to pursue are TDS, ChoiceOne Communications and KMC. Each of these companies already provide competing services in Wisconsin, as nearby as Green Bay. Currently McLeod is the only active CLEC in Door County and provides telephone services in Sturgeon Bay. The DCEDC should also pursue McLeod to expand its product offerings, such as DSL Internet services.

The majority of the CLECs operating in Wisconsin today only offer competitive services in existing SBC territories. This creates a problem in Door County because SBC does not cover the entire county (As mentioned earlier, Verizon covers the northern part of Door County and Century Tel covers the southern part). Therefore, it will always make it almost impossible for the entire county to receive the same services no matter where one is located. The only realistic solutions would be a complete over-build of the telecommunications infrastructure in Door County—perhaps using alternative technologies such as wireless—or the purchase of all three territories by one provider.

Door County-Based Network and Services

In order for Door County to get new and enhanced telecom and data services, a local effort may be necessary to construct a network capable of providing services needed by the communities. A network could be implemented in a partnership with one or more service providers or implemented so that DCEDC/local party provides services directly.

As noted above, it may be necessary to build a fiber network throughout the county that extends to Green Bay and perhaps to other locations such as Algoma or Kewaunee in order to get enough customer base to attract new providers. The network backbone could connect service providers' central offices, POPs (points of presence), antenna towers or other facilities needed to provide services.

In Wisconsin, communities have taken a variety of approaches to solve their telecommunications problems. For example, the City of Richland Center formed a partnership with a provider to provide services in their community. The City constructed a fiber optic ring around the

community and leases it back to the service provider. From the city-owned fiber network, the provider is building facilities to customers in order to offer services. By working with the City, the service provider was able to set up a long-term lease on the fiber network and save on the up-front funds needed to build its network.

In other communities, the local municipality has taken it upon themselves to construct networks and offer services directly to its citizens, such as Reedsburg and Sun Prairie. Reedsburg is in the process of constructing a fiber-to-the-home/business network to offer telephone, cable television and high-speed Internet services. Sun Prairie has constructed both a fiber network and wireless network to offer high-speed Internet services, and is currently working on its business plans for fiber-to-the-home/business. Both communities are constructing the FTTH networks themselves and considering partnering with other service providers to assist them in providing future services.

DCEDC should start discussions on how a local “service provider entity,” if needed, would be formed. This concept should be discussed with potential local interest groups such as local municipalities, county government, existing telecom and datacom service providers, utility service providers and the private sector.

It should be noted that some federal funding is available for constructing telecommunications networks in rural areas. The Rural Utility Service (RUS) has been given the challenge to administer several new programs for improving the telecommunications in rural areas. The RUS has loan programs and grants for constructing telecommunications networks and may be a source of funding. The programs are based on the size of the community and the service available to customers (or lack thereof) today. Based on their populations, all the communities in Door County would be eligible for the RUS programs.

In addition, Governor Doyle recently announced his ‘Grow Wisconsin’ initiative to create jobs and raise incomes. As a part of his initiative, Governor Doyle is working to secure the energy, transportation and communication infrastructure Wisconsin needs in order to be fully engaged in the national and world economy. One of the highlights of Governor Doyle’ initiative is to promote broadband deployments throughout the state.

Governor Doyle is issuing a challenge to his Administration, the Legislature, the private sector and local governments to provide universal access to competitively priced broadband for every business and home in Wisconsin in five years. Governor Doyle is meeting with providers of advanced telecommunications services in Wisconsin to chart the course our state will follow to achieve this goal. The Governor is also directing the Public Service Commission to conduct the first ever statewide, comprehensive review of advanced telecommunications services in Wisconsin to provide the foundation for this effort. The Public Service Commission and the Department of Administration are also working with communities that are interested in the Federal RUS programs. DCEDC should contact these departments to express their interests in both State and Federal programs.

If a local entity is formed and considers building a telecommunications network to either partner with other providers or provide services directly, a feasibility and business plan would need to be performed. The feasibility study would identify the type of network that needs be constructed based on 1) the services to be provided and 2) the potential revenues for the services. The

business plan would identify the capital costs and operation costs needed to construct a network and to provide services. The business plan will also be needed in order to secure funding for the system.

In addition, the DCEDC should:

- Regularly work with and educate businesses on broadband communications and its benefits to them. The technology council could sponsor monthly or bimonthly presentations from providers, consultants, other vendors, etc., on emerging technologies and on how to use them.
- Develop a high-speed Internet “waiting list” of businesses that cannot obtain the current cable modem service or future wireless service. The waiting list might be shared (with businesses approval) with current providers, as well as new potential providers. Over time, the technology council will be able to document how successfully these businesses obtain high-speed Internet service.
- Create and maintain a database to collect problem/complaint information about telecommunication services. This will allow the technology council to document specific issues and present them to appropriate providers and/or the Wisconsin Public Service Commission.
- Become familiar with and monitor the new high-speed wireless Internet service that will be rolled out shortly in Door County. Based on its performance, this technology might be used to serve additional customers in other parts of the county.

Customer Survey

APPENDIX B

Business Summaries

The following is a summary of each of the business customers surveyed:

3W Design – Sister Bay

3W Design is a web design firm located in Sister Bay. It currently has Verizon for local telephone service and Urbia for long distance telephone service and it is satisfied with both services. It also has cellular service with CellCom and is satisfied with the service now that additional towers have been added. It has high-speed Internet cable modem service with Charter and is satisfied with the service. It has a web site that is used for marketing and another that is used for searching Door County jobs. It sees no need for alternative telecommunication services based on the fact that people may want them but can't afford them.

Ace Hardware – Sturgeon Bay

Ace Hardware uses McLeod for its local and long distance phone service and is neutral about the service it receives; the business does not use cell phones. It uses Infinity for dial-up Internet service and characterizes it as slow. It would like to see another high-speed Internet provider in Door County, but cites that it must be cost-effective. Its web site is used for marketing and customer support, and allows employee login; it would eventually like the ability to sell online.

American Folklore Theatre – Ephraim

American Folklore Theatre is an entertainment company with an office in Ephraim and a performance and rehearsal site located in Peninsula State Park. Currently it does not have a wide area network between the locations, but would like to in the future. Currently, it doesn't even have a phone line at the park. It would like to be able to process credit cards from the park over a wide area network or through a modem. The office in Ephraim has Verizon for local telephone service and Qwest for long distance telephone service and is satisfied with both. It does have one cell phone with CellCom for communication while at the park; however, reception has many dead spots. Currently it has dial up Internet service with Online Door County and is switching to Charter's high-speed cable modem. It currently has a web site for marketing, reservations and sales of merchandise. It sees no need for alternative telecommunication services.

Bank Mutual – Sturgeon Bay

Located in Sturgeon Bay, Bank Mutual is one of 70 banks. It has a T1 circuit to its Green Bay bank that is used for data and Internet communications. It currently has McLeod for local and long distance telephone and is satisfied with both services. It currently has a corporate web site that is used for marketing, customer support and customer login, but it does not have a local web site. All decisions relating to telecommunications are handled by the corporate office.

Baudhuin, Inc. – Sturgeon Bay

Baudhuin is a civil engineering and land surveying firm with two locations, Sturgeon Bay and Shawano, Wisconsin. The two locations are not connected and communicate via email. The Sturgeon Bay facility has telephone service with SBC and is satisfied with the service. It also has cellular service with CellCom and has an average/neutral impression of the service. It has had problems with signal strength and dead spots. It has a high-speed Internet connection with Charter and is satisfied with the service. It currently has a web site that is used for marketing. It

would like to add customer support, customer and employee logins to the web site and implement a VPN to Shawano and employees. In the future, it would like more competition with telephone, Internet and cellular service.

Baylake Bank – Sturgeon Bay

Baylake Bank has eight Door County locations; they are part of 26 locations in Northeast Wisconsin. All satellite locations connect to the main bank in Sturgeon Bay via 64K lines; the main bank links to a data center in Grafton with a leased T1. There is a dedicated telephone network interconnecting all the various locations. With so many locations, it uses a variety of providers. For WAN services, it uses SBC, CenturyTel, Verizon and Norlight. It says Norlight is “excellent,” SBS is “average” and CenturyTel and Verizon are “bad.” It is somewhat satisfied with local phone service it buys from SBC, Verizon and CenturyTel. Regarding long distance, it says Norlight provide excellent service while SBC is average. CellCom is its cellular provider and Norlight provides Internet service; it is satisfied with both companies. Online banking is available on its web site. It doesn’t believe Door County needs more telecom providers, but that more Door County people need “to use telecommunications so telcos can justify new services.” Because it has had problems with cut lines, lightning and problems at providers CO (central office), it would be open to paying slightly more to ensure redundancy of services.

Bay Shipbuilding – Sturgeon Bay

Bay Shipbuilding is a manufacturer of large ships with 4 locations, Sturgeon Bay, Marinette, Toledo and Cleveland. Bay Shipbuilding is apart of the Manitowoc Marine Group that is owned by Manitowoc Company in Manitowoc, Wisconsin. The Sturgeon Bay facility is connected to the Marinette and Manitowoc facilities via a fractional T1 circuit (384Kbps) for data. The T1 circuit is provided by Sprint and Bay Shipbuilding has an average impression of the service. It had problems with the circuit going down about every 15 days. Local telephone service is provided by SBC and AT&T provides long distance service. It is satisfied with both services. It also has cellular service with CellCom and has an average impression of the service. It has had problems with the cell phones working when sales personnel travel out west or east. It needs to call ahead to make sure personnel can get service for a particular destination. It currently has a high-speed T1 Internet circuit with 128Kbps of Internet access, 384Kbps of video and 512Kbps of voice with AT&T. It is satisfied with the service, but it took six months for the installation and experienced a couple of months of billing issues. It currently has a web site that is used for marketing, customer support and employee login. In the future, it plans on adding online purchasing of parts on the web site and VPN, and voice over IP technologies. It would like to see alternative local telephone service, high-speed Internet, cellular service and redundancy.

Bergstrom – Sturgeon Bay

Bergstrom is an automobile dealership located in Sturgeon Bay. The Sturgeon Bay facility is connected to company headquarters in Neenah with a T1 circuit that is used for data and Internet communications. It currently has GlobalCom for local and long distance telephone service and is satisfied with the service. Its only issue with telephone service was with billing. It currently has a web site that is used for marketing, online sales (view inventory), and customer support. It also uses video conferencing for training and meetings. In the future it would like to see alternative high-speed Internet services.

Birch Creek Music Performance Center – Egg Harbor

Birch Creek is a music education and performance center located outside Egg Harbor. It currently has Verizon for its local telephone and PowerNet Global for its long distance service and is satisfied with the services. It does have problems with “all circuits are busy” messages. It has dial-up Internet service with Online Door County and would like a high-speed connection. It has a web site that is used for marketing and customer support. In the future, it would like to see alternative/any high-speed Internet service.

C&S Manufacturing – Sturgeon Bay

C&S is a manufacturing firm located in Sturgeon Bay. It has McLeod for local and long distance service and is satisfied with the service. It has problems with getting phone calls a couple of times a day with no one on the other end. It noted that once someone in Florida trying to reach Sturgeon Bay heard the phone ringing, but the phone did not actually ring on the Sturgeon Bay end. It also said the phones echo every once in awhile. It also has cellular service with CellCom and is satisfied with the service. It has dial-up Internet service with Infinity and would like to get a high-speed Internet connection. Charter cable modem is not available and a T1 circuit is too expensive. It currently has a web site under construction that will be used for marketing and downloads of catalogs. It would like to do online sales in the next couple of years. In the future it would like to see alternative telephone service, high-speed Internet and cellular services.

CarQuest – Sturgeon Bay

CarQuest is retailer and distributor of automotive parts with one location in Sturgeon Bay. CarQuest currently has a software program that allows stores and vendors to see current inventories and specifications. The Sturgeon Bay facility currently uses dial-up Internet to connect to the system and it is too slow. It is in need of high-speed Internet service. It also has 30 vendors/resellers in the Door County area that need to connect to the system and dial-up Internet is going to be too slow them to use the system. It currently has McLeod for telephone and is satisfied with the services; its only complaint was customer service. It also has cellular service with CellCom, with which it is not satisfied (the northern part of Door County has too many dead spots). In the future it would like to see alternative high-speed Internet services countywide.

Century 21 – Egg Harbor/Sister Bay

Century 21 is a real estate firm with locations in Egg Harbor and Sister Bay. Currently the two locations do not have a wide area connection between them and pass information across the Internet via a FTP site. It has Verizon for local telephone service at both locations and is not satisfied with the service. It routinely has problems with: dropped lines, crossed lines, answer and nobody is there and “all circuit are busy” when it tries to call out. Weather also seems to cause inference and quality issues. For long distance service, it has Sprint and it is satisfied with the service. It also has cellular service with CellCom and US Cellular. It is not satisfied with these services; it would like more coverage (it gets complaints from people visiting the area). It has a dedicated 56Kbps dial-up account for Internet service at Egg Harbor and dial-up service for Sister Bay. It would like to upgrade to high-speed Internet service but its not offered in Egg Harbor. It’s waiting to see what comes for services, but has been waiting for more than a year. It currently has two web sites that are used for marketing, customer support and MLS searches. Three years ago, 7-10 percent of its sales were generated from the Internet; last year 84 percent of its sales were generated from the Internet. In the future it would like to see alternative/any high-speed Internet services.

City of Sturgeon Bay – Sturgeon Bay

The City has four locations located throughout the Sturgeon Bay area. The locations are not currently connected with a wide area network, but will be in the future. All city buildings have a fiber optic connection free of charge from Charter. The City is looking at a new phone system that will utilize the fiber. It has McLeod for local and long distance and is satisfied with its services. It also has cellular service with CellCom and is satisfied with the service. It currently has five dial-up Internet accounts with Infinity. The city is upgrading to high-speed cable modem in the near future. The city does have a web site that is used for marketing and meeting schedules and agendas. In the future it would like to see alternative local telephone, high-speed Internet, and cable television services.

Coldwell Banker – Fish Creek

Coldwell Banker is a real estate firm with locations in Fish Creek and Sturgeon Bay. The two locations are not connected with a wide area network. The Fish Creek office has Verizon as the local telephone provider and is not satisfied with the service. It has had billing problems, scratchy lines and no dial tone. It also has cellular service with CellCom and is satisfied with the service, but would like to see Sprint services. It has a high-speed Internet cable modem connection with Charter and is satisfied with the service. It has a web site that is used for marketing, customer support, and MLS searches. In the future it would like to see alternative local telephone, high-speed Internet, cellular and cable television services.

Connector Services Corp. – Sturgeon Bay

Connector Services is a manufacturer of electronic components with seven locations located worldwide. The Sturgeon Bay facility is connected to company headquarters in Chicago via a T1 circuit. The T1 circuit is used for data and Internet communications and is handled by corporate headquarters. It currently has McLeod for local telephone service with 12 lines and is satisfied with the service. It currently has a web site that is used for marketing and an employee login intranet. In the next couple of years it would like to add online sales to the web site. Internet service is obtain from company headquarter from Chicago and at times can be slow due to the traffic on the T1 circuit. In the future it would like to see high-speed Internet options to supplement or replace the T1 circuit and allow for a VPN to Chicago and video conferencing.

Country House – Sister Bay

Country House is a resort that consists of 46 rooms and suites. It currently has Verizon for its local telephone service and Qwest for its long distance, and it satisfied with both services. It currently has a Charter cable modem for Internet access. At this point, the resort does not offer Internet access in the rooms. It does, however, have a computer set up in its lobby with free access to the Internet. In the future it would be open to alternative local telephone and Internet providers.

DCWis (Door County Online)– Fish Creek

Door County Online has been providing Internet access to the Door County area since 1995 and currently has around 3,000 customers. It offers dial-up Internet service and its standard rate is \$19.95/month. It also offers email and web hosting to its customers. In addition to dial-up service, it is implementing a wireless network to offer high-speed Internet access.

Door County – Sturgeon Bay

Door County is based out of Sturgeon Bay and has eight facilities. Three locations are connected to the county courthouse via T1 circuits and five facilities have a fiber optic connection from Charter. The fiber optic connections are provided free of charge to the county as part of the cable franchise agreement with Sturgeon Bay. The T1 and fiber optic are used for data, Internet, and voice communications. It has SBC for local telephone service and has a neutral/average impression on the service. It had problems getting the T1 lines installed. AT&T provides long distance service and it is satisfied with the service. It also has cellular service with CellCom and paging service with SBC and is satisfied with the services. It does have problems with billing issues with all the providers. It has a high-speed T1 Internet connection with WiscNet and is satisfied with the service. In the future it would like to see alternative local telephone services and cellular services.

Door County Library – Sturgeon Bay

The Door County Library has eight locations throughout Door County: Baileys Harbor, Egg Harbor, Ephraim, Fish Creek, Forestville, Sister Bay, Sturgeon Bay and Washington Island. Each of the libraries has a T1 line to Appleton for data and Internet communications with Outagamie Waupaca Library System. The T1 circuits are provided by SBC and are subsidized by the State of Wisconsin. The Sturgeon Bay location has a fiber optic connection to the County building and gets its telephone service from the County phone switch. The other locations get telephone from the local providers. It currently has a web site that is used for marketing, online sales (check out), customer support, customer login and library catalog. It would like to add a virtual reference section and chat room features to the web site and add a distance learning classroom over the next couple of years. In the future it would like to see alternative local telephone services and cable television services offered.

Door County Memorial Hospital – Sturgeon Bay/Fish Creek/Washington Island

Door County Memorial Hospital has eight locations throughout Door County. The hospital is connected to corporate Ministry Health Care in Milwaukee with a shared T1 circuit that is used for data, Internet and video conferencing. The T1 circuit is shared with Ministry Home Care. All the Door County locations are connected by modems at around 24Kbps except for Washington Island, which has a T1 circuit. The Washington Island T1 circuit was made possible with a grant. The other locations do not have T1 circuits due to the high costs of T1s. The hospital also has private telephone network for extension dialing made possible by tie lines. Norlight provides the T1 circuit to corporate and its satisfied with the service. It currently has SBC for local and long distance telephone service and is satisfied with both services. It also has cellular service with CellCom and its satisfied with the service. The hospital has a web site that is used for marketing and customer support. In the future it would like to add a patient login section to the web site. It would like to see alternative local telephone and high-speed Internet services in the future especially redundant services.

Door Peninsula Internet – Forestville

Door Peninsula Internet has been providing Internet access to the Door County area since 1998 and currently has around 1,300 customers. It has POP locations in Sturgeon Bay and Algoma and each is fed with a T1 of Internet from AT&T. From its POPs it offers dial-up Internet and its standard rate is \$19.95/month. It also offers email and web hosting to its customers. In addition to dial-up service, it is implementing satellite Internet service for customers who want high-speed Internet. The satellite Internet service offers speeds up to 400Kbps download and uses a phone

line for upload. Service packages start at \$29.95/month, with \$199 for equipment purchase and a one-time activation fee.

FLS Banners – Sturgeon Bay

FLS Banners is a printing company specializing in flags, table covers and banners with one location Sturgeon Bay. It currently has McLeod for local and long distance service and is satisfied with the services. It also has cellular service with US Cellular and is not satisfied with the service. It would like to see more advanced cellular services that are already offered in other areas. It has a high-speed Internet connection with Charter and is satisfied with the service. It currently has a web site that is used for marketing, online sales, customer support, customer login, and employee login. In the future it would like to add chat features, flash design, and a quote module to the web site. In the future it would like to see alternative local telephone, cellular and cable television services. Overall, it would like to see more enhanced and advanced services.

Hatco Corporation – Sturgeon Bay

Hatco is a manufacturer of foodservice equipment with locations in Milwaukee and Sturgeon Bay. The Sturgeon Bay location is connected to the corporate headquarters in Milwaukee with a T1 circuit that is used for data, Internet and voice communications. AT&T provides the T1 circuit, local telephone and long distance service and it is satisfied with the services. It has cellular service with US Cellular and is satisfied with the service except for some coverage issues. It currently has a web site that is used for marketing, customer support, customer login, and employee login. In the future it would like to see alternative local telephone service and high speed Internet service with redundancies built in.

Horseshoe Bay Farms and Golf – Egg Harbor

Horseshoe Bay Farms is a development and construction company and a golf course. It has four offices in Door County. The golf center is connected to Arizona corporate headquarters with a T1 circuit that is used for data and Internet communication. It has Verizon for local telephone and is not satisfied with the service. The lines and T1 circuits go down and sometimes it's the fault of the phone technicians. Long distance service is provided by MCI and it is satisfied with the service. It also has cellular service with CellCom and is satisfied with the service due to a tower on its grounds. The other three offices have a need for high-speed Internet, but there are no options available. It has a web site that is used for marketing and members only login with future online billing and tee times. It would like to see alternative/any high-speed Internet services and more options with local telephone services in the future.

IBM Software Development – Sturgeon Bay

IBM has a software developer in Sturgeon Bay, who works with a remotely located team of other developers. A satellite broadband connection from Door PI is used to VPN to the corporate office, and performance is satisfactory. It previously had Starband service, which frequently went down and had latency problems. McLeod furnishes local phone service, with LDMI providing long distance and CellCom providing cellular service. Performance and price is satisfactory on all. Former provider SBC had disconnection problems. In addition to the VPN, IBM also uses the Internet to collaborate on software projects via LotusNotes. Although saying that it can get "complicated with too many providers," IBM supports more broadband (high-speed Internet) beyond just Sturgeon Bay. IBM feels that a combination of high-speed

capabilities and Door County's picturesque setting would attract more professionals to live and work in the area.

Itasca Systems – Egg Harbor

Itasca Systems manufactures programmable electric coil winders and automated assembly equipment with one location in Egg Harbor. It currently has Verizon for local telephone and Qwest for long distance and is satisfied with the services. It also has cellular service with CellCom and overall is satisfied with the service; however, there are some dead spots. For Internet service, it uses three dial-up accounts with Online Door County. It is interested in high speed Internet, but it is not offered. It currently has a web site that is utilized for marketing and customer support; it is looking to possibly upgrade the site in the near future. It is interested in high speed Internet for future video conferencing. In the future, it would like to see high-speed Internet services in Egg Harbor, perhaps by microwave or wireless.

Just In Time Corp. – Sturgeon Bay

Just In Time is a distributor located in Sturgeon Bay. It currently has McLeod for local and long distance telephone service and is satisfied with the services. However, it noted that most plans are not offered to Door County customers. It also has cellular service with US Cellular and is satisfied with the service, but would like to see more competition. It has dial-up Internet with Infinity and is looking to upgrade to a high-speed Internet connection. It is looking into whether or not it can get Charters cable modem service. It has a web site that is used for marketing and in the future they are thinking about adding online sales. In the future it would like to see alternative local telephone, high-speed Internet service and cellular service, with all plans available to the Door County area that are available elsewhere.

Kellstrom-Ray Agency – Sister Bay

Kellstrom-Ray Agency is a real estate and appraisal firm with one location Sister Bay. It currently has Verizon for telephone service and gave no overall impression of satisfaction level. It did comment on how it has no choice for services. It also has cellular service with CellCom and is satisfied with the service. For Internet service, it has a high-speed connection with Charter and is satisfied with the service. It currently has a web site that is used for marketing and MLS home search.

Kerber Rose & Associates – Sturgeon Bay/Sister Bay

Kerber Rose is an accounting firm with nine locations with offices in Sturgeon Bay and Sister Bay. The offices are connected to corporate headquarters in Shawano, Wisconsin, via VPN. The Sturgeon Bay office has SBC for local telephone and the Sister Bay office has Verizon for local telephone service. It is currently satisfied with both services. Global Crossing provides long distance telephone to both offices and it is satisfied with the service. The offices also have cellular service with CellCom and it is satisfied with the service except for some dead spots. Both offices currently have high-speed Internet access with Charter that is used for VPNs to corporate headquarters. It currently has a web site that is used for marketing and customer support (tools). It sees no need for alternative telecommunication services.

Lang Ltd./Door County Candle – Sturgeon Bay

Door County Candle manufactures candles and has two locations, Delafield and Sturgeon Bay, Wisconsin. The Sturgeon Bay facility is connected to corporate headquarters in Delafield via a T1 circuit. The T1 circuit is used for data and Internet communications and is handled by

corporate headquarters. It is not satisfied with the service due to several outages and problems with the circuit. The Sturgeon Bay facility is dependent on the service and is in need of better redundant service. It is open to negotiation on bringing better T1 service to the Sturgeon Bay facility because it is needed in order for the facility to stay in the Door County area. It currently has SBC for telephone service and is not satisfied with the service. It claimed the phone lines go down, and can be scratchy at times, especially when calling the corporate office. It currently has a web site that is used for marketing, online sales, customer support and employee login intranet. Internet service is obtain from company headquarters and at times can be slow due to the traffic on the T1 circuit. In the future it is considering adding another T1 circuit and would like to see alternative telephone and high-speed Internet options.

Liberty Grove Software – Ellison Bay

Liberty Grove provides software, training and consulting from offices in Ellison Bay and Glen Ellyn, IL. It purchases local, long distance and cellular service from Verizon, American Phone and AT&T, respectively. It estimates it uses e-mail for 80 percent of its business communications and needs to use the Internet at least 6 hours a day. Therefore, it is challenged by the availability of only dial-up service and avoids doing some types of work at its Door County office. It is satisfied with the service provided by Online Door County, but is exploring satellite service to get better speed and reliability. It has considered expanding its business several times but decided not to due to lack of telecom services. Liberty Grove feels having access to broadband services would draw more white-collar employers, which tend to be high margin businesses on the growth side of the economy.

Main Street Market – Egg Harbor

Main Street Market is a family-owned supermarket with one location. It uses Verizon for its local and long distance phone service, and also has separate lines for a pay phone, ATM and credit card approval (dedicated). Although generally satisfied with service, it would like better reliability and faster connect time for the credit card approval system; if the system goes down, it must process credit cards through a paper system instead. It explored linking by satellite, which proved to be too expensive. It noted that it felt phone service is better than it was even two years ago. CellCom is its cellular phone provider and dial-up Internet is provided by Online Door County, both of which give satisfactory service. Although Online Door County provides excellent customer service, Main Street Market would like to see additional high-speed Internet providers in Door County so it has more choices and faster connections; it would also consider paying more for better service.

Nelson Team Ford – Sturgeon Bay

Nelson Team Ford is an automobile dealership in Sturgeon Bay. The Sturgeon Bay facility is connected to Ford Corporate via satellite. The connection is used for training and video conferencing. In the near future the satellite will be replaced with a connection over the Internet. It uses McLeod for local and long distance telephone and is satisfied with the service. It also has cellular service with CellCom and is satisfied with the service. It has a high-speed Internet connection with Charter and is satisfied with the service. It currently has a web site that is used for marketing and automobile inventories. In the future it would like to see alternative high-speed Internet services.

N.E.W. Industries, Inc. – Sturgeon Bay

Manufacturer N.E.W. Industries is satisfied with all the providers at its single location: local and long distance (McLeod), cellular phone (CellCom) and Internet (Charter). It plans to have a web site within three years and use it for marketing, customer support, customer accounts, employee access and business-to-business communications. Higher bandwidth is important since it frequently transfers large CAD files. Since it felt it was getting cable modem service at a fair price, it didn't feel the need for additional telecom providers in the county. It also believed redundancy should be "a given" on the part of providers and wasn't willing to pay more for something that should already be part of everyday service.

Nor-Dor Clinic – Sister Bay

The clinic was neutral about its land line phone providers (Verizon for local service, AT&T for long distance, but was positive toward CellCom (cellular phone) and Online Door County (dial-up Internet). It does not have a web site. It does want to see additional high-speed Internet providers in the county to increase competitiveness and speed. It would not pay any additional cost to receive redundancy.

Northeast Wisconsin Technical College – Sturgeon Bay

NWTC has one location in Sturgeon Bay and one mobile classroom. The Sturgeon Bay facility is connected to Green Bay with two T1 circuits. The T1 circuits are used for data, Internet, video conferencing and voice communications with the Green Bay technical college. It also has two DS-3 circuits for its distance learning classroom. It currently has SBC for local and long distance telephone service and is satisfied with the services. It also has cellular service with Nextel and is very satisfied with the service. It has a web site that is used for marketing, student registration, and employee login access with student login access in the future. It would like to see alternative local telephone, high-speed Internet and cellular services.

Northern Door Communications – Sister Bay

Northern Door Communications is a reseller of CellCom's cellular service and products with one location in Sister Bay. It currently has Verizon for local telephone service and is not overly satisfied with the service. The lines sometimes are scratchy and noisy. For Internet service, it has a high-speed connection with Charter and is satisfied with the service. It currently has a web site for marketing and customer support. In the future it will be using the web site for online sales and will be using the high-speed Internet connection to access billing information from CellCom. In the future it would like to see alternative high-speed Internet and voice options via wireless.

Palmer Johnson – Sturgeon Bay

Palmer Johnson is a manufacturer of luxury yachts and has five locations in Sturgeon Bay and eleven locations worldwide. The Sturgeon Bay locations are connected for data by T1 lines and the other locations connected by VPNs. The Sturgeon Bay locations also have separate T1 lines for telephone/voice communications. The T1 circuits and local telephone service are provided by SBC and it is satisfied with the services. Norlight provides the long distance and Internet service and it is satisfied with the services. For Internet service it has a T1 circuit and some dial-up accounts with Infinity. It currently has a web site that is primarily used for marketing. In next couple of years it would like to add customer login and employee login features. Its high-speed Internet is used extensively for VPNs to remote offices, VPN to employees, file transfers and video conferencing. In the future it is looking at training and voice over IP over the Internet and would like to see alternative telephone and high-speed Internet services.

Peninsula Art School – Fish Creek

Peninsula Art School offers various art workshops and is located in Fish Creek. It has Verizon for local telephone service and has a neutral/average impression of the service. AT&T provides satisfactory long distance service. It has eight dial-up Internet accounts with Online Door County and would like to have a high-speed connection. It has looked into obtaining a high-speed connection, but it's not available: it is too far from Charters network. It currently has a web site that is used for marketing and workshop registration and would like to add student login, online courses and chat features in the future. It would like to see more high-speed Internet providers.

Pheasant Park – Sister Bay

Pheasant Park is a resort that consists of suites and condos. It currently has Verizon for its local telephone service and Qwest for its long distance service, and is satisfied with both services. It currently has dial-up Internet with DCWis and has received pricing from Charter for cable modem service. In the future, it would like to offer high-speed Internet to its rooms and see more options for telephone and high-speed Internet services.

Pick n Save – Sturgeon Bay

Pick n Save is a supermarket that is corporately owned by its parent company, Roundy's. It is connected to the Milwaukee headquarters by dedicated telephone line, which allows it to participate in the corporate intranet (65 stores total). It uses SBC for local phone and MCI for long distance, and is satisfied with both, although it did experience outages when Door County's fiber optic backbone was severed. It uses no cell phones in the business. Internet content is provided over the company intranet. Roundy's is discussing such Web-based activities as secure login for employees and online training. It would like to see more providers for fast Internet service, at least 1 Mbps.

Piggly Wiggly – Sister Bay

Piggly Wiggly is a grocery store located in Sister Bay. The Sister Bay location is connected to corporate headquarters in Sheboygan, Wisconsin with a T1 circuit. The T1 circuit will be used for data, Internet and telephone/voice communication and is handled by corporate headquarters. It has Verizon for telephone service and is satisfied with the service. Sometimes they do have trouble with the credit card lines. It also has cellular service with US Cellular and is satisfied with the service. It currently has a web site that is used for marketing and employee applications. In the future they would like to see alternative telephone and high-speed Internet services.

Pinkert Law Office – Sturgeon Bay

Pinkert Law Office has a second location in Sister Bay. It has SBC for local phone service, AT&T for long distance, CellCom for its cellular phones and Online Door County for its Internet service; it is satisfied with all these providers. It noted a tendency to get bumped off the Internet with its former provider, Infinity. Pinkert would like to have Internet service that's faster than its current dial-up connection, especially since necessary legal information that was available on CDs is now only available via a download.

Portside Properties – Sturgeon Bay

Portside is a general construction contractor that builds primary residences, condominiums and light commercial buildings. It has a satellite office in Oshkosh. It uses McLeod for both its local and long distance phone service; although it has experienced service disruptions occasionally,

McLeod has been very responsive to these issues. It has numerous cellular phones with CellCom service and has dial-up service through Infinity. It would like to see additional providers in Door County for Local and long distance telephone service, as well as high speed Internet and cable television, believing this would drive prices down and raise quality of service. Portside and its customers are counting on broadband communications being available in Door County; the company installs Category 7 cable in half of all homes it constructs.

ReMax Realty Express – Sturgeon Bay

This realty company has one location in Sturgeon Bay. It was neither satisfied nor dissatisfied with its local phone service (Ameritech) or long distance service (AT&T). However, it was satisfied with its CellCom cellular service and very pleased with its cable modem Internet service from Charter, citing that “its a lot faster.” It would like to see additional telecom providers for all types of phone service (local, long distance, cellular) plus high speed Internet, in order to have more choices of providers and service packages.

Scandia Village – Sister Bay

Scandia Village is a retirement living village located in Sister Bay. The Sister Bay facility is connected to corporate headquarters with a telephone data line that is used for data and Internet communications. It has Verizon for local telephone and Sprint for long distance service. It is satisfied with both services. Residents of the village are responsible for obtaining their own phone service. It currently gets its Internet service from corporate but it also has a computer lab for its residents with dial-up Internet. It currently does not have a web site and cant afford to build a site at this time. It does some video conferencing for training over its data line to corporate. In the future it would like to see alternative local telephone and cellular service.

Scandinavia Lodge – Sister Bay

Scandinavia Lodge is a hotel located in Sister Bay. It has Verizon for its local telephone service and has an average impression with the service. Currently it has Sprint and Ameridas for long distance service and is satisfied with the services. It's currently looking at only having one provider. It also has a cellular phone with CellCom and is not satisfied with the service due to signal strengths, rates, and packages available. It also gets complaints from out of town guests about the cellular coverage. It has a dial-up account with Online Door County and has an average impression on the service. It currently has a web site that is used for marketing and would like to add online reservations in the future. In the future, it wants to have high-speed Internet service (to rooms) and would like to see alternatives for telephone, Internet and cellular service.

Spielman's Woodworks – Fish Creek

Spielman's Woodworks is a retailer of wood products located in Fish Creek. It currently has Verizon for local and long distance telephone service and is satisfied with both services. It also has cellular service with CellCom and is not satisfied with the service. It would like access to a larger area without having to pay roaming charges, especially when out of the Door County area. It currently does not use Internet service and does not have a web site. It did at one time have a web site but closed it because it was too expensive and had no positive results. It sees no need for alternative telecommunication services.

State Farm Insurance – Sturgeon Bay

State Farm has one location and is linked to the corporate headquarters by dedicated line so agents throughout the country can access policyholder information. Its web site, hosted

corporately, is used for marketing, online applications, customer support, customer account access and employee login. It has experienced reception problems with its cell phones and hang-ups from its landline phone service. For these reasons, it would like to see additional phone providers in Door County, especially for cell service.

Stone Harbor Resort – Sturgeon Bay

Stone Harbor is a hotel/resort with space for meeting space for conventions and other functions. It relies heavily on IT, with one network for its PCs and another for its point-of-sale system. It leases a full T1 from SBC. McLeod provides it with good quality local and long distance phone service but there have been some billing issues. It is satisfied with its cell phones from CellCom. Charter provides Internet service (and video) satisfactorily as well. It plans to host its own web site within the next year and be capable of taking online reservations. It would like to see additional Internet providers enter the market, especially those selling cost-effective T1s. It is considering offering Internet service to rooms and looking for alternative to cable video, such as satellite. It feels that it is an appropriate time for the county to invest in broadband technologies in order to better compete with other markets.

Stoneman-Schopf Agency – Sturgeon Bay

A single-location insurance agency, Stoneman-Schopf uses McLeod for local and long distance phone service, CellCom for Cellular service, and Charter for Internet service. It is satisfied with all, especially the speed of the cable modem service. Even so, it would prefer more telecommunication providers in the county for local and long distance telephone and high speed Internet; it especially would like to see speedier Internet access and more choices. Since it experienced outages due to the main optical fiber being cut, it would like to see additional fiber routes into the county. The agency currently processes insurance applications online and would explore voice-over-IP telephone service if there were sufficient broadband infrastructure to do so.

Sturgeon Bay Community Development – Sturgeon Bay

Sturgeon Bay Community Development is a non-profit organization located in Sturgeon Bay. It currently has McLeod for local and long distance telephone service and is satisfied with the service. It currently has dial-up Internet with infinity and is satisfied with the service. It has no future plans to upgrade to a high-speed Internet connection due to the costs and its usage. It has a web site that is used for marketing the Sturgeon Bay area and in the future would like to add video. Currently it produces a video that is aired on cable TV. In the future it would like to see alternative high-speed Internet services.

Sturgeon Bay Sand & Gravel – Sturgeon Bay

Sturgeon Bay Sand & Gravel is located in Sturgeon Bay. It currently has GlobalCom for local and long distance telephone service and is satisfied with the services. It has cellular service with CellCom and is satisfied with the service. For Internet service it has a dial-up account with Door Peninsula Internet and does plan on upgrading to high-speed. It currently does not have a web site and has no future plans to develop one. It sees no need for alternative telecommunication services.

Sturgeon Bay Utilities – Sturgeon Bay

Sturgeon Bay Utilities has several locations within Sturgeon Bay including a main office, five wells, three ozone treatment plants, three substations, and a wastewater treatment plant. Most of

the locations are connected by landlines for internal communications and the wastewater treatment plant has a cable buried to the main office. The utility also has a 48-count fiber optic cable under the bay. In the future, the utility would like to use the fiber optic line with wireless technologies to replace the landlines. The utility also has a fractional T1 circuit to WPPI that provides billing support and Internet service. It has SBC for local and long distance telephone service and is satisfied with the services. It also has cellular service with CellCom and is satisfied with the service. It currently does not have a web site and sees no value in it at present. In the future it would like to see alternative high-speed Internet services and redundancy.

Target – Sturgeon Bay

Target is a retailer with a location in Sturgeon Bay. The facility in Sturgeon Bay is connected to corporate headquarters with satellite and phone lines that are used for data and Internet communications. It has local telephone service with SBC and is satisfied with the service. All communications are handled at the corporate level with no local input. It sees no need for alternative telecommunication services.

Therma-Tron-X, Inc. – Sturgeon Bay

This company manufactures industrial finishing systems at two locations, Sturgeon Bay and St. Charles, IL. The locations are linked with a T1 purchased from SBC that carries both phone service and Internet content. SBC furnishes the local and long distance phone service to the company's satisfaction, as does CellCom for cell phones and Norlight for Internet service. It would like to see more broadband throughout Door County, reckoning that "what's good for the community is good for us." It feels this technology would help both the redundancy issue as well as increase the county's ability to bring in good jobs.

United States Coast Guard – Sturgeon Bay

The Coast Guard has a business office as well as a canal station in Sturgeon Bay. It has a dedicated link to the USCG regional headquarters in Cleveland but wasn't sure of the specifications. Internet service and local/long distance phone service is also purchased by procurement office located elsewhere. It uses CellCom cellular phones but has experienced limited coverage areas and dead zones, especially in trying to communicate between personnel on Lake Michigan and the canal station. Its web site is hosted by the sub-command in Milwaukee and there is an intranet for employees. High speed Internet and cellular telephone are both services for which it would like to see additional providers.

Wisconsin Department of Natural Resources – Sturgeon Bay

Besides its main office in Sturgeon Bay, the DNR has offices at five parks in Door County: Peninsula, Potawatomi, Newport, Rock Island and Whitefish Dunes. Four game wardens are also stationed out of their homes. The headquarters is tied into BadgerNet with a T1 line; a VPN connects it to ReserveAmerica, an online camp booking service. All other parks and wardens connect to the Internet via local dial-up service. This is a problem since software upgrades that are downloaded sometimes take up to 45 minutes to complete; this wouldn't be a problem if cable modem or DSL services were readily available in the county. The DNR does some online training and personnel can log into a secure area of the Web site to track time, travel and budgets. Certain personnel use CellCom or U.S. Cellular phone service. Before the state budget cuts occurred, reliability of services was the most important; now cost of services is of paramount importance.

Wilson-Shaffer Realty – Ephraim

Wilson-Shaffer is a real estate firm located in Ephraim. It currently has Verizon for telephone services and is satisfied with the services. It also has cellular service with CellCom and is satisfied with the service. It has five dial-up Internet accounts with Infinity and is satisfied with the service. It said that the telephone lines are old that results in slow dial-up connections. It currently has a web site that is used for marketing and MLS home searches. In the future it does not think Door County needs alternative telecommunications services, but would like to see phone lines upgraded. It believes that new technologies would change the type of people that come to Door County.

Woodrow Engineering – Sister Bay

Woodrow Engineering is a manufacturer of measuring devices located in Sister Bay. It currently has Verizon for local telephone service and Broadwing for long distance telephone service and is satisfied with both services. It also has cellular service with CellCom and is satisfied with the service except for some dead spots. For Internet service it has a dial-up account with Online Door County and is satisfied with the service and has no plans to upgrade to a high-speed connection. It has a web site that is used for marketing. In the future it believes the Sturgeon Bay area should have alternative telecommunication providers, but it does not need any more services than it has already.

Wulf Bros. – Sturgeon Bay

Wulf Bros. sells and installs flooring from two locations in Door County, which are connected by a dedicated phone line from Verizon. It has received good customer service and pricing from phone provider McLeod, but has had technical problems such as hang-ups, misdirected calls and static. It has also experienced “slamming” by Verizon, which provides phone service for its Sister Bay location. CellCom provide good coverage for Wulf’s cell phones, but since its service technicians because already use both a radio and a cell phone; it is exploring NexTel phones which contain both. Online Door County provides dial-up Internet. It could anticipate using broadband since it already transfers larger files (drawings, advertising, etc.) and would like to explore a VPN between its two locations. It advocates additional providers for local phone, long distance phone, high-speed Internet, cellular services and other services, citing the need for more service options, better coverage and greater competition.

Younkers – Sturgeon Bay

Younkers is a retailer with a location in Sturgeon Bay. The facility in Sturgeon Bay is connected to corporate headquarters with satellite, tie lines, and data lines used for data, voice, video conferencing and Internet communications. All communications are handled at the corporate level with no local input.