MISSAUKEE COUNTY

TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT MICHIGAN

AND THE

MISSAUKEE COUNTY TECHNOLOGY PLANNING TEAM

CONNECT Michigan.

CONNECTED
Community Engagement Program

AUGUST 16, 2013

ACCESS   ADOPTION   USE

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INTRODUCTION

The purpose of this report is to summarize the community's assessment of local broadband access, adoption, and use, and to provide an action plan for broadband acceleration.

Background

Deploying broadband infrastructure, services, and application, as well as supporting the universal adoption and meaningful use of broadband, are challenging - but required - building blocks of a twenty-first century community. The success of a community has become dependent on how broadly and deeply the community adopts technology resources – this includes access to reliable high-speed networks, digital literacy of residents, and the use of online resources locally for business, government, and leisure. Due in large part to private investment and market-driven innovation, broadband in America has improved considerably in the last decade. More Americans are online at faster speeds than ever before.

Despite the progress, there are still critical problems that slow the progress of the access, adoption, and use of broadband. Connected Nation estimates that approximately 70 million, or 30% of, Americans do not subscribe to home broadband service, and adoption varies significantly across socioeconomic lines.[1] Connected Nation's studies also show that 17 million families with children do not have broadband at home – and 7.6 million of these children live in low-income households. Connected Nation also estimates that at least 1.8 million businesses - 24% - in the United States do not utilize broadband technology today.[2]

In early 2009, Congress directed the Federal Communications Commission (FCC) to develop a National Broadband Plan (NBP) to ensure every American has "access to broadband capability."[3] Congress also required that the plan include a detailed strategy for achieving affordability and maximizing use of broadband to advance "consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence, and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes."[4]

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[1] *Consumer Broadband Adoption Trends*, Connected Nation, Inc., March 2013, http://www.connectednation.org/survey-results/residential
[2] Connected Nation, *Broadband and Business: Leveraging Technology to Stimulate Economic Growth,* http://www.connectednation.org/survey-results/business
[3] *Connecting America: The National Broadband Plan,* Federal Communications Commission, April 2010, http://www.broadband.gov/download-plan/
[4] Ibid.

To fulfill Congress's mandate, the National Broadband Plan, released in 2010, makes recommendations to the FCC, the Executive Branch, Congress, and state and local governments that influence the broadband ecosystem – networks, devices, content, and applications – in four ways:

1. Design policies to ensure robust competition and, as a result, maximize consumer welfare, innovation, and investment.
2. Ensure efficient allocation and management of assets and government controls or influences, such as spectrum, poles, and rights-of-way, to encourage network upgrades and competitive entry.
3. Reform current universal service mechanisms to support deployment of broadband and voice in high-cost areas; and ensure that low-income Americans can afford broadband; and in addition, support efforts to boost adoption and utilization.
4. Reform laws, policies, standards, and incentives to maximize the benefits of broadband in sectors that government influences significantly, such as public education, healthcare and government operations.[5]

In addition to these recommendations, the plan recommended that the country set the following six goals for 2020 to serve as a compass over the decade:

GOAL No. 1: At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second.

GOAL No. 2: The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.

GOAL No. 3: Every American should have affordable access to robust broadband service and the means and skills to subscribe if they so choose.

GOAL No. 4: Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals, and government buildings.

GOAL No. 5: To ensure the safety of the American people, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network.

GOAL No. 6: To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.[6]

Meeting these six goals will help achieve the Congressional mandate of using broadband to

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[5] Ibid.
[6] Ibid.

achieve national purposes, while improving the economics of deployment and adoption. While the National Broadband Plan recommends significant action by the FCC, the Executive Branch, and Congress, it requires a strong partnership among all broadband stakeholders. Federal action is necessary, but state, local, and Tribal governments, corporations, and community-based organizations must all do their part to build a high-performance America.

To assist communities in localizing the goals and recommendations made by the National Broadband Plan, Connected Nation developed the Connected Community Engagement Program. [7] The program is designed to help communities identify local technology assets, complete an assessment of local broadband access, adoption, and use, and develop an action plan for accelerating broadband's integration into the community's priorities.

Methodology

By actively participating in the Connected Community Engagement Program, the Missaukee County Technology Planning Team is boosting the community's capabilities in education, healthcare, and public safety, and stimulating economic growth and spurring job creation. The Missaukee County Technology Planning Team has collaborated with multiple community organizations and residents to:

1. Empower a community team leader (local champion) and create a community team composed of a diverse group of local residents from various sectors of the economy including education, government, healthcare, the private sector, and libraries.
2. Identify the community's technology assets, including local infrastructure, providers, facilities, websites, and innovative uses employed by institutions.
3. Complete the Connected Assessment, a measurement of the community's access, adoption, and use of broadband based on the recommendations of the National Broadband Plan.
4. Match gaps in the local broadband ecosystem to solutions and best practices being utilized by communities across the nation.
5. Pursue Connected certification, a nationally recognized platform for spotlighting communities that excel in the access, adoption, and use of broadband.

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[7] Connected Nation, parent company for Connect Michigan, is a national non-profit 501(c)(3) organization that expands access to and use of broadband Internet and the related technologies that are enabled when individuals and communities have the opportunity and desire to connect. Connected Nation works in multiple states to engage community stakeholders, state leaders, and technology providers to develop and implement technology expansion programs with core competencies centered around the mission to improve digital inclusion for people and places previously underserved or overlooked.

CONNECTED ASSESSMENT

The Connected Assessment framework is comprised of three elements: access, adoption, and use. Each sub-assessment has a maximum of 40 points. To achieve Connected certification, the community must have 32 points in each sub-assessment and 100 points out of 120 points overall.

- The access assessment reviews whether an adequate broadband foundation exists for the community. The criteria within the access sub-assessment endeavors to identify gaps that could affect a local community broadband ecosystem including: last mile and middle mile issues, cost issues, and competition issues. As noted in the National Broadband Plan, broadband access "is a foundation for economic growth, job creation, global competitiveness and a better way of life."[8]
- Broadband adoption is important for consumers, institutions, and communities alike to take the next step in fully utilizing broadband appropriately. The adoption sub-assessment seeks to ensure the ability of all individuals to access and achieve meaningful use of broadband service by measuring the community's capability and commitment to eliminating the major barriers that keep non-adopters from getting broadband.
- Broadband use is the most important component of the framework because it is where the value of broadband can finally be realized. However, without access to broadband and adoption of broadband, meaningful use of broadband wouldn't be possible. As defined by the NBP, meaningful use of broadband includes those areas of economic opportunity, education, government, and healthcare where values to individuals, organizations, and communities can be realized.

Connected Assessment Criteria

The criteria for the Connected Assessment stems from the Federal Communications Commission's National Broadband Plan, as well as the broadband speed tiers used under the National Telecommunications and Information Administration's State Broadband Initiative Grant Program. The Connected Assessment's thirteen questions are as follows:

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[8] *Connecting America: The National Broadband Plan,* Federal Communications Commission, April 2010, http://www.broadband.gov/download-plan/

ACCESS

- **Broadband Availability:** What percentage of homes in the community has access to fixed broadband speeds of 3 Mbps or higher?[9]
- **Broadband Speeds:** What is the highest speed level available to at least 75% of the households in your community?
- **Broadband Competition:** What percentage of homes in the community has access to more than one broadband provider?
- **Middle Mile Access:** What is the availability of middle mile access to the community?
- **Mobile Broadband Availability:** What is the mobile broadband availability in your community?

ADOPTION

- **Digital Literacy:** What is the number of digital literacy program graduates over the past year in the community?
- **Public Computer Centers:** What is the number of public computer hours available per low-income resident per week?
- **Broadband Awareness:** What percentage of the community is reached by broadband awareness campaigns?
- **Vulnerable Population Focus:** How many vulnerable population groups are being targeted within the community?

USE

- **Economic Opportunity:** What economic opportunity applications are currently in place utilizing broadband technology?
- **Education:** What broadband-enabled applications are currently being utilized by the education sector?
- **Government:** What broadband-enabled applications are currently being utilized by the government sector?
- **Healthcare:** What broadband-enabled applications are currently being utilized by the Healthcare sector?

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[9] The Broadband Availability criterion is based on the speed tiers required by the National Telecommunications and Information Administration's State Broadband Initiative Grant Program. The closest combination of speeds for which NTIA collects data that would allow a consumer, according to the Federal Communications Commission's National Broadband Plan, to "access a basic set of applications that include sending and receiving e-mail, downloading web pages, photos and video, and using simple video conferencing" is 3 Mbps downstream and 768 kbps upstream. Downstream speed measures the rate at which a user can download data from the Internet, including viewing Web pages, receiving e-mails, or downloading music. Upstream speed measures the rate at which a user can upload data to the Internet, including sending e-mail messages and files. For more information, go to: http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf.

Community Technology Scorecard

The Community Technology Scorecard provides a summary of the community's Connected Assessment. The Connected Assessment's criteria are reflective of the recommendations made by the Federal Communications Commission's National Broadband Plan. These scores reflect the community's progress to meeting these national benchmarks to universal fixed broadband service, ubiquitous mobile service, and growing access to higher speed next-generation services. Lower scores do not necessarily signify a complete lack of access to broadband service but instead reflect that the broadband infrastructure in the community has not met these national goals and benchmarks.

Community Technology Scorecard Brief

The Community Technology Scorecard provides a summary of the community's Connected Assessment.

- The community scored 19 out of a possible 40 points in broadband access primarily because Missaukee County is basically a rural community that lacks the necessary infrastructure. However, significant investment is currently being made in the broadband infrastructure of Missaukee County, which should increase the community's access in the near future.
- The community scored 30 out of a possible 40 points in broadband adoption. This score indicates an opportunity for Missaukee County to increase efforts to overcome the local barriers to home broadband subscription by increasing broadband awareness within the community.
- The community scored 37 out of a possible 40 points in broadband use. This score indicates that the healthcare sector could realize more efficient service delivery by pursuing broadband and broadband-enabled applications.
- Missaukee County achieved a score of 86 points out of 120 for overall broadband and technology readiness, which indicates that the community is exhibiting high success in technology adoption and use.

While the results indicate that the community has made tremendous strides and investments in technology, this technology action plan will provide some insight and solutions that will help the community continue to achieve success.

Community Technology Scorecard
Community Champions: Carolyn Flore
Community Advisor: Tom Stephenson

FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	80% to 89.9% of households have access to fixed speeds of 3 Mbps	4	10
	Broadband Speeds	75% of households with access to at least 6Mbps	2	5
	Broadband Competition	60% to 69.9% of households with access to more than 1 Broadband provider	1	5
	Middle Mile Access	Availability of last mile infrastructure at speeds of at least 50 Mbps	4	10
	Mobile Broadband Availability	95% to 98.9% of households with access to mobile broadband	8	10
	ACCESS SCORE		**19**	**40**
ADOPTION	Digital Literacy	Program grads are greater than 10 per 1,000 residents over the past year	10	10
	Public Computer Centers	500 computer hours per 1,000 low income residents per week	10	10
	Broadband Awareness	Campaigns reach 20% of the community	2	10
	Vulnerable Population Focus	4 groups	8	10
	ADOPTION SCORE		**30**	**40**
USE	Economic Opportunity	2 advanced, 5 basic uses	9	10
	Education	10 advanced, 10 basic uses	10	10
	Government	3 advanced, 4 basic uses	10	10
	Healthcare	3 advanced, 2 basic uses	8	10
	USE SCORE		**37**	**40**
	COMMUNITY ASSESSMENT SCORE		**86**	**120**

Itemized Key Findings

The Missaukee County Technology Planning Team identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment:

ACCESS
- 14 last mile broadband providers currently provide service in Missaukee County:
  - 57.72% of households have access to 3 Mbps.
  - More than 85.88% of Missaukee County homes have access to 6 Mbps service.
  - 60.20% of Missaukee County households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from multiple providers in Missaukee County.
- 97.11% of Missaukee County households have access to mobile broadband.

ADOPTION
- 1 Digital Literacy Program exists in the community resulting in 300 graduates over the past year.
- 3 Public Computer Centers (PCC) with a total of 62 computers are open to the public.
- 1 Broadband Awareness Campaign is reaching 35% of Missaukee County.
- 5 organizations are working with vulnerable populations.

USE
- At least 7 uses of broadband were identified in the area of economic opportunity including 2 advanced uses and 5 basic uses.
- At least 20 uses of broadband were identified in the area of education including 10 advanced uses and 10 basic uses.
- At least 7 uses of broadband were identified in the area of government including 3 advanced uses and 4 basic uses.
- At least 5 uses of broadband were identified in the area of healthcare including 3 advanced uses and 2 basic uses.

In addition to the items identified above, the Missaukee County Technology Planning Team identified the following technology resources in the community:

Technology Providers
- 17 broadband providers were identified in Missaukee County
- 1 web developer

Technology Facilities
- 3 public computing centers
- 3 wireless hotspots

Community Websites
- 1 Business-related website (excluding private businesses)
- 7 Education-related websites
- 19 Government-related websites
- 1 Healthcare-related website
- 3 Library-related websites
- 1 Tourism-related website
- 2 Agriculture-related websites

Community Priority Projects

The Connected Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. Below are four priority projects. This is followed by a complete list of all proposed projects.

Digital Literacy and Low-Cost Broadband Program

Develop Program Supporting Schools' New Technology Initiatives

Host Website and Social Media Classes for the Local Businesses

Identify, Map, and Validate Broadband Demand

Proposed Projects

Below is a complete list of 17 proposed projects. Detailed descriptions of each project can be found in the *Action Plan* section later in this report.

ACCESS

Broadband Availability
1. Apply to USDA for Funding Support to Build out Broadband in Community
2. Identify, Map, and Validate Broadband Demand

Broadband Speeds – No proposed projects

Broadband Competition – No proposed projects

Middle Mile Access
3. Develop Public-Private Partnerships to Deploy Broadband Service
4. Study and Possibly Reassess Major Telecom Purchase Contracts

Mobile Broadband Availability

5. Identify, Map, and Validate Broadband Demand
6. Complete a Vertical Assets Inventory
7. Perform a Broadband Build-out Analysis in Unserved Areas

ADOPTION

Digital Literacy – No proposed projects

Public Computer Centers – No proposed projects

Broadband Awareness
8. Facilitate a Technology Summit

Vulnerable Population Focus
9. Develop a Technology Mentorship Program

USE

Economic Opportunity
10. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses
11. Establish a "Digital Factory"
12. Host Website and Social Media Classes for the Local Businesses

Education
13. Improve Education through Digital Learning
14. Develop a Program Supporting Schools' New Technology Initiatives

Government
15. Improve Online Business Services Offered by the Government
16. Pursue Next Generation 911 Upgrades

Healthcare
17. Promote Telemedicine in Remote Areas

DETAILED FINDINGS

Missaukee County Assessment Findings

Residents in Missaukee County (or sections of the community) are served by 17 providers. Currently, broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream.[10] According to Connect Michigan's latest broadband mapping update, the following providers have a service footprint in the Missaukee County Community:

Broadband Providers	Technology Type	Website Reference
Verizon Wireless	Mobile Wireless	www.verizonwireless.com
Summit Digital Holdings, Inc.	Cable, Fixed Wireless	www.summitdigital.us
Sprint Nextel Corporation	Mobile Wireless	www.sprint.com
M33 Access	Fixed Wireless	www.m33access.com
The Iserv Company, LLC	DSL	www.iserv.net
Charter Communications, Inc.	Cable	www.charter.com
Chain of Lakes Internet	Fixed Wireless	www.colicom.com
CenturyLink	DSL	www.centurylink.com
Casair, Inc.	Fixed Wireless	www.casair.net
AT&T Mobility LLC	Mobile Wireless	www.wireless.att.com
AT&T Michigan	DSL	www.att.com
miSpot	Fixed Wireless	www.mispot.net
Boardman River Communications, LLC	Fixed Wireless	www.brconline.net
Hughes Network Systems, LLC	Satellite	www.hughesnet.com
Skycasters	Satellite	www.skycasters.com
StarBand Communications	Satellite	www.starband.com
ViaSat, Inc.	Satellite	www.exede.com

Below is a list of community websites (sorted by category) designed to share and promote local resources.

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[10] Organizations define broadband in different ways. For information to be included on the National Telecommunications and Information Administration's National Broadband Map, the technology must provide a two-way data transmission (to and from the Internet) with advertised speeds of at least 768 kilobits per second (Kbps) downstream and at least 200 Kbps upstream to end users. The Connected Community Engagement Program defines basic broadband as 768 Kbps downstream and 200 Kbps upstream.

Organization Name	Website	Website Category
Michigan State University Extension	www.missaukee.org	Agriculture
Missaukee Conservation District	www.missaukeecd.org	Agriculture
MI Works	www.michiganworks.org/agencies/agency/188	Business
Wexford Missaukee-Intermediate School District	www.wmisd.org	Education
McBain Rural Agrl School	www.mcbain.org	Education
Lake City Area Schools	www.lakecityschools.net	Education
Northern Michigan Christian School	www.nmcs.us	Education
Baker College-Cadillac Campus	www.baker.edu/current-students/cadillac/departments/career-services	Education
Kirtland Community College	www.kirtland.edu	Education
Crawford, Oscoda, Ogemaw, and Roscommon Intermediate School District	www.coorisd.net	Education
West Branch Township	www.missaukee.org	Government
Riverside Township	www.missaukee.org	Government
Richland Township	www.missaukee.org	Government
Reeder Township	www.missaukee.org	Government
Pioneer Township	www.missaukee.org	Government
Norwich Township	www.missaukee.org	Government
Lake Township	www.missaukee.org	Government
Holland Township	www.missaukee.org	Government
Forest Township	www.missaukee.org	Government
Enterprise Township	www.missaukee.org	Government
Clam Union	www.missaukee.org	Government
Caldwell Township	www.missaukee.org	Government
Butterfield Township	www.missaukee.org	Government
Bloomfield Township	www.missaukee.org	Government
Aetna Township	www.missaukee.org	Government
Missaukee County	www.missaukee.org	Government
City of Lake City	www.lakecitymich.com	Government
City of McBain	www.cityofmcbain.com	Government
Lake City Downtown Development Authority	www.lakecitymich.com	Government
Mercy Hospital Cadillac Munson Healthcare	www.mercycadillac.munsonhealthcare.org	Healthcare
Ardis Missaukee District Library	www.missaukeelibrary.org	Libraries
McBain Community Library	www.mcbain.michlibrary.org	Libraries
Falmonth Area Library	www.librarytechnology.org/lwc-	Libraries

	displaylibrary.pl?RC=19522	
Lake City Chamber of Commerce	www.lakecitymich.com	Tourism

Below is a list of organizations that are making technological resources available to the community. These include organizations that provide videoconferencing, public computing, and wireless hotspots.

Organization Name	Website	Resource Type
Ardis Missaukee District Library	www.missaukeelibrary.org	Public Computer Facility
McBain Community Library	www.mcbain.michlibrary.org	Public Computer Facility
Falmonth Area Library	www.librarytechnology.org/lwc-displaylibrary.pl?RC=19522	Public Computer Facility
Missaukee County Park	www.missaukee.org	Wireless Hotspot
Lake City McDonald's	www.mcmichigan.com/23668/	Wireless Hotspot
Muskrat Lake Cafe	www.facebook.com/pages/Muskrat-Lake-Cafe/338908206166156	Wireless Hotspot

Connected Assessment Analysis

A ACCESS SCORE EXPLANATION

Broadband Availability (<u>4 out of 10 Points Possible</u>) – is measured by analyzing the percentage of households in the community with access to fixed broadband speeds of 3 Mbps or higher. Data are collected by Connected Nation's broadband mapping program.[11] If broadband data is missing, the community team was able to improve the quality of data to ensure all providers are included.

- **According to the April 2013 data collected by Connect Michigan, 87.8% of Missaukee County residents had access to broadband speeds of 3 Mbps or greater.**

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[11] Connected Nation is working across states and with the federal government to implement the State Broadband Initiative (SBI) program created by the Broadband Data Improvement Act of 2008 and managed by the National Telecommunications and Information Administration (NTIA) within the Department of Commerce. One of the main components of the SBI program is the creation of a detailed, nationwide map of broadband coverage in order to accurately pinpoint remaining gaps in broadband availability across the nation. Connected Nation is the largest mapping agent across the nation supporting the SBI program, and has worked in thirteen jurisdictions to collect, process, integrate, and validate provider data, and map the broadband inventory across these jurisdictions. Connected Nation has received, processed, and submitted records to the NTIA from over 1,400 service providers.

Broadband Speeds (<u>2 out of 5 Points Possible</u>) – is measured by analyzing the speed tiers available within a community. Data are collected by Connected Nation's broadband mapping program. The Connected Assessment analyzes broadband coverage by the highest speed tier with at least 75% of households covered. If broadband data is missing, the community team was able to improve the quality of data to ensure all providers are included.

- **According to the April 2013 data collected by Connect Michigan, 85.88% of Missaukee County residents had access to broadband speeds of 50 Mbps.**

Broadband Competition (<u>1 out of 5 Points Possible</u>) – is measured by analyzing the number of broadband providers available in the community and the percentage of that community's residents with more than one broadband provider available. Connected Nation performed this analysis by reviewing the data collected through its broadband mapping program. In communities that may have broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- **According to the April 2013 data collected by Connect Michigan, 60.2% of Missaukee County residents had access to more than one broadband provider.**

Middle Mile Access (<u>4 out of 10 Points Possible</u>) – is measured based on a community's availability to fiber. Three aspects of availability exist: proximity to middle mile points of presence (POPs), number of POPs available, and available bandwidth. The community, in collaboration with Connected Nation, collected and analyzed middle mile access data.

- **Missaukee County is served by 5 or more middle mile fiber providers.**

Mobile Broadband Availability (<u>8 out of 10 Points Possible</u>) – is measured by analyzing provider availability of mobile broadband service gathered by Connected Nation's broadband mapping program. In communities that may have mobile broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- **According to the April 2013 data collected by Connect Michigan, 97.11% of Missaukee County residents had access to mobile broadband service.**

ADOPTION SCORE EXPLANATION

Digital Literacy (<u>10 out of 10 Points Possible</u>) – is measured by first identifying all digital literacy

programs in the community. Once the programs are determined, a calculation of program graduates will be made on a per capita basis. A digital literacy program includes any digital literacy course offered for free or at very low cost through a library, seniors center, community college, K-12 school, or other group serving the local community. A graduate is a person who has completed the curriculum offered by any organization within the community. The duration of individual courses may vary. A listing of identified digital literacy offerings is below.

Organization Name	Program Description	Number of Grads
Missaukee District Library	Beginning Computers, Internet Safety, and How to use Search Engines	300
Total Graduates		300

Public Computer Centers (10 out of 10 Points Possible) – is measured based on the number of hours computers are available each week per 1,000 low-income residents. Available computer hours are calculated by taking the overall number of computers multiplied by the number of hours open to a community during the course of the week. A listing of public computer centers available in Missaukee County is below.

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
Missaukee District Library	44	19	836
McBain Community Library	35	40	1,400
Falmonth Area Library	19	3	57

Broadband Awareness (2 out of 10 Points Possible) – is measured based on the percentage of the population reached. All community broadband awareness programs are first identified, and then each program's community reach is compiled and combined with other campaigns. A listing of broadband awareness programs in Missaukee County is below.

Organization Name	Campaign Description	Community Reach
McBain Rural Agricultural School	Newsletters to all district residents including articles promoting digital learning and meaningful use of technology	35%

Vulnerable Population Focus (8 out of 10 Points Possible) – A community tallies each program or ability within the community to encourage technology adoption among vulnerable groups. Methods of focusing on vulnerable groups may vary, but explicitly encourage technology use among vulnerable groups. Example opportunities include offering online GED classes, English as

a Second Language (ESL) classes, video-based applications for the deaf, homework assistance for students, and job-finding assistance. Communities receive points for each group on which they focus. Groups may vary by community, but include low-income, minority, senior, children, etc. A listing of programs focusing on vulnerable populations in Missaukee County is listed below.

Organization Name	Program Description	Vulnerable Group
Michigan Works Adult Learning Labs	Adult Learning Labs. GED, high school diploma, prepare for college, or improve their job skills	Unemployed adults
Michigan Works	Online job search assistance	Unemployed adults and seniors
Michigan Works Youth Services	Youth job skills training, preparing youth to enter the workforce	Youth and at-risk youth
Missaukee District Library	Homework assistance	Youth and at-risk youth
Wexford-Missaukee Intermediate School District	Youth Build	At-risk youth

USE SCORE EXPLANATION

Economic Opportunity (9 out of 10 Points Possible) – A community receives one point per basic use of broadband and two points per advanced use of broadband. Categories within economic opportunity include: economic development, business development, tourism, and agriculture. Identified uses of broadband in the area of economic opportunity are listed below and identified as basic or advanced.

Application Provider	Description	Basic / Advanced
Lake City Area Chamber of Commerce	75% of local attractions online	Basic
Lake City Area Chamber of Commerce	1 free, publicly accessible wireless hotspot available per 5,000 residents	Basic
Lake City Area Chamber of Commerce	Availability of free online banking for consumers and businesses	Basic
MI Works	Presence of program to provide virtual employment assistance programs and individualized job training	Advanced

Lake City Downtown Development Authority	Initiative to spur innovation and commercialization within community	Advanced
Lake City Downtown Development Authority	Availability of main street program online	Basic
Michigan State University Extension	Availability of agriculture and farming information online	Basic

Education (10 out of 10 Points Possible) – A community receives one point per basic use of broadband and two points per advanced use of broadband. Categories within education include K-12, higher education, and libraries. Identified uses of broadband in the area of education are listed below and identified as basic or advanced.

Application Provider	Description	Basic/ Advanced
Wexford-Missaukee Intermediate School District	100% of classrooms in the three public school districts serviced by the Wexford-Missaukee ISD (Lake City, Manton, and McBain) are connected to Internet via broadband	Basic
Wexford-Missaukee Intermediate School District	100% of school libraries in the three public school districts serviced by the Wexford-Missaukee ISD are connected to Internet via broadband	Basic
Wexford-Missaukee Intermediate School District	100% of school libraries in the three public school districts serviced by the Wexford-Missaukee ISD have automated library systems	Basic
Wexford-Missaukee Intermediate School District	100% of K-12 classes in the three public school districts serviced by the Wexford-Missaukee ISD provide parents secure online access to curricula, student progress, grades, etc. via Power School student management system	Advanced
Wexford-Missaukee Intermediate School District	100% of the three public school districts serviced by the Wexford-Missaukee ISD interact online with parents through Power School, a student management system; email, both mass and select individual; and with emergency notification systems	Advanced
Wexford-Missaukee Intermediate School District	100% of the three public school districts serviced by the Wexford-Missaukee ISD offer a variety of online courses for students including: Accelerated Reader, Star Reader, Atomic Learning, Delta Math, Reading Counts, Michigan Virtual High School and College, E20/20, Odessyware, and NovaNet	Advanced
McBain Public School	1 on 1 digital education initiative, by the fall of 2015, each student will be assigned either an iPad or MacBook Air for the school year	Advanced
Houghton Lake Community	100% of classrooms in the Houghton Lake Community	Basic

School District	School District is connected to Internet via broadband	
Houghton Lake Community School District	100% of school libraries in Houghton Lake Community Schools located in Missaukee County is connected to Internet via broadband	Basic
Houghton Lake Community School District	100% of school libraries in the Houghton Lake Community Schools district in Missaukee County has automated library systems	Basic
Houghton Lake Community School District	100% of K-12 classes in the Houghton Lake Community School district located in Missaukee County provide parents secure online access to curricula, student progress, grades, etc. via Skyward student	Advanced
Houghton Lake Community School District	The Houghton Lake Community School district located in Missaukee County interact online with parents through Skyward, a student management system; through e-mail, both mass and select individual	Advanced
Houghton Lake Community School District	The Houghton Lake Community School District located in Missaukee County offer a variety of online courses for students including: Accelerated Reader, Star Reader, Reading Counts, Michigan Virtual High School and College, E20/20, and Kahn Academy	Advanced
Northern Michigan Christian School	All Northern Michigan Christian School (NMCS) classrooms and the library are connected to Internet via wireless broadband	Basic
Baker College-Cadillac Campus	100% of classrooms, libraries connected to Internet via broadband; presence of library automation system and online tutoring for students	Basic
Northern Michigan Christian School	NMCS has an automated library system (ResourceMate)	Basic
Northern Michigan Christian School	K-12 classes at NMCS provide parents secure online access to curricula, student progress, grades, etc. via Sycamore, a student management system	Advanced
Northern Michigan Christian School	NMCS interacts online with parents through; Sycamore, a student management system; e-mail, both mass and select individual; and with an emergency notification system (Brightarrow)	Advanced
Northern Michigan Christian School	NMCS offers a variety of online courses for students including: Accelerated Reader, Star Reader, IXL Math, Career Cruising, Michigan Virtual High School and College, and several online college courses (Calvin, IU, BYU, others)	Advanced
Kirtland Community College	100% of classrooms, Libraries connected to Internet via broadband; presence of library automation system and tutoring for students	Basic

Government (10 out of 10 Points Possible) – A community receives one point per basic use of broadband and two points per advanced use of broadband. Categories within government include general government, public safety, energy, and the environment. Identified uses of broadband in the area of government are listed below and identified as basic or advanced.

Application Provider	Description	Basic/ Advanced
Missaukee County Government	Majority of local governments with websites	Basic
Missaukee County Government	Presence of smart grid electricity system	Basic
Missaukee County Government	Presence of smart homes and buildings	Basic
Missaukee County Government	Over 75% of essential government services online	Advanced
Missaukee County Government	Presence of broadband in all county parks	Basic
Missaukee County Government	Availability of ubiquitous, interoperable wireless public safety network	Advanced
Missaukee County Government	Presence of next generation 911 system	Advanced

Healthcare (X out of 10 Points Possible) – A community receives one point per basic use of broadband and two points per advanced use of broadband. Entities within healthcare can include, but are not limited to, hospitals, medical and dental clinics, health departments, nursing homes, assisted living facilities, and pharmacies. Identified uses of broadband in the area of healthcare are listed below and identified as basic or advanced.

Application Name	Description	Basic/ Advanced
Mercy Hospital Cadillac Munson Healthcare	Online listing of healthcare professionals within community	Basic
Mercy Hospital Cadillac Munson Healthcare	Availability of telemedicine (send or receive)	Advanced
Mercy Hospital Cadillac Munson Healthcare	100% of doctors using e-Health using Medical Record system	Advanced
Mercy Hospital Cadillac Munson Healthcare	e-Prescription program available	Basic
Mercy Hospital Cadillac Munson Healthcare	100% of doctors with adequate bandwidth (based on NBP standard)	Advanced

ACTION PLAN

Community Priority Projects

The Connected Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. Below are four priority projects. This is followed by a complete list of all proposed solutions.

Digital Literacy and Low-Cost Broadband Program

Project Description

Create a partnership between libraries, school systems, computer suppliers, and broadband providers to provide free training and discounted computers and broadband service to low-income community members who are not participating in the digital age. An example of such a program is Connected Nation's Every Community Online program (ECO). This is an innovative program that is providing free digital literacy training, access to low-cost computers, and discounted broadband access to communities across the country. ECO is based on five core innovative principles:

1. Bridging the digital divide by enabling underprivileged individuals with access to affordable computers offers true broadband performance and experience.
2. Introducing individuals to the Internet and abundant global resources that allow them to compete in the global economy.
3. Addressing a major barrier to computer ownership – computer affordability. Cost is cited as the main barrier to computer ownership by 43% of adults with incomes less than $25K annually and 44% of households with total income less than $25K cited.
4. Addressing a major barrier to broadband adoption – broadband affordability.
5. Increasing awareness of the importance of computer ownership and use through training about essential online applications.

Goal

1. *Increasing technology adoption* – Bridging the digital divide by providing free digital literacy training and access to reduced-cost computers and discounted broadband.
2. *Increasing technology use* – Introducing meaningful applications that improve lives through technology.
3. *Increase the number of digital literacy training programs* – Increase the number of digital literacy training programs that focus on the senior citizens of Missaukee County in addition to increasing the access to broadband at senior citizens' centers.
4. *Establish and maintain computer centers* – Establish and maintain computer centers in pockets of vulnerable populations.

5. *Upgrade the existing computers* – Upgrade the existing computers at the Falmouth Public Library.

Benefit
1. Improves digital literacy skills of community. Success is achieved when a community experiences increased usage of computers and the Internet, improved basic computer skills, increased use of technology in day-to-day operations of a community, and increased access to economic opportunities.

Action Items
1. Create a partnership with local non-profits (library, community center, school, etc.) to help promote the program locally; offer a facility where individuals can participate in the self-paced training or in-person training.
2. If ECO does not have participating provider in local community, reach out to local providers to participate in the program.
3. Work with local media to promote ECO PSAs, ads, etc.
4. Seek support of local leadership.
5. Access ECO self-paced training at www.connectmi.org/every-community-online.

Implementation Team
To be determined.

Develop Program Supporting Schools' New Technology Initiatives

Project Description
A large number of Michigan's public school districts are requesting and receiving technology bond issues in order to implement e-Learning programs such as the iPad 1:1 Initiative. Because of the value of these programs, communities need to develop a program to support these new technology initiatives. Research conducted by Connect Michigan reveals that broadband adoption rates among low-income groups with children range from 37% to 45% (or 56% in rural communities), thereby creating a digital divide and logistical problems for those school districts implementing e-Learning programs. Placing computing devices in students' hands is a critical component to the anytime, anywhere approach to learning that is foundational to 21st century education. Some school districts have passed bonds for replacement or addition of technology devices. Other potential sources of computers may include donors or some sort of "bring your own device" plan, as so many of today's students have broadband enabled cell phones or their own laptops.

Every idea for student computer replacement has pros and cons and issues that will need to be resolved, but it's important to keep moving forward. We have dedicated educators preparing our students for their futures with technology. Continuing to give teachers and students the tools they need should be a priority.

Goal
1. Improve education through digital learning.
2. Increase digital literacy and access for all.

Benefits
1. Increase learning time by extending learning beyond the classroom walls. Individualize learning and increase student engagement in school. Encourage self-directed learning. Enable parents to more effectively support their children at home.

Action Items
1. Develop an awareness campaign within the community to inform its citizens of the new technology advances and earn the community support that is required to ensure the success of the programs. Utilize the local media and public events to educate the public on the advantages of these programs.
2. Examine the community's existing digital resources necessary to support these new e-Learning programs. Do the existing public computer centers have adequate bandwidth? Do they have enough computers? Are they open during the evenings and on weekends for school children to do their homework?
3. Remove any unnecessary barriers that would increase the cost of broadband. Community leaders should work in coordination with the school district, local business leaders, the citizens of the community, and local broadband providers to ensure that adequate resources are available to all the students to close the digital divide and ensure the success of these e-Learning programs.

Implementation Team
To be determined.

Host Website and Social Media Classes for the Local Businesses

Project Description
For small businesses, an online presence and the use of social media are vital for staying competitive in the twenty-first century work environment. A website and social media use is not just for companies that have the experience, staff, or budget; any small business can tap into these resources. Training should be provided to small businesses regarding the use of websites and social media within each small business. Website topics should range from starting a basic website to more advanced topics such as e-Commerce. Social media topics should include a variety of social media outlets including Facebook, Twitter, YouTube, Pinterest, and LinkedIn.

For many business owners, the belief that broadband would not help their business, or the lack of knowledge of how broadband positively effects business development, are the main reasons

that they do not adopt broadband service. Many believe that since they have always operated without broadband, they can continue to do so. Communicating how businesses can achieve significant results via the utilization of broadband and broadband-enabled business tools is important to overcoming the barriers of relevance and lack of awareness. The key to this communication is providing local examples of successful broadband utilization and facilitating collaboration and cooperation among businesses and technology and service providers.

Broadband adoption should not be the end goal for an awareness program. New technology platforms continue to emerge, software and hardware evolve, and website, media, and online customer engagement methods continue to change, which can complicate adoption or leave businesses with outdated technology infrastructure and ineffective marketing strategies. An awareness program should promote the benefits of broadband, offer education and training, and provide assistance with follow-up questions and concerns. Thus, it is important to have a support network of businesses and community organizations that can assist each other with adoption and the continued use of technology.

Goal
1. Promote the adoption and use of broadband and broadband-enabled tools among businesses in Missaukee County via awareness-building and training.
2. Build awareness of the benefits associated with the adoption of broadband among businesses and how a connected business community positively effects the county's economic development through communicating how broadband and broadband-enabled tools allow businesses to increase efficiency, improve market access, reduce costs, and increase the speed of both transactions and interactions.

Benefits
1. Provides entrepreneurial support.
2. Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
3. Promotes business growth and workforce development.
4. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets. According to Connected Nation 2012 Jobs and Broadband Report, businesses that are using the Internet bring in approximately $300,000 more in median annual revenues than their unconnected counterparts.

Action Items
1. Develop an awareness program: Methods of implementing a broadband awareness program include, but are not limited to, facilitating awareness sessions, press conferences led by community leaders, inviting a speaker to community business conferences or summits, and public service announcements.

2. Build awareness and cohesion: Facilitate the distribution of needs assessments, case studies, technology education resources, and success stories among local businesses, and work to develop an informal network of local business owners who have adopted broadband for business operations in order to provide a resource to field common questions and respond to issues within the community.
3. Identify support: Identify federally or state-sponsored business support programs (e.g. Chamber of Commerce, SBA, EDA, Agriculture or Manufacturing extension) that includes assistance with broadband or IT content.
4. Develop local partnerships: Develop local partnerships with organizations such as the Chamber of Commerce, economic development corporation, main street program, or community anchor institutions (such as the Bay Community College or district library) to expand on existing programs or develop programs that provide technology education.
5. Develop a training program: A training program or entry-level "Broadband 101" course should be developed to give small and medium businesses an introduction on how to capitalize on broadband connectivity, as well as more advanced applications for IT staff. In addition, training should include resources for non-IT staff, such as how to use commerce tools for sales, streamline finances with online records, or leverage knowledge management across an organization. Additional training might include:
   - "How to" training for key activities such as online collaboration, search optimization, cyber security, equipment use, and Web 2.0 tools.
   - Technical and professional support for hardware, software, and business operations.
   - Licenses for business applications such as document creation, antivirus and security software, and online, audio, and videoconferencing.
   - Website development and registration.
   - Basic communications equipment, such as low-cost personal computers and wireless routers.
   - Educate local businesses on Internet tools that are available at minimal or no cost to them.

Implementation Team
To be determined.

Identify, Map, and Validate Broadband Demand

Project Description
Develop a team to conduct research surveys and market analyses to validate a business case. A market analysis includes research on the existing and potential service offerings and the respective rates to determine the levels of interest in the services and rate plans offered by the client. The team should provide accurate, timely, and thorough solutions accompanied by personalized service to meet the needs of communities or broadband providers.

Goal

1. Understand existing and potential markets for broadband subscribers (both residential and business).
2. Perform a broadband build-out analysis in unserved areas.
3. Increase access to broadband in the unserved areas such as the Crooked Lake area.

Benefits
1. Enables the ability to better understand the key drivers of the broadband market.
2. Validates the business case for network build-out and capacity investment.

Action Items
1. The project team should be prepared to provide research project design, data collection services, data analysis and reporting, and presentation development and delivery.
2. Working with the members of the Missaukee County Technology Planning Team to develop a marketing survey and methods of implementation utilizing best practice plans and survey samples from other communities participating in the Connect Michigan Community Engagement program.
   a. A survey mailing sample from the Charlevoix County Osceola County and Oscoda County is readily available and currently loaded on the web portal of Missaukee County located on the Connect Michigan website http://www.connectmi.org.
   b. A sample of a press release by the Charlevoix team is also loaded on the web portal of Missaukee County.
3. The project team should then tabulate the data and work with a local GIS team to display the tabulated data on a series of Google Maps that create clusters of homes in need of greater access to broadband. The survey results and Google maps then can be placed on a public website for review by all the broadband providers who provide broadband service in Missaukee County. A best practice sample of similar survey results tabulated by the HARBOR Inc. Broadband Committee can be found on its website: http://www.harborinc.org/broadband.asp.

Implementation Team
The team made up of volunteer members of the Missaukee County Technology Planning team launched a broadband survey in May of 2013 in an attempt to facilitate the expansion of reliable, affordable high-speed Internet to residents, businesses, and visitors to the Missaukee County area that is currently unserved or underserved.

All Proposed Projects

ACCESS

Broadband Availability

1. Apply to USDA for Funding Support to Build out Broadband in Community

The USDA, through its Rural Development mission area, administers and manages housing, business, and community infrastructure and facility programs through a national network of state and local offices. Rural Development has an active portfolio of more than $165 billion in loans and loan guarantees. These programs are designed to improve the economic stability of rural communities, businesses, residents, farmers, and ranchers and improve the quality of life in rural areas.

Programs:

1. *Farm Bill Loan Program – USDA*

   This program is designed to provide loans for funding, on a technology neutral basis, for the costs of construction, improvement, and acquisition of facilities and equipment to provide broadband service to eligible rural communities.

   Additional Information:
   - Direct loans are in the form of a cost-of-money loan, a 4-percent loan, or a combination of the two.

   Eligibility:
   - Must be a rural area. Rural area means any area, as confirmed by the latest decennial census by the U.S. Census Bureau, which is not located within:
     - A city, town, or incorporated area that has a population of more than 20,000 people
     - An urbanized area contiguous and adjacent to a city or town with a population of more than 50,000 people. An urbanized area means a densely populated territory as defined in the latest decennial census.
   - To be eligible for a broadband loan, an applicant may be either a nonprofit or for-profit organization, and must take one of the following forms:
     - Corporation
     - Limited liability company (LLC)
     - Cooperative or mutual organization
     - Federally recognized Indian tribe or tribal organization
     - State or local government, including any agency, subdivision, or one of their units.
   - A service area may be eligible for a broadband loan if all of the following are true:
     - The service area is completely contained within a rural area
     - At least 25 percent of the households in the service area are underserved households
     - No part of the service area has three or more incumbent service providers

- No part of the funded service area overlaps with the service area of current RUS borrowers and grantees
- No part of the funded service area is included in a pending application before RUS seeking funding to provide broadband service.

Contact Information:
- Point of Contact: Ken Kuchno
  Telephone: (202) 690-4673
  E-mail: kenneth.kuchno@wdc.usda.gov
  Website: http://www.rurdev.usda.gov/utp_farmbill.html

2. *Community Connect Program – USDA*
   This program provides community access to broadband services in un-served areas through a one-time grant to such organizations as tribes, cooperatives, private companies, and universities, and uses the infrastructure built by the grant to create opportunities for continued improvement.

   Additional Information:
   - The funding will support construction, acquisition, or lease of facilities, including spectrum, to deploy broadband transmission services to all critical community facilities and to offer such services to all residential and business customers located within the proposed service area.
   - The funding can be put towards the improvement, expansion, construction, acquisition, or leasing of a community center that furnishes free access to broadband Internet service, providing that the community center is open and accessible to area residents before, during, and after normal working hours and on Saturday or Sunday.
   - All equipment purchases with grant and/or matching funds must be new or non-depreciated.

   Eligibility:
   - Must be single community with a population of less than 20,000 that does not have Broadband Transmission Service.
   - Applicants must be organized as an incorporated organization, an Indian tribe or tribal organization, a state or local unit of government, or other legal entity, including cooperatives or private corporations or limited liability companies organized on a for-profit or not-for-profit basis.
   - The project must deploy Basic Broadband Transmission Service, free of all charges for at least 2 years, to all Critical Community Facilities located within the proposed Service Area. Additionally, it should offer Basic Broadband

Transmission Service to residential and business customers within the proposed Service Area.

Contact Information:
- Point of Contact: Thera Swersky or Steven Levine
  Telephone: (202) 690-4673
  Email: community.connect@wdc.usda.gov
  Website: http://www.rurdev.usda.gov/utp_commconnect.html

3. *Distance Learning and Telemedicine Loans and Grants Program – USDA*
   This program provides loans and grants to rural community facilities (e.g. schools, libraries, hospitals, and tribal organizations) for advanced telecommunications systems that can provide healthcare and educational benefits to rural areas.

Additional Information:
- The Distance Learning and Telemedicine Loans and Grant Program (DLT Program) provides three kinds of financial assistance: a full grant, grant-loan combination, and a full loan.

Eligibility:
To be eligible for a grant, your organization must:
- Currently deliver or propose to deliver distance learning or telemedicine services for the term of the grant. To receive a grant, the purposes must meet the grant definition of distance learning and telemedicine. The DLT program is focused on sustainability. Planning studies, research projects, and short-term demonstration projects of less than two years will not be considered.
- Be legally organized as an incorporated organization or partnership; an Indian tribe or tribal organization; a state or local unit of government; a consortium; or other legal entity, including a private corporation organized on a for-profit or not-for-profit basis with the legal capacity to contract with the United States Government.
- Operate a rural community facility or deliver distance learning or telemedicine services to entities that operate a rural community facility or to residents of rural areas at rates calculated to ensure that the benefit of the financial assistance passes through to such entities or to residents of rural areas.

Contact Information:
- Point of Contact: Sam Morgan
  Telephone: (202) 720-0665
  E-mail: dltinfo@wdc.usda.gov
  Website: http://www.rurdev.usda.gov/UTP_DLT.html

4. *Universal Service Rural Health Care Program – Universal Service Administration Company*

The Rural Health Care program supports healthcare providers serving rural communities by funding telecommunications services necessary for the provision of healthcare. The program is intended to ensure that rural healthcare providers pay no more for telecommunications in the provision of healthcare services than their urban counterparts.

Additional Information:
- Public and non-profit healthcare providers in rural areas can receive discounts on installation and monthly charges for telecommunications and Internet access service used for the provision of healthcare by using one of two methods: a mileage-based calculation, or a calculation of the "urban rate" to receive support equal to the difference between what they pay and what they would pay if they were receiving the service in any city in their state with a population of 50,000 or more.
- The rural healthcare provider must submit a form requesting services to the Universal Service Administrative Company (USAC). Once the form is approved, it is posted on USAC's website seeking bids from telecommunications companies interested in providing the requested services. After the rural healthcare provider selects a provider from qualified bidders and USAC has approved the funding request, the services may begin. Support from the USF is then used to help pay for eligible services provided to the rural healthcare provider.

Eligibility:
Eligible organizations include:
- Post-secondary educational institutions offering healthcare instruction, including teaching hospitals and medical schools
- Community health centers or health centers providing healthcare to migrants
- Local health departments or agencies
- Community mental health centers
- Not-for-profit hospitals
- Dedicated emergency departments in rural for-profit hospitals
- Rural healthcare clinics
- Part-time eligible entities located in facilities that are ineligible
- Groups of healthcare providers consisting of one or more entities described above

Contact Information:

- Telephone: (800) 229-5476
  E-mail: rhc-admin@usac.org
  Website: http://www.universalservice.org/rhc/default.aspx

2. Identify, Map, and Validate Broadband Demand

Develop a team to conduct research surveys and market analyses to validate a business case. A market analysis includes research on the existing and potential service offerings and the respective rates to determine the levels of interest in the services and rate plans offered by the client. The team should provide accurate, timely, and thorough solutions, accompanied by personalized service to meet the needs of communities or broadband providers.

Goal
1. Understand existing and potential markets for broadband subscribers (both residential and business).
2. Perform a broadband build-out analysis in un-served areas.
3. Increase access to broadband in the un-served areas such as the Crooked Lake Area.

Benefits
1. Enables the ability to better understand the key drivers of the broadband market.
2. Validates the business case for network build out and capacity investment.

Action Items
1. The project team should be prepared to provide research project design, data collection services, data analysis and reporting, and presentation development and delivery.
2. Working with the members of the Missaukee County Technology Planning Team to develop a marketing survey and methods of implementation utilizing best practice plans and survey samples from other communities participating in the Connect Michigan Community Engagement program.
    - A survey mailing sample from the Charlevoix County Osceola County and Oscoda County is readily available and currently loaded on the web portal of Missaukee County located on the Connect Michigan website www.connectmi.org.
    - A sample of a press release by the Charlevoix team is also loaded on the web portal of Missaukee County.
3. The project team should then tabulate the data. Then work with a local GIS team of to display the tabulated data on a series of Google Maps that create clusters of homes in need of greater access to broadband. The survey results and Google maps then can be placed on a public website for review by all the broadband providers who provide broadband service in Missaukee County. A best practice sample of similar survey results tabulated by the HARBOR Inc. Broadband Committee can be found on their website www.harborinc.org/broadband.asp.

Broadband Speeds – No proposed projects

Broadband Competition – No proposed projects

Middle Mile Access

3. Develop Public-Private Partnerships to Deploy Broadband Service

Public-private partnerships take many forms, limited only by the imagination and legal framework in which the municipality operates. Some communities issue municipal bonds to fund construction of a network that they lease to private carriers, with the lease payments covering the debt service. Others create non-profit organizations to develop networks in collaboration with private carriers or provide seed investment to jumpstart construction of networks that the private sector is unable to cost-justify on its own.

A public-private partnership should not be simply seen as a method of financing. The strength of these partnerships is that each party brings something important to the table that the other doesn't have or can't easily acquire. The community can offer infrastructure (publicly-owned building rooftops, light poles, towers, and other vertical assets for mounting infrastructure) for the deployment of the system, as well as committed anchor tenants. Private-sector partners bring network-building and operations experience.

Goal
1. Fund broadband network deployment.

Benefits
1. The public sector transfers much of the risk for private investment. For example, the public sector has many funding tools available, including incentivizing continued investment through tax credits, encouraging greater availability of private capital through government guaranteed loans, or government being a direct source of capital through loans or grants.
2. The partnership can aggregate demand and reduce barriers to deployment. By working together, public and private parties can educate and build awareness needed for the public to better integrate the use of broadband into their lives, thereby improving the business case for broadband deployment.
3. A good partnership concentrates investment on non-duplicative networks and aims to ensure that all residents have access to adequate broadband service.

Action Items
1. Decide on the technology (e.g. cable, DSL, fiber, etc.).
2. Issue an RFP.
3. Develop a finance and ownership model.

4. Study and Possibly Reassess Major Telecom Purchase Contracts

Demand for broadband capacity across community institutions represents a key segment of the overall demand for broadband in many communities. The purchasing power of this collective should be leveraged to help promote greater competition in the broadband market and drive increased investment in backhaul and last mile broadband capacity.

Goal
1. Leverage the demand for broadband across community institutions to promote competition and investment in broadband services.

Benefits
1. By aggregating demand within a local community, these institutions will be able to demonstrate to interested broadband providers existing pent-up demand and help justify private investments to bring greater capacity backhaul service to that community.
2. The increased backhaul capacity can in turn benefit the whole community.

Action Items
1. Develop partnerships between local high-capacity demand institutions, including local civic leaders, government entities, public safety agencies, libraries, hospital or clinics, and schools, in a coordinated effort to aggregate local demand needs for increased broadband capacity and service.

Mobile Broadband Availability

5. Identify, Map, and Validate Broadband Demand
Develop a team to conduct research surveys and market analyses to validate a business case. A market analysis includes research on the existing and potential service offerings and the respective rates to determine the levels of interest in the services and rate plans offered by the client. The team should provide accurate, timely, and thorough solutions, accompanied by personalized service to meet the needs of communities or broadband providers.

Goal
1. Understand existing and potential markets for broadband subscribers (both residential and business).

Benefits
1. Enables the ability to better understand the key drivers of the broadband market.
2. Validates the business case for network build out and capacity investment.

Action Items
1. The project team should be prepared to provide research project design, data collection services, data analysis and reporting, and presentation development and delivery.

6. Complete a Vertical Assets Inventory

Wireless communications equipment can be placed in a wide variety of locations, but ideally, wireless providers look for locations or structures in stable conditions, with reasonably easy access to electricity and wired telecommunications, and with a significant height relative to the surrounding area. "Vertical assets" are defined as structures on which wireless broadband equipment can be mounted and positioned to broadcast a signal over as much terrain as possible. These assets include structures such as cell towers, water tanks, grain silos, and multi-story buildings.

The lack of easily accessible and readily usable information regarding the number and location of vertical assets prevents the expansion of affordable, reliable wireless broadband service. Wireless broadband providers must determine if it is worth the effort and expense to collect and analyze this data when making investment decisions. Public sector organizations are faced with the same challenges. A centralized and comprehensive vertical assets inventory can help wireless broadband providers expedite decisions regarding the deployment of affordable, reliable broadband service in rural areas.

Goal
1. Develop a single repository of vertical assets, such as communications towers, water tanks, and other structures potentially useful for the support of deploying affordable, reliable wireless broadband in less populated rural areas or topographically challenged areas.

Benefits
1. The vertical assets inventory provides data for private and public investment decisions, lowering the initial cost of efforts needed to identify potential mounting locations for infrastructure.
2. The inventory can encourage the expansion of affordable, reliable wireless broadband services to underserved areas by shortening project development time.

Action Items
1. Identify or develop a vertical assets inventory toolkit to provide guidelines to identify structures or land that could serve as a site for installation of wireless communications equipment.
2. Data to collect would include vertical asset type, owner type, minimum base elevation, minimum height above ground, and location.
3. Identify and map elevated structures utilizing your community's GIS resources. The resulting database should be open ended; localities should be encouraged to continuously map assets as they are made available.

7. Perform a Broadband Build-out Analysis in Unserved Areas

Conduct an onsite visual assessment of the defined geographic area seeking broadband coverage. The assessment determines the feasibility of deploying various Internet systems in a

defined area. You should gather site specific information required for (i) determining use of existing infrastructure, (ii) designing wired and wireless Internet system using these assets, and (iii) expanding the broadband coverage in the defined area.

Wireless may be the best likely solution. To assist with that, you should conduct a visual assessment of the vertical assets (broadcast towers and water tanks) to determine the feasibility of deploying a fixed wireless broadband Internet system in the unserved community and to gather site-specific information required for that purpose.

Goal
1. Determine which areas lack the necessary technological structure and determine the feasibility of deploying various Internet systems in the defined area.

Benefits
1. Determines project feasibility and provides information to develop a business case for build-out.
2. First step in providing unserved community residents with adequate broadband access.

Action Items
Conduct a wireless assessment to include:
1. Determining the functionality of all potential transmit locations
2. Surveying the availability of adequate power sources at each location
3. Identifying any issues regarding ingress and egress at each location
4. Designing a wireless broadband system using these potential transmit locations
5. Creating a methodology for the expansion of wireless broadband coverage into the un-served areas of the community

ADOPTION

Digital Literacy – No proposed projects

Public Computer Access – No proposed projects

Broadband Awareness

8. Facilitate a Technology Summit
Develop and host a technology summit for residents and businesses to increase awareness of broadband value, service options, and the potential impact on quality of life. The technology summit should facilitate community partnerships between leaders in local government and the private sector, including non-profits and private businesses in the education, healthcare, and agriculture sectors, with the goal of ensuring that residents have at least one place in the

community to use powerful new broadband technologies, and that this asset will be sustained over time. Further, the technology summit should highlight success stories as evidence of the impact of technology.

Goal
1. A technology summit should bring together community stakeholders to develop a dialogue about how public and private stakeholders can collectively improve broadband access, adoption, and use.

Benefits
1. Highlights successes, opportunities, and challenges regarding community technology planning.
2. Develops ongoing dialogue around improving broadband access, adoption, and use.
3. Unifies community stakeholders under one vision.

Action Items
1. Create community partnerships.
2. Identify funding sources and hosts.
3. Identify suitable speakers.
4. Develop relevant content.

Vulnerable Population Focus

9. Develop a Technology Mentorship Program

Initiate a program designed to recruit local high school or college students who excel in school and exhibit advanced leadership and technology skills to assist in technology training, technical support, and outreach efforts in their communities. Recognizing students as a powerful resource for local outreach efforts, the program will challenge them to extend their technology experiences beyond the classroom. The program essentially taps into a technology knowledge base that exists through these exceptional students. Students will be required to develop programs such as training seniors to use computers, initiating a computer refurbishing program, offering basic computer training for local communities, building websites, etc.

Goal
1. Utilize student technology knowledge to implement community programs.

Benefits
1. The program helps students develop self-confidence and technical competencies as they work with their families, leaders, peers, neighbors, seniors, and other members of their communities. In addition to empowering these students with real world experience, it helps enhance their skills as they mature into productive and highly competent citizens.

2. It helps to build character by awarding students opportunities to give back to their communities and embrace responsibilities associated with community service.
3. The program will engage students who are creative, knowledgeable, and interested in technology as a great resource for planning, implementation, support, and using technology at a local level. With guidance and support, they will help to provide a missing, and important, link between the members of community that have experience with broadband technology and those who are currently not using it.
4. The program will expose students to potential career paths and provide a basis to determine if they want to further their educations in a technology field. It could also potentially provide a beginning client base from the relationships he or she has built within the community as a student.

USE

Economic Opportunity

10. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses

Methods of implementing a small and medium business broadband awareness program include, but are not limited to, facilitating awareness sessions, holding press conferences led by community leaders, inviting speakers to community business conferences or summits, and public service announcements. It is also important to educate local businesses about Internet tools that are available at minimum or no cost to them.

A training program, or entry-level "Broadband 101" course, could be utilized to give small and medium businesses an introduction on how to capitalize on broadband connectivity, as well as more advanced applications for IT staff. In addition, training should include resources for non-IT staff, such as how to use commerce tools for sales, streamline finances with online records, or leverage knowledge management across an organization. Additional training might include:

- "How-to" training for key activities such as online collaboration, search optimization, cyber-security, equipment use, and Web 2.0 tools.
- Technical and professional support for hardware, software, and business operations.
- Licenses for business applications such as document creation, antivirus and security software, and online audio- and videoconferencing.
- Website development and registration.
- Basic communications equipment, such as low-cost personal computers and wireless routers.

Goal

1. Businesses adopt and use broadband-enabled applications, resulting in increased efficiency, improved market access, reduced costs, and increased speed of both transactions and interactions.

Benefits
1. Provides entrepreneurial support.
2. Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
3. Promotes business growth and workforce development.
4. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets. According to Connected Nation's 2012 Jobs and Broadband Report, businesses that are using the Internet bring in approximately $300,000 more in median annual revenues than their unconnected counterparts.

Action Items
1. Identify federally or state sponsored business support programs (e.g. Chamber of Commerce, SBA, EDA, Agriculture, or Manufacturing extension) that include assistance with broadband or IT content.
2. Identify or develop a business awareness and training program.
3. Identify or develop online training modules for businesses. For example, the Southern Rural Development Center, in partnership with National Institute of Food and Agriculture, USDA, administers the National e-Commerce Extension Initiative. As the sole outlet nationally for e-Commerce educational offerings geared at Extension programming, the National e-Commerce Extension Initiative features interactive online learning modules. In addition, the program's website offers a library of additional resources and a tutorials section for greater explanation on website design and function. Modules and presentations include: A Beginner's Guide to e-Commerce, Doing Business in the Cloud, Electronic Retailing: Selling on the Internet, Helping Artisans Reach Global Markets, and Mobile e-Commerce. To see some examples, click here: http://srdc.msstate.edu/ebeat/small_business.html#.

11. Establish a "Digital Factory"

A digital factory is a hybrid between an employment agency and a co-working facility that connects residents with online training courses and connections with companies that lack a physical presence in the community. Digital factories provide office space, computer and broadband access, and conference space, as well training ranging from computer and digital literacy skills to computer programming.

"VisionPerry," located in Perry County, Tennessee, provides an ideal example of the digital factory concept. VisionPerry provides office space, high-speed Internet service, a conference room, and training/work rooms that all act as a hub for employees, remote employers, and online training courses. Training at VisionPerry currently follows two main courses: Customer Service Representative and Programmer Training.

VisionPerry currently partners with companies such as LiveOps, Salesforce.com, and Kodak, that desire customer service representatives and remote programmers. Just like a co-working facility, workers who are employed and working at the digital factory pay, according to their salary and job levels, a small monthly fee for using the facilities and services of the digital factory, making the operation sustainable without ongoing government support. For more information, visit: http://www.visionperry.com/.

Another example would be Connected Nation's recently unveiled Digital Works program. The Digital Works program creates jobs in areas facing high unemployment by leveraging broadband technology for call center and IT outsourcing. Extended training is available for HTML programming, and other technical positions as well. The program is providing an avenue for communities to create a job incubator, retaining workers in the area and attracting corporate jobs while providing a pathway for improving a worker's competitive advantage in the twenty-first century workforce with specified coursework and training.

At the end of training, workers are placed in available positions that match their skills and interests. All jobs pay above minimum wage and the training provides opportunities for placement at levels for upward mobility. This is work that can be done from home or at the Digital Works center, which is provided through a partnership with the community. For more information, visit: http://www.connectednation.org/sites/default/files/connected-nation/files/cn_digital_works_launch_final.pdf.

Goal
1. Connect IT training and education with remote employment opportunities.

Benefits
1. This type of project can educate, train, employ, and has the potential to ultimately increase the productivity and economic competitiveness of your community's workforce.
2. The physical infrastructure and training exposes a broad spectrum of residents to the benefits of telecommunications and productive uses of the Internet.
3. Through training and work, participants will rely heavily on local ISPs, broadband technology, and emerging IT technologies to provide services to a global marketplace, in turn fostering the demand-driven strengthening of your community's physical Internet infrastructure.

Action Items
1. The digital factory concept requires a site suitable for establishing office infrastructure, educational partners to develop the workforce, and business relationships with enterprises willing to hire workers through the digital factory.
2. Identify the physical, financial, and technological resources needed to establish a digital factory.

3. Space to house workspace and training and support offices will be needed, as well as the equipment, such as computers and monitors for video conferencing and training.
4. Develop partnerships with companies who would provide contractual employment to program graduates.
5. This employment-focused program can be coupled with a digital literacy program, such as Connected Nation's Every Community Online program, in order to provide basic computer and Internet skills. Connected Nation provides a discounted, turnkey training lab solution, including refurbished or new computers, presentation equipment, training curriculum, and broadband service.

12. Host Website and Social Media Classes for the Local Businesses

For small businesses, an online presence and the use of social media are vital to stay competitive in today's twenty-first century. A website and social media use is not just for companies that have the experience, staff, or budget; any small business can tap into these resources. Training should be provided to small businesses regarding the use of websites and social media within each small business. Website topics should range from starting a basic website to more advanced topics such as e-commerce. Social media topics should include a variety of social media outlets including Facebook, Twitter, YouTube, Pinterest, and LinkedIn. For many business owners, the belief that broadband would not help their business, or the lack of knowledge of how broadband positively effects business development, is the main reason that they do not adopt broadband service. Many believe that since they have always operated without broadband, they can continue to do so. Communicating how businesses can achieve significant results via the utilization of broadband and broadband-enabled business tools is important to overcoming the barriers of relevance and lack of awareness. The key to this communication is providing local examples of successful broadband utilization and facilitating collaboration and cooperation among businesses and technology and service providers. Broadband adoption should not be the end goal for an awareness program. New technology platforms continue to emerge, software and hardware evolve, and website, media, and online customer engagement methods continue to change, which can complicate adoption or leave businesses with outdated technology infrastructure and ineffective marketing strategies. An awareness program should promote the benefits of broadband, offer education and training, and provide assistance with follow-up questions and concerns. Thus, it is important to have a support network of businesses and community organizations that can assist each other with adoption and the continued use of technology.

Goals
1. Promote the adoption and use of broadband and broadband-enabled tools among businesses in Missaukee County via awareness-building and training.
2. Build awareness of the benefits associated with the adoption of broadband among businesses and how a connected business community positively effects the county's economic development through communicating how broadband and broadband-enabled

tools allow businesses to increase efficiency, improve market access, reduce costs, and increase the speed of both transactions and interactions.

Benefits
1. Provides entrepreneurial support.
2. Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
3. Promotes business growth and workforce development.
4. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets. According to Connected Nation 2012 Jobs and Broadband Report, businesses that are using the Internet bring in approximately $300,000 more in median annual revenues than their unconnected counterparts.

Action Items
1. Develop an awareness program: Methods of implementing a broadband awareness program include, but are not limited to, facilitating awareness sessions, press conferences led by community leaders, inviting a speaker to community business conferences or summits, and public service announcements.
2. Build awareness and cohesion: Facilitate the distribution of needs assessments, case studies, technology education resources, and success stories among local businesses, and work to develop an informal network of local business owners who have adopted broadband for business operations in order to provide a resource to field common questions and respond to issues within the community.
3. Identify support: Identify federally or state-sponsored business support programs (e.g. Chamber of Commerce, SBA, EDA, Agriculture or Manufacturing extension) that includes assistance with broadband or IT content.
4. Develop local partnerships: Develop local partnerships with organizations such as the Chamber of Commerce, economic development corporation, main street program, or community anchor institutions such as the Bay Community College or district library to expand on existing programs or develop programs that provide technology education.
5. Develop a training program: A training program or entry-level "Broadband 101" course should be developed to give small and medium businesses an introduction on how to capitalize on broadband connectivity, as well as more advanced applications for IT staff. In addition, training should include resources for non-IT staff, such as how to use commerce tools for sales, streamline finances with online records, or leverage knowledge management across an organization. Additional training might include:
    - "How to" training for key activities such as online collaboration, search optimization, cyber security, equipment use, and Web 2.0 tools.
    - Technical and professional support for hardware, software, and business operations.
    - Licenses for business applications such as document creation, antivirus and security software, and online, audio, and videoconferencing.

- Website development and registration.
- Basic communications equipment, such as low-cost personal computers and wireless routers.
- Educate local businesses on Internet tools that are available at minimal or no cost to them.

Implementation Team
To be determined

Education

13. Improve Education through Digital Learning

Several digital learning platforms are available for K-12 implementation. For example, CFY is a national education nonprofit that helps students in low-income communities, together with their teachers and families, harness the power of digital learning to improve educational outcomes. The organization is unique in that it operates both "in the cloud" (through PowerMyLearning.com, a free K-12 online learning platform) and "on the ground" (through its Digital Learning Program, a whole school initiative that works hands-on with all three of the constituents that impact student achievement: teachers, parents, and students).

PowerMyLearning.com is a free online educational tool that helps students, teachers and parents locate and access over 1,000 high-quality online digital learning activities — videos, simulations, and other educational software — to propel student achievement in subjects including math, English, science, and social studies. The platform features a kid-friendly design. There is a playpoint/badge feature to help motivate students. In addition, students can rate digital learning activities and share them with friends via e-mail, Facebook, and Twitter. CFY also provides onsite training to instruct teachers how to integrate PowerMyLearning into their classrooms.

Goal
1. Increase student attention and engagement, encourage students to take ownership of their learning, and make it easier for teachers to differentiate instruction without embarrassing students.

Benefits
1. Increase learning time by extending learning beyond the classroom walls.
2. Individualize learning and increase student engagement in school.
3. Encourage self-directed learning.
4. Enable parents to more effectively support their children at home.

14. Develop a Program Supporting Schools' New Technology Initiatives

A large number of Michigan's public school districts are requesting and receiving technology bond issues in order to implement e-learning programs such as the iPad 1:1 Initiative, and because of the value of these programs, communities need to develop a program to support these new technology initiatives. Research conducted by Connect Michigan reveals that broadband adoption rates among low-income groups with children range from 37% to 45% (or 56% in rural communities), thereby creating a digital divide and logistical problems for those school districts implementing e-learning programs. Placing computing devices in students' hands is a critical component to the anytime, anywhere approach to learning that is foundational to 21st century education. Some school districts have passed bonds for replacement or addition of technology devices. Other potential sources of computers may include donors or some sort of bring your own device plan as so many of today's students have broadband enabled cell phones or their own laptops. Every idea for student computer replacement has pros and cons and things to work out about them, but it's important to keep moving forward. We have dedicated educators preparing our students for their futures with technology. Continuing to give teachers and students the tools they need should be a priority.

Goal
1. Improve education through digital learning.
2. Increase digital literacy and access for all.

Benefits
1. Increase learning time by extending learning beyond the classroom walls. Individualize learning and increase student engagement in school. Encourage self-directed learning. Enable parents to more effectively support their children at home.

Action Items
1. Develop an awareness campaign within the community to inform its citizens of the new technology advances and earn the community support that is required to ensure the success of the programs. Utilize the local media and public events to educate the public on the advantages of these programs.
2. Examine the community's existing digital resources necessary to support these new eLearning programs. Do the existing public computer centers have adequate bandwidth? Do they have enough computers? Are they open evenings and weekends for school children to do their homework?
3. Remove any unnecessary barriers that would increase the cost of broadband. Community leaders should work in coordination with the school district, local business leaders, the citizens of the community, and local broadband providers to ensure that adequate resources are available to all the students to close the digital divide and ensure the success of these e-learning programs.

Implementation Team
To be determined

Government

15. Improve Online Business Services Offered by the Government

Developing more e-Government applications not only provides value to businesses, but also allows the government to realize cost savings and achieve greater efficiency and effectiveness. Examples of activities include paying for permits and licensing, paying taxes, providing services to the government, and other operations.

Goal
1. Build an e-Government solution that improves the ability of businesses to conduct business with the government over the Internet.

Benefits
1. Facilitates business interaction with government, especially for urban planning, real estate development, and economic development.
2. e-Government lowers the cost to a business conducting all of its interaction with government. Further, as more businesses conduct their business with government online, their transaction costs will be lowered. The cost to a business for any interaction decreases as more technology and fewer staff resources are needed.
3. e-Government provides a greater amount of information to businesses and provides it in a more organized and accessible manner.

Action Items
1. The first step in the process of providing e-Government services to constituents is developing a functional web portal that allows businesses to have access to resources easily. Such a portal can enable outside businesses looking for new opportunities to make informed decisions about working in a certain community.
2. In addition, often overlooked in e-Government deployment are the issues of audiences and needs. Local governments must determine who will visit the website and what sort of information and services they will typically seek. A first step toward meeting general needs of constituents is to provide online access to as broad a swath of governmental information and data as is possible. The sort of information that should be included is:
   - Hours of operation and location of facilities.
   - Contact information of key staff and departments.
   - An intuitive search engine.
   - Access to documents (ideally a centralized repository of online documents and forms).
   - Local ordinances, codes, policies, and regulations.
   - Minutes of official meetings and hearings.
   - News and events.

16. Pursue Next Generation 911 Upgrades

The overall system architecture of Public Safety Answering Points (PSAPs) has essentially not changed since the first 911 call was made in 1968. These 911 systems are voice-only networks based on original wireline, analog, circuit-switched infrastructure that prevents easy transmission of data and critical sharing of information that can significantly enhance the decision-making ability, response, and quality of service provided to emergency callers. To meet growing public expectations of 911-ststem functionality (capable of voice, data, and video transmission from different types of communication devices), that framework should be replaced. This would require replacing analog phone systems with an Internet Protocol (IP)-based system. This system would provide an enabling platform for current technology, as well as future upgrades.

For example, in January 2013, the Federal Communications Commission proposed to amend its rules by requiring all wireless carriers and providers of "interconnected" text messaging applications to support the ability of consumers to send text messages to 911 in all areas throughout the nation where 911 Public Safety Answering Points (PSAPs) are also prepared to receive the texts (which requires an IP-based system). Text-to-911 will provide consumers with enhanced access to emergency communications in situations where a voice call could endanger the caller, or a person with disabilities is unable to make a voice call. In the near term, text-to-911 is generally supported as the first step in the transition to a Next Generation 911.

Goal
1. Design a system that enables the transmission of voice, data, or video from different types of communication devices to Public Safety Answering Points (PSAPs) and onto emergency responder networks.

Benefits
Transitioning to a "Next Generation" IP-based network will enable the public to make voice, text, or video emergency calls from any communications device. With Next Generation 911, responders and PSAPs will gain greater situational awareness that will enable better-informed decisions, resulting in better outcomes and, ultimately, a safer community. By capitalizing on advances in technologies, you are enabling:
1. Quicker and more accurate information to responders
2. Better and more useful forms of information
3. More flexible, secure and robust PSAP operations
4. Lower capital and operating costs

Action Items
If you're involved in PSAP decision making and are faced with replacing aging systems or purchasing new technology for the very first time, you need to consider what your most immediate requirements are and where you need to be 10 years from now. Your community can take a measured and practical approach that spreads the operational impact and costs of a

Next Generation 911 transition over time. Your local agency should choose a starting point that makes the most sense and provides immediate benefits for their PSAP, responders, and communities they serve. For example, according to Intrado, Inc., a provider of 911 and emergency communications infrastructure to over 3,000 public safety agencies, local public-safety agencies can implement any of the following next-generation 911 components today, and provide immediate benefits with little to no disruption of current operations:

1. A public-safety-class, IP-based network
2. IP-based call processing equipment (CPE) in public-safety answering points (PSAPs)
3. Geographic information system (GIS) data enhancements
4. Advanced 911 data capabilities and applications

Healthcare

17. Promote Telemedicine in Remote Areas

Promote the delivery of healthcare services from a distance using video-based technologies. Telemedicine can help to address challenges associated with living in sparsely populated areas and having to travel long distances to seek medical care - particularly for patients with chronic illnesses. It also addresses the issue of the lack of medical specialists in remote areas by awarding access to specialists in major hospitals situated in other cities, states, or countries. While telemedicine can be delivered to patient homes, it can also be implemented in partnership with local clinics, libraries, churches, schools or businesses that have the appropriate equipment and staff to manage it. The most critical steps in promoting telemedicine are ensuring that patients and medical professionals have access to broadband service, understand the main features of telemedicine, are aware of the technologies required for telemedicine, and understand how to develop, deliver, use, and evaluate telemedicine services.

One relevant funding opportunity includes Distance Learning and Telemedicine Loans and Grants Program. USDA provides loans and grants to rural community facilities (e.g. schools, libraries, hospitals, and tribal organizations) for advanced telecommunications systems that can provide healthcare and educational benefits to rural areas. Three kinds of financial assistance are available: a full grant, grant-loan combination, and a full loan.

Goal
1. Deliver improved healthcare services to rural residents.

APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND

Statewide Infrastructure

As part of the Michigan State Broadband Initiative (SBI), and in partnership and at the direction of the Central Upper Peninsula Planning Area District (CUPPAD), Connect Michigan produced an inaugural map of broadband availability in spring 2010. The key goal of the map was to highlight communities and households that remain unserved or underserved by broadband service; this information was essential to estimating the broadband availability gap in the state and understanding the scope and scale of challenges in providing universal broadband service to all citizens across the state. Since the initial map's release, Connect Michigan has collected and released new data every six months, with updates in October and April annually.

The most current Statewide and County Specific Broadband Inventory Maps released in the spring of 2012 depict a geographic representation of provider-based broadband data represented by cable, DSL, wireless, fiber, etc. These maps also incorporate data such as political boundaries and major transportation networks in the state. Vertical assets that can be utilized for broadband network facilitation or transmission will be added to the interactive mapping application in October 2012. A statewide map is found at www.connectmi.org/mapping/state. The county maps are found at www.connectmi.org/community_profile/find_your_county/michigan/missaukee.

Table 1: Estimate of Broadband Service Availability in the State of Michigan By Speed Tier Among Fixed Platforms			
SBI Download Speed Tiers	Unserved Households ('000)	Served Households ('000)	Percent Households by Speed Tier
At Least 768 Kbps/200 Kbps	37	3,836	99.05
At Least 1.5 Mbps/200 Kbps	46	3,826	98.80
At Least 3 Mbps/768 Kbps	103	3,769	97.33
At Least 6 Mbps/1.5 Mbps	251	3,621	93.52
At Least 10 Mbps/1.5 Mbps	279	3,594	92.80
At Least 25 Mbps/1.5 Mbps	515	3,357	86.70
At Least 50 Mbps/1.5 mbps	646	3,227	83.33
At Least 100 Mbps/1.5 Mbps	647	3,226	83.30
At Least 1 Gbps/1.5 Mbps	3,867	5	0.14

Source: Connect Michigan, May 2013.

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile and satellite service) across the state of Michigan; it presents the number and percentage of unserved and served households by speed tiers. The total number of households in Michigan in 2010 was 3,872,508, for a total population of 9.88 million people. Table 1 indicates that 99.05% of households are able to connect to broadband at download speeds of at least 768 Kbps. This implies that the number of households originally estimated by Connect Michigan to be unserved has dropped from 121,701 households in the fall of 2010 to 36,603 households in the spring of 2013. Further, approximately 3,769,134 households across Michigan have broadband available of at least 3 Mbps download speeds and 768 Kbps upload speeds. The percentage of Michigan households having fixed broadband access available of at least 6 Mbps download speeds is estimated at 93.52%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.92% of Michigan households have broadband available from at least one provider at download speeds of 768 Kbps or higher and upload speeds of 200 Kbps or higher. This leaves 3,100 households in the state completely unserved by any form of terrestrial broadband (including mobile, but excluding satellite services).

As differences in broadband availability estimates between the fall of 2010 and the spring of 2013 show, additional participating broadband providers can have a large impact upon Michigan broadband mapping inventory updates. Further, the measured broadband inventory provides an estimate of the true extent of broadband coverage across the state. There is a degree of measurement error inherent in this exercise, which should be taken into consideration when analyzing the data. This measurement error will decrease as local, state, and federal stakeholders, identify areas where the displayed coverage is underestimated or overestimated. Connect Michigan welcomes such feedback to be analyzed in collaboration with broadband providers to correct errors identified in the maps.

In addition, the broadband availability data collected, processed, and aggregated by Connect Michigan has been sent on a semi-annual basis to the NTIA to be used in the National Broadband Map, and comprises the source of Michigan's broadband availability estimates reported by the NTIA and the FCC in the National Broadband Map. The National Broadband Map can be found here: http://www.broadbandmap.gov and the Map's specific page for Michigan can be found here: http://www.broadbandmap.gov/summarize/state/michigan.

Interactive Map
Connect Michigan provides My ConnectView™, an online tool developed and maintained by Connected Nation, intended to allow users to create completely customized views and maps of broadband infrastructure across the state. The self-service nature of this application empowers Michigan's citizens to take an active role in seeking service, upgrading service, or simply becoming increasingly aware of what broadband capabilities and possibilities exist in their area, city, county, or state.

http://www.connectmi.org/interactive-map

For additional maps and other related information, visit:
http://www.connectmi.org/broadband-landscape.

APPENDIX 2: PARTNER AND SPONSORS

Connect Michigan, in partnership with Michigan Public Service Commission, supports Michigan's reinvention and technological transformation through innovation, job creation, and entrepreneurship via the expansion of broadband technology and increased usage by Michigan residents. In 2009, Connect Michigan partnered with the Michigan Public Service Commission to engage in a comprehensive broadband planning and technology initiative as part of the national effort to map and expand broadband. The program began by gathering provider data to form a statewide broadband map, and has progressed to the planning and development stage. At this point the program is expanding to include community engagement in local technology planning, identification of opportunities with existing programs, and implementation of technology projects designed to address digital literacy, improve education, give residents access to global Internet resources, and stimulate economic development. www.connectmi.org.

Michigan Public Service Commission (MPSC) is the lead Michigan agency for the State Broadband Initiative that is responsible for working with Connect Michigan, overseeing the Michigan initiative, and providing direction of the project. The MPSC facilitates interactions with other state government entities, broadband providers, and other Michigan stakeholders. They view promoting broadband view Connect Michigan activities as complementary to its mission to "grow Michigan's economy and enhance the quality of life of its communities by assuring safe and reliable energy, telecommunications, and transportation services at reasonable rates."
http://www.michigan.gov/mpsc

Connected Nation (Connect Michigan's parent organization) is a leading technology organization committed to bringing affordable high-speed Internet and broadband-enabled resources to all Americans. Connected Nation effectively raises the awareness of the value of broadband and related technologies by developing coalitions of influencers and enablers for improving technology access, adoption, and use. Connected Nation works with consumers, community leaders, states, technology providers, and foundations, including the Bill & Melinda Gates Foundation, to develop and implement technology expansion programs with core competencies centered on a mission to improve digital inclusion for people and places previously underserved or overlooked.
http://www.connectednation.org

The **National Telecommunications and Information Administration** (**NTIA**) is an agency of the United States Department of Commerce that is serving as the lead agency in running the State Broadband Initiative (SBI). Launched in 2009, the NTIA's State Broadband Initiative (SBI) implements the joint purposes of the Recovery Act and the Broadband Data Improvement Act,

which envisioned a comprehensive program, led by state entities or non-profit organizations working at their direction, to facilitate the integration of broadband and information technology into state and local economies. Economic development, energy efficiency, and advances in education and healthcare rely not only on broadband infrastructure, but also on the knowledge and tools to leverage that infrastructure.

The NTIA has awarded a total of $293 million for the SBI program to 56 grantees, one each from the 50 states, 5 territories, and the District of Columbia, or their designees. Grantees such as Connect Michigan are using this funding to support the efficient and creative use of broadband technology to better compete in the digital economy. These state-created efforts vary depending on local needs but include programs to assist small businesses and community institutions in using technology more effectively, developing research to investigate barriers to broadband adoption, searching out and creating innovative applications that increase access to government services and information, and developing state and local task forces to expand broadband access and adoption.

Since accurate data is critical for broadband planning, another purpose of the SBI program is to assist states in gathering data twice a year on the availability, speed, and location of broadband services, as well as the broadband services used by community institutions such as schools, libraries, and hospitals. This data is used by the NTIA to update the National Broadband Map, the first public, searchable nationwide map of broadband availability launched February 17, 2011.

APPENDIX 3: WHAT IS CONNECTED?

The goal of Connect Michigan's Connected program is to certify that each community that participates in the program has, in some relevant manner, addressed their community's need for improved Access, Adoption, and Use of technology by assessing community technological resources, identifying gaps, and working to fill those gaps:

- **ACCESS – Is Broadband infrastructure available to all residents?**
- **ADOPTION – Do residents use the technologies?**
- **USE – Are residents using technology to improve their quality of life?**

Connected Process

The Connected process consists of a 4-step process:

Step 1: Create a community technology team. Facilitate kickoff meetings and program orientation with regional leaders and community champions. Provide them with tools and resources to form a community team. This team will be represented by local leaders from key community sectors, including:

- Broadband Provider Community
- Government: General, Public Safety, Energy and Environment
- Economic Opportunity: Economic Development, Business Development, Tourism
- Agriculture
- Education: K-12, Higher Education
- Libraries
- Healthcare

Step 2: Perform a technology assessment. With support provided by a planning specialist, Connect Michigan will provide communities with tools (electronic or print depending on the community needs) to benchmark local community technology. Bolstered by benchmarking data that had been gathered through Connect Michigan's mapping and market research, the Missaukee County Technology Planning Team will work with community members to determine their overall broadband and technology grade on a thirteen-point "community certification AAU" model:

1. Broadband Availability
2. Broadband Speeds
3. Broadband Competition
4. Middle Mile Access
5. Mobile Broadband Availability
6. Digital Literacy
7. Public Computer Centers
8. Broadband Awareness
9. Vulnerable Population Focus
10. Economic Opportunity
11. Education
12. Government
13. Healthcare

Step 3: Action Planning & Implementation.
Following Community Assessments, the data is analyzed, gaps will be determined, and recommended actions to help to fill gaps will be identified. After successful execution of projects the community will be certified as a Connected Community.

Broadband Catalysts for Change

CN Initiatives and Interventions
• Expand Access
• Expand Adoption
• Expand Use

ACCESS to Better and Broader Networks

Broader ADOPTION

Expanded USE

Step 4: Project Success and Expanded Local Empowerment. Once a community is certified, the community will have an avenue to discuss its success and pursue opportunities as a recognized, technologically advanced community.

#
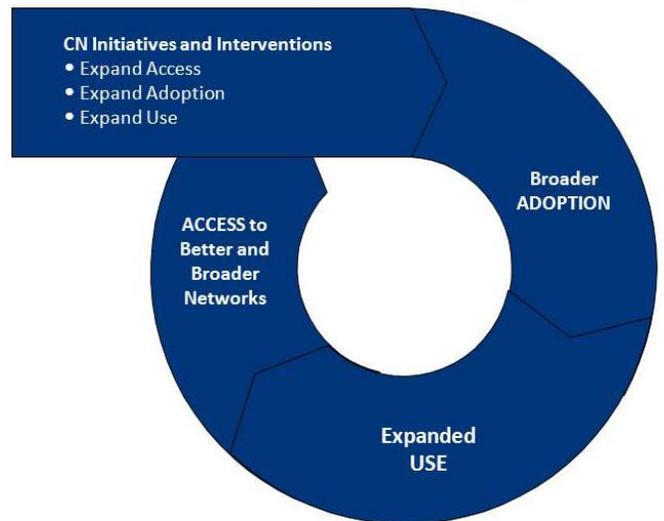
3G Wireless - Third Generation - Refers to the third generation of wireless cellular technology. It has been succeeded by 4G wireless. Typical speeds reach about 3 Mbps.

4G Wireless - Fourth Generation - Refers to the fourth generation of wireless cellular technology. It is the successor to 2G and 3G. Typical implantations include LTE, WiMax, and others. Maximum speeds may reach 100 Mbps, with typical speeds over 10 Mbps.

A

ARRA - American Recovery and Reinvestment Act.

ADSL - Asymmetric Digital Subscriber Line - DSL service with a larger portion of the capacity devoted to downstream communications, less to upstream. Typically thought of as a residential service.

ATM - Asynchronous Transfer Mode - A data service offering by ASI that can be used for interconnection of customers' LAN. ATM provides service from 1 Mbps to 145 Mbps utilizing Cell Relay Packets.

B

Bandwidth - The amount of data transmitted in a given amount of time; usually measured in bits per second, kilobits per second, and megabits per second.

BIP - Broadband Infrastructure Program - Part of the American Recovery and Reinvestment Act (ARRA), BIP is the program created by the U.S. Department of Agriculture focused on expanding last mile broadband access.

Bit - A single unit of data, either a one or a zero. In the world of broadband, bits are used to refer to the amount of transmitted data. A kilobit (Kb) is approximately 1,000 bits. A megabit (Mb) is approximately 1,000,000 bits.

BPL - Broadband Over Powerline - An evolving theoretical technology that provides broadband service over existing electrical power lines.

BPON - Broadband Passive Optical Network - A point-to-multipoint fiber-lean architecture network system which uses passive splitters to deliver signals to multiple users. Instead of running a separate strand of fiber from the CO to every customer, BPON uses a single strand of fiber to serve up to 32 subscribers.

Broadband - A descriptive term for evolving digital technologies that provide consumers with integrated access to voice, high-speed data service, video-demand services, and interactive delivery services (e.g. DSL, cable Internet).

BTOP - Broadband Technology Opportunities Program - Part of the American Recovery and Reinvestment Act (ARRA), BTOP is the program created by the U.S. Department of Commerce focused on expanding broadband access, expanding access to public computer centers, and improving broadband adoption.

Cable Modem - A modem that allows a user to connect a computer to the local cable system to transmit data rather than video. It allows broadband services at speeds of five Mbps or higher.

CAP - Competitive Access Provider - (or "Bypass Carrier") A company that provides network links between the customer and the Inter-Exchange Carrier or even directly to the Internet Service Provider. CAPs operate private networks independent of Local Exchange Carriers.

Cellular - A mobile communications system that uses a combination of radio transmission and conventional telephone switching to permit telephone communications to and from mobile users within a specified area.

CLEC - Competitive Local Exchange Carrier - Wireline service provider that is authorized under state and federal rules to compete with ILECs to provide local telephone and Internet service. CLECs provide telephone services in one of three ways or a combination thereof: a) by building or rebuilding telecommunications facilities of their own, b) by leasing capacity from another local telephone company (typically an ILEC) and reselling it, or c) by leasing discreet parts of the ILEC network referred to as UNEs.

CMTS - Cable Modem Termination System - A component (usually located at the local office or head end of a cable system) that exchanges digital signals with cable modems on a cable network, allowing for broadband use of the cable system.

CO - Central Office - A circuit switch where the phone and DSL lines in a geographical area come together, usually housed in a small building.

Coaxial Cable - A type of cable that can carry large amounts of bandwidth over long distances. Cable TV and cable modem broadband service both utilize this technology.

Community Anchor Institutions (CAI) - Institutions that are based in a community and larger user of broadband. Examples include schools, libraries, healthcare facilities, and government institutions.

CWDM - Coarse Wavelength Division Multiplexing - Multiplexing (more commonly referred to as WDM) with less than 8 active wavelengths per fiber.

D

Dial-Up - A technology that provides customers with access to the Internet over an existing telephone line. Dial-up is much slower than broadband.

DLEC - Data Local Exchange Carrier - DLECs deliver high-speed access to the Internet, not voice. DLECs include Covad, Northpoint, and Rhythms.

Downstream - Data flowing from the Internet to a computer (surfing the net, getting e-mail, downloading a file).

DSL - Digital Subscriber Line - The use of a copper telephone line to deliver "always on" broadband Internet service.

DSLAM - Digital Subscriber Line Access Multiplier - A piece of technology installed at a telephone company's CO that connects the carrier to the subscriber loop (and ultimately the customer's PC).

DWDM - Dense Wavelength Division Multiplexing - A SONET term which is the means of increasing the capacity of Sonet fiber-optic transmission systems.

E
E-rate - A federal program that provides subsidy for voice and data lines to qualified schools, hospitals, Community-Based Organization (CBOs), and other qualified institutions. The subsidy is based on a percentage designated by the FCC.

Ethernet - A local area network (LAN) standard developed for the exchange data with a single network. It allows for speeds from 10 Mbps to 10 Gbps.

EON - Ethernet Optical Network - The use of Ethernet LAN packets running over a fiber network.

EvDO - Evolution Data Only - A new wireless technology that provides data connections that are 10 times faster than a regular modem.

F
FCC - Federal Communications Commission - A federal regulatory agency that is responsible for, among other things, regulating VoIP.

Fixed Wireless Broadband - The operation of wireless devices or systems for broadband use at fixed locations such as homes or offices.

Franchise Agreement - An agreement between a cable provider and a government entity that grants the provider the right to serve cable and broadband services to a particular area - typically a city, county, or state.

FTTH - Fiber To The Home - Another name for fiber to the premises, where fiber optic cable is pulled directly to an individual's residence or building allowing for extremely high broadband speeds.

FTTN - Fiber To The Neighborhood - A hybrid network architecture involving optical fiber from the carrier network, terminating in a neighborhood cabinet that converts the signal from optical to electrical.

FTTP - Fiber To The Premise (Or FTTB – Fiber To The Building) - A fiber optic system that connects directly from the carrier network to the user premises.

G
Gbps - Gigabits per second - 1,000,000,000 bits per second or 1,000 Mbps. A measure of how fast data can be transmitted.

GPON - Gigabyte-Capable Passive Optical Network - Uses a different, faster approach (up to 2.5 Gbps in current products) than BPON.

GPS - Global Positioning System - A system using satellite technology that allows an equipped user to know exactly where he is anywhere on earth.

GSM - Global System for Mobile Communications - This is the current radio/telephone standard in Europe and many other countries except Japan and the United States.

H

HFC - Hybrid Fiber Coaxial Network - An outside plant distribution cabling concept employing both fiber optic and coaxial cable.

Hotspot - See *Wireless Hotspot*.

I

IEEE - Institute of Electrical and Electronics Engineers (pronounced "Eye-triple-E.").

ILEC - Incumbent Local Exchange Carrier - The traditional wireline telephone service providers within defined geographic areas. They typically provide broadband Internet service via DSL technology in their area. Prior to 1996, ILECs operated as monopolies having the exclusive right and responsibility for providing local and local toll telephone service within LATAs.

IP-VPN - Internet Protocol - Virtual Private Network - A software-defined network offering the appearance, functionality, and usefulness of a dedicated private network.

ISDN - Integrated Services Digital Network - An alternative method to simultaneously carry voice, data, and other traffic, using the switched telephone network.

ISP - Internet Service Provider - A company providing Internet access to consumers and businesses, acting as a bridge between customer (end-user) and infrastructure owners for dial-up, cable modem, and DSL services.

K

Kbps - Kilobits per second - 1,000 bits per second. A measure of how fast data can be transmitted.

L

LAN - Local Area Network - A geographically localized network consisting of both hardware and software. The network can link workstations within a building or multiple computers with a single wireless Internet connection.

LATA - Local Access and Transport Areas - A geographic area within a divested Regional Bell Operating Company is permitted to offer exchange telecommunications and exchange access service. Calls between LATAs are often thought of as long-distance service. Calls within a LATA (IntraLATA) typically include local and local toll telephone services.

Local Loop - A generic term for the connection between the customer's premises (home, office, etc.) and the provider's serving central office. Historically, this has been a wire connection; however, wireless options are increasingly available for local loop capacity.

Low Income - Low income is defined by using the poverty level as defined by the U.S. Census Bureau. A community's low-income percentage can be found at www.census.gov.

M

MAN - Metropolitan Area Network - A high-speed date intra-city network that links multiple locations with a campus, city, or LATA. A MAN typically extends as far as 50 kilometers (or 31 miles).

Mbps - Megabits per second - 1,000,000 bits per second. A measure of how fast data can be transmitted.

Metro Ethernet - An Ethernet technology-based network in a metropolitan area that is used for connectivity to the Internet.

Multiplexing - Sending multiple signals (or streams) of information on a carrier (wireless frequency, twisted pair copper lines, fiber optic cables, coaxial, etc.) at the same time. Mutiplexing, in technical terms, means transmitting in the form of a single, complex signal and then recovering the separate (individual) signals at the receiving end.

N

NTIA - National Telecommunications and Information Administration, which is housed within the United State Department of Commerce.

NIST - National Institute of Standards and Technology.

O

Overbuilders - Building excess capacity. In this context, it involves investment in additional infrastructure projects to provide competition.

OVS - Open Video Systems - A new option for those looking to offer cable television service outside the current framework of traditional regulation. It would allow more flexibility in providing service by reducing the build-out requirements of new carriers.

P

PON - Passive Optical Network - A Passive Optical Network consists of an optical line terminator located at the Central Office and a set of associated optical network terminals located at the customer's premises. Between them lies the optical distribution network comprised of fibers and passive splitters or couplers.

R

Right-of-Way - A legal right of passage over land owned by another. Carriers and service providers must obtain right-of-way to dig trenches or plant poles for cable and telephone systems and to place wireless antennae.

RPR - Resilient Packet Ring - Uses Ethernet switching and a dual counter-rotating ring topology to provide SONET-like network resiliency and optimized bandwidth usage, while delivering multi-point Ethernet/IP services.

RUS - Rural Utility Service - A division of the United States Department of Agriculture that promotes universal service in un-served and underserved areas of the country through grants, loans, and financing.

S

Satellite - Satellite brings broadband Internet connections to areas that would not otherwise have access, even the most rural of areas. Historically, higher costs and lower reliability have prevented the widespread implementation of satellite service, but providers have begun to overcome these obstacles, and satellite broadband deployment is increasing. A satellite works by receiving radio signals sent from the Earth (at an uplink location also called an Earth Station)

and resending the radio signals back down to the Earth (the downlink). In a simple system, a signal is reflected, or "bounced," off the satellite. A communications satellite also typically converts the radio transmissions from one frequency to another so that the signal getting sent down is not confused with the signal being sent up. The area that can be served by a satellite is determined by the "footprint" of the antennas on the satellite. The "footprint" of a satellite is the area of the Earth that is covered by a satellite's signal. Some satellites are able to shape their footprints so that only certain areas are served. One way to do this is by the use of small beams called "spot beams." Spot beams allow satellites to target service to a specific area, or to provide different service to different areas.

SBI - State Broadband Initiatives, formerly known as the State Broadband Data & Development (SBDD) Program.

SONET - Synchronous Optical Network - A family of fiber-optic transmission rates.

Streaming - A Netscape innovation that downloads low-bit text data first, then the higher bit graphics. This allows users to read the text of an Internet document first, rather than waiting for the entire file to load.

Subscribership - Subscribership is the number of customers that have subscribed for a particular telecommunications service.

Switched Network - A domestic telecommunications network usually accessed by telephones, key telephone systems, private branch exchange trunks, and data arrangements.

T

T-1 - Trunk Level 1 - A digital transmission link with a total signaling speed of 1.544 Mbps. It is a standard for digital transmission in North America.

T-3 - Trunk Level 3 - 28 T1 lines or 44.736 Mbps.

U

UNE - Unbundled Network Elements - Leased portions of a carrier's (typically an ILEC's) network used by another carrier to provide service to customers.

Universal Service - The idea of providing every home in the United States with basic telephone service.

Upstream - Data flowing from your computer to the Internet (sending e-mail, uploading a file).

V

VDSL (or VHDSL) - Very High Data Rate Digital Subscriber Line - A developing technology that employs an asymmetric form of ADSL with projected speeds of up to 155 Mbps.

Video On Demand - A service that allows users to remotely choose a movie from a digital library and be able to pause, fast-forward, or even rewind their selection.

VLAN - Virtual Local Area Network - A network of computers that behave as if they were connected to the same wire even though they may be physically located on different segments of a LAN.

VoIP - Voice over Internet Protocol - A new technology that employs a data network (such as a broadband connection) to transmit voice conversations.

VPN - Virtual Private Network - A network that is constructed by using public wires to connect nodes. For example, there are a number of systems that enable one to create networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

Vulnerable Groups - Vulnerable groups will vary by community, but typically include low-income, minority, senior, children, etc.

W

WAN - Wide Area Network - A communications system that utilizes cable systems, telephone lines, wireless, and other means to connect multiple locations together for the exchange of data, voice, and video.

Wi-Fi - Wireless Fidelity - A term for certain types of wireless local networks (WLANs) that uses specifications in the IEEE 802.11 family.

WiMax - A wireless technology that provides high-throughput broadband connections over long distances. WiMax can be used for a number of applications, including last mile broadband connections, hotspots, and cellular backhaul and high-speed enterprise connectivity for businesses.

Wireless Hotspot - A public location where Wi-Fi Internet access is available for free or for a small fee. These could include airports, restaurants, hotels, coffee shops, parks, and more.

Wireless Internet - 1) Internet applications and access using mobile devices such as cell phones and palm devices. 2) Broadband Internet service provided via wireless connection, such as satellite or tower transmitters.

Wireline - Service based on infrastructure on or near the ground, such as copper telephone wires or coaxial cable underground, or on telephone poles.