

# MACKINAC COUNTY

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## TECHNOLOGY ACTION PLAN

PREPARED BY **CONNECT MICHIGAN**  
AND THE  
**MACKINAC COUNTY BROADBAND COMMITTEE**



APRIL 9, 2013



ACCESS



ADOPTION



USE



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## EXECUTIVE SUMMARY

### Key Findings

Connect Michigan, in conjunction with the Mackinac County Broadband Committee, has released a Mackinac County Community Technology Action Plan following a community assessment of overall broadband and technology readiness, using criteria that analyzes broadband access, adoption, and use.

### Community Technology Scorecard

| Community Champion: Paula Ramelis<br>Community Advisor: Tom Stephenson |                               |                 |                        |
|--|-------------------------------|-----------------|------------------------|
| FOCUS AREA   | ASSESSMENT CRITERIA           | COMMUNITY SCORE | MAXIMUM POSSIBLE SCORE |
| ACCESS   | Broadband Availability        | 0               | 10                     |
|  | Broadband Speeds              | 0               | 5                      |
|  | Broadband Competition         | 0               | 5                      |
|  | Middle Mile Access            | 10              | 10                     |
|  | Mobile Broadband Availability | 4               | 10                     |
|  | <b>TOTAL ACCESS SCORE</b>     | <b>14</b>       | <b>40</b>              |
| ADOPTION   | Digital Literacy              | 6               | 10                     |
|  | Public Computer Centers       | 10              | 10                     |
|  | Broadband Awareness           | 10              | 10                     |
|  | Vulnerable Population Focus   | 10              | 10                     |
|  | <b>TOTAL ADOPTION SCORE</b>   | <b>36</b>       | <b>40</b>              |
| USE  | Economic Opportunity          | 10              | 10                     |
|  | Education                     | 10              | 10                     |
|  | Government                    | 6               | 10                     |
|  | Healthcare                    | 10              | 10                     |
|  | <b>TOTAL USE SCORE</b>        | <b>36</b>       | <b>40</b>              |
| <b>COMMUNITY ASSESSMENT SCORE</b>                                      |                               | <b>86</b>       | <b>120</b>             |

### Analysis of Scorecard

- Mackinac County achieved a score of 86 points out of 120 for overall broadband and technology readiness which indicates that the community has not surpassed the score of 100 required for Connected certification.

- The county scored 14 out of a possible 40 points in broadband access primarily because of some large gaps in broadband availability. Connect Michigan’s mapping data indicates that only 59% of households have access to 3 Mbps broadband download speeds.
- Mackinac County has not exceeded the 32 points in each focus area which is required for certification.
- While the results indicate that the community has made tremendous strides and investments in technology, this technology plan will provide some insight and recommendations that will help the community continue to achieve success.

## Introduction

Today, technology plays a pivotal role in how businesses operate, the type of service consumers expect, how institutions provide services, and where consumers choose to live, work, and play. For children to succeed, access to online resources has become crucial. More importantly, 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.

In order to determine if businesses and residents are maximizing the benefits from using high-speed Internet technologies, there is a need to determine the current state of technology before identifying gaps. Thus, the need to know the state of technology in a community – and subsequently in a state – is great. In response to this need, Connected Nation<sup>1</sup> developed the Connected community program to help guide a community through an assessment of its overall broadband and technology status, using criteria that Connected Nation has developed as a “community certification” model. The program helps train community team leaders and supports the formation of community planning teams made up of various sector representatives with the goal of creating an actionable plan for expanding the access to broadband infrastructure, adoption, and use of Internet technologies and becoming a certified technology community. Funded by the National Telecommunications and Information Administration (NTIA), this effort is part of the State Broadband Initiative.

The Mackinac County Broadband Committee is leading the way into a new economy for Mackinac County by actively participating in Connect Michigan’s Connected community program. Using tools provided by Connect Michigan, the Mackinac County Broadband

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<sup>1</sup> 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.

Committee collaborated with multiple community organizations and residents to assess the overall broadband and technology status in Mackinac County.

## Methodology

In order to determine the state of technology in Mackinac County, the community team initiated a 4-step community engagement program that consisted of:

1. Identification and empowerment of a community team leader (local champion) and creation of 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. Assessment of community technology resources.
3. Development of a community technology plan and implementation of recommended actions that will lead to community certification as a Connected community (*ongoing*).
4. Once a community is certified, the community will have an avenue to discuss its success and pursue opportunities as a recognized, technologically advanced community.

## Itemized Key Findings

The Mackinac County Broadband Committee identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment:

### ACCESS

- 16 last-mile broadband providers currently provide service in Mackinac County:
  - 59.43% of households have access to 3 Mbps.
  - 54.13% of Mackinac County households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from multiple providers in Mackinac County.
- 89.77% of Mackinac County households have access to mobile broadband.

### ADOPTION

- 2 Digital Literacy Programs exist in the community resulting in 64 graduates over the past year.
- 5 Public Computer Centers (PCC) with a total of 57 computers are open to the public.
- 1 Broadband Awareness Campaign is reaching 100% of Mackinac County.
- 5 vulnerable populations are being targeted with digital literacy programs.

### USE

- At least 9 uses of broadband were identified in the area of economic opportunity including 3 advanced uses and 6 basic uses.
- At least 10 uses of broadband were identified in the area of education including 5 advanced uses and 5 basic uses.

- At least 4 uses of broadband were identified in the area of government including 2 advanced uses and 2 basic uses.
- At least 8 uses of broadband were identified in the area of healthcare including 4 advanced uses and 4 basic uses.

Through the broadband mapping and inventory undertaken by both Connect Michigan and the Mackinac County Broadband Committee, several Community Anchor Institutions (CAI) were identified. They are broken down by type below:

| CAI Type |   | Number of CAIs |
|----------|---|----------------|
| 1        | School K-12                               | 13             |
| 2        | Library                                   | 17             |
| 3        | Medical/Healthcare                        | 1              |
| 4        | Public Safety                             | 5              |
| 5        | University, College, Other Post-Secondary | 0              |
| 6        | Other Community Support – Government      | 0              |
| 7        | Other Community Support – Nongovernment   | 0              |

In addition to the items identified above, the Mackinac County Broadband Committee identified the following technology resources in the community:

**Technology Providers**

- 16 broadband providers were identified in Mackinac County
- 1 web developer

**Technology Facilities**

- 5 public computing centers
- 9 wireless hotspots

**Community Websites**

- 1 Business-related website (excluding private businesses)
- 1 Education-related website
- 15 Government-related websites
- 2 Healthcare-related websites
- 5 Library-related websites
- 4 Tourism-related websites



## Current Community Technology Developments in Mackinac County

During the assessment process, the community team identified projects that are currently in development or being implemented. These projects are helping to enhance technology in Mackinac County:

1. In 2010, the Eastern Upper Peninsula Intermediate School District (EUPISD) received a \$3,165,000 BTOP grant that allowed the district to:
  - A. Provide netbooks (small laptop style computing devices) for every 7<sup>th</sup> - 12<sup>th</sup> grade student and provide training in educational technology for teachers.
  - B. Provide community training in a variety of technology topics.
  - C. Educate students, teachers, and community members about broadband and seek to increase the use of broadband to enhance K-12 education and increase opportunities to health, finance, and educational resources for community members.
2. Sault Ste. Marie Advanced Resources and Technology, Inc. (SSMart) operates the Sault Ste. Marie SmartZone, as a collaborative partnership with the City of Sault Ste. Marie and its Economic Development Corporation, Lake Superior State University (LSSU), and the Michigan Economic Development Corporation (MEDC). The Sault Ste. Marie SmartZone is a technology center designated to promote resource collaborations between universities, industry, research organizations, government, and other community institutions with the goal of establishing technology based businesses and jobs. For more information, visit: [www.ssmartzone.com](http://www.ssmartzone.com)
3. Launched in the fall of 2012, e-commerce and social media training sessions presented by Google and in partnership with Michigan Small Business and Technology Development Center and the Eastern Upper Peninsula Intermediate School District (EUPISD). Local businesses and non-profits from Luce, Chippewa, and Mackinac counties are represented in the workshops.
4. Charter Communications has upgraded its cable network and is now offering broadband service up to 100 Mbps download speeds and 5 Mbps upload speeds.
5. Century Link launched its “Basics Internet” program, a low-cost Internet package, affordable computers, and free technology training to improve and promote broadband adoption and use by low-income consumers.
6. Digital literacy training sessions we presented by staffs of CenturyLink and Eastern Upper Peninsular Intermediate School District Les hosted by Les Cheneaux Community Library.
7. Lighthouse Computers upgraded and improved the original cable system on Mackinac Island and launched a new Fiber Cable Internet Service in 2012 on Mackinac Island. This new service brings download speeds up to 30 Mbps to almost every home and business on the Island.
8. Lighthouse.Net has acquired existing cable networks in Curtis, Engadine, and Naubinway and will be investing in improvements to bring broadband cable Internet using fiber broadband in 2013.

## Priority Projects

This exercise has culminated in the outlining of projects to allow the community to continue its recognized excellence in technology and broadband planning across the community. Below are 4 priority projects, each describing a project plan with suggested steps. This is followed by a complete list of all recommended actions.

### *Develop Program Supporting Schools' New Technology Initiatives*

#### **Project Description**

In September 2010, the Eastern Upper Peninsula Intermediate School District (EUPISD) received funding from the broadband appropriations of the American Recovery and Reinvestment Act (ARRA). The application was awarded under BTOP's Sustainable Broadband Adoption (SBA) category. The funded project, titled "Sparking Broadband Use in the Upper Peninsula of Michigan" will provide 3,500 netbooks and software to EUPISD students in grades 7 – 12. The students are encouraged to take their netbooks home in the evening, over the weekend, and even over the summer.

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.

Over the past decade, Eastern Upper Peninsula Intermediate School District has received two large grants that have enabled schools in the Eastern Upper Peninsula to establish a wireless infrastructure, provided teacher training about how to integrate technology into education, and provided computers for secondary students. We now have the tools in place to offer suburban students a twenty-first century education, and many educators have used the tools to provide a real advantage for students.

Placing computing devices in students' hands is a critical component to the anytime, anywhere approach to learning that is foundational to twenty-first century education. Grants written by the Eastern Upper Peninsula Intermediate School District staff have allowed our region to be on the forefront of educational technology, but the grant funds are getting scarcer. 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 other issues 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**

Continue to support the Eastern Upper Peninsula Intermediate School District's new 1:1 laptop initiative.

### **Benefits**

- 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.

### *Develop an Intergovernmental Network*

### **Project Description**

It is recommended by several members of the committee to expand the existing fiber-optic network that is currently being utilized by the Eastern Upper Peninsula Intermediate School

District to include all the community's anchor institutions. Such an expansion would create an intergovernmental fiber-optic network throughout the region which would bring to those institutions linked to this network the cost and efficiency benefits of high-speed connectivity.

Several communities within the state of Michigan have already begun the process of creating a governmental fiber network, such as Clare County, where all the major Community Anchor Institutions are linked together via fiber optic lines. Under an atmosphere of cooperation and a desire to improve the lives of its citizens, the leaders within the community developed a network that linked the Clare/Gladwin Intermediate School District, the County Governments of Clare, the City of Clare, the City of Harrison, the Village of Farwell, all three public libraries, and six of the county's townships.

As these communities develop and implement these networks, they are discovering the advantages of a fiber network include: unlimited capacity, higher quality and better security, multi-application support flexibility, application enabling technology, collaboration ease and flexibility, and the potential of economic development with a private partner. Working as a team - or consortium - these communities are able to share the cost and thereby able take advantage of high-speed connectivity that would otherwise be cost prohibitive for their communities.

### **Goal**

Develop a fiber optic Intergovernmental Network throughout Chippewa, Luce, and Mackinac counties in order to improve the lives of their citizens.

### **Action Item**

1. Develop an RFP that procures the most cost effective means of developing a fiber optic Intergovernmental Network throughout Chippewa, Luce, and Mackinac counties.

### **Implementation Team**

TBD

### *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.

### Goals

- Understand existing and potential markets for broadband subscribers (both residential and business).
- Increase access to broadband in the unserved areas of Mackinac County.

### Benefits

- Enables the ability to better understand the key drivers of the broadband market.
- 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 Eastern Upper Peninsula Community Planning Team, 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 samples from the Charlevoix County and Oscoda County teams are readily available and currently loaded on the web portals of Chippewa, Luce, and Mackinac Counties located on the Connect Michigan website [www.connectmi.org](http://www.connectmi.org).
  - b. A sample of a press release and an online survey by the Charlevoix team is also loaded on the web portals of Chippewa, Luce, and Mackinac counties.
3. The project team should then tabulate the data and work with the GIS team of the Eastern Upper Peninsula Regional Planning & Development Commission 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 to Mackinac 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

A team comprised of the champions of the Eastern Upper Peninsula Community Planning Team is currently developing a marketing survey and methods of implementation.

### *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 to stay competitive in the twenty-first century business environment. A website and social media use are 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.

### **Goals**

1. Promote the adoption and use of broadband and broadband-enabled tools among businesses in Mackinac 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.

### **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 Mid-Michigan 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:
  - a. “How to” training for key activities such as online collaboration, search optimization, cyber security, equipment use, and Web 2.0 tools.
  - b. Technical and professional support for hardware, software, and business operations.
  - c. Licenses for business applications such as document creation, antivirus and security software, and online-audio-and videoconferencing.
  - d. Website development and registration.
  - e. Basic communications equipment, such as low-cost personal computers and wireless routers.
  - f. Educate local businesses on Internet tools that are available at minimal or no cost to them.

### **Implementation Team**

A team comprised of the champions of the Eastern Upper Peninsula Community Planning Team and staff from the Eastern Upper Peninsula Intermediate School District are hosting free website and social media classes for the local businesses. Working with the Michigan Small Business Technology Development Center staff located in Escanaba, the team has already hosted two workshops and is scheduling several more throughout the Eastern Upper Peninsula region.

### **Proposed Community Projects**

The Eastern Upper Peninsula Community Planning Team created a list of proposed community-specific projects or actions that could be implemented to further increase the access, adoption, and use of broadband in order to improve the lives of the citizens of Mackinac County. They are as follows:



1. Develop hot spots in the county's downtown areas and at the township halls for both residents and visitors.
2. Develop a technology-mentoring program for the students and the community's seniors.
3. Facilitate the increase of e-Government services at all levels of local government.
4. Broadband awareness program in supporting the schools' new technology initiative.
5. Work with the Mackinac County Planning Commission to examine the community's zoning ordinances for any unnecessary local regulatory barriers that would inhibit the expansion of broadband.

## Complete List of Recommended Actions

Below is a complete list of recommended actions. Numbered actions indicate those recommended by Connect Michigan, whereas non-numbered actions indicate those developed by the Mackinac County Broadband Team. Detailed descriptions of each solution proposed by Connect Michigan can be found in the *Recommended Actions* section later in this report.

### ACCESS

#### Broadband Availability

- 1) Perform Analysis of Local Policies and Ordinances
- 2) Develop & Issue an RFP for Build-out
- 3) Apply to USDA for Funding Support to Build out Broadband in Community

#### Broadband Speeds

- 4) Identify, Map, and Validate Broadband Demand

#### Broadband Competition

- 5) Develop Public-Private Partnerships to Deploy Broadband Service
- 6) Study and Possibly Reassess Major Telecom Purchase Contracts

**Middle Mile Access** - No Recommended Actions

#### Mobile Broadband Availability

- 7) Perform a Broadband Build-out Analysis in Unserved Areas
- 8) Complete a Vertical Assets Inventory

### ADOPTION

#### Digital Literacy

- 9) Facilitate a Technology Summit
- 10) Distribute Digital Literacy Content
- 11) Promote the Nationwide Connect2Compete Program
- 12) Develop or Identify a Broadband Training and Awareness Program for Small and Medium



Businesses

- 13) Create a Technology Mentorship Program
- 14) Establish a "Community Technology Academy"
- 15) Procure a Multipurpose Mobile Technology Center

**Public Computer Centers** – No Recommended Actions

**Broadband Awareness** – No Recommended Actions

**Vulnerable Population Focus** – No Recommended Actions

**USE**

**Economic Opportunity**

- Host website and social media classes for the local businesses
- Establish a "Digital Factory"

**Education**

- Develop program supporting schools' new technology initiatives
- 16) Improve Education through Digital Learning

**Government**

- Develop an Intergovernmental Network
- 17) Perform a Community IT Assessment
- 18) Facilitate a Technology Summit
- 19) Improve the Online Presence of Government
- 20) Seek Funding for Improving the Public Safety Network
- 21) Pursue Next Generation 911 Upgrades
- 22) Improve Online Business Services Offered by the Government

**Healthcare** – No Recommended Actions

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## INTRODUCTION

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### Purpose

The purpose of this report is to summarize the assessment of Mackinac County's current capacity for encouraging the Access, Adoption, and Use of technology as well as the best next steps for addressing any deficiencies or opportunities for improving Mackinac County's technology landscape. (Community assessment results and recommended actions are provided later in this report.)

### Background

Today, high-speed Internet access plays an integral role in how we conduct our business and how we live our lives on a day-to-day basis. As noted in the National Broadband Plan, a high-speed network is "a foundation for economic growth, job creation, global competitiveness and a better way of life."<sup>2</sup> Despite the growing dependence on technology, as of 2012 nearly 34% of Americans did not have a high-speed connection at home.<sup>3</sup> Further, 14 million Americans are lacking access to broadband infrastructure that can support today's and tomorrow's applications.<sup>4</sup> 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. In 2012, Connected Nation surveyed 7,004 businesses in 9 states. Based on this data, Connected Nation estimates that at least 1.8 million businesses - 24% - in the United States do not utilize broadband technology today.<sup>5</sup>

In this age of technology, a number of factors have forced businesses to change time-honored models of operation, including global competition and a demand for faster and more personalized services from consumers. Research shows that businesses that use high-speed Internet generate more revenue<sup>6</sup> and experience the most direct benefit of high-speed Internet with increased sales, profit, and growth. Gaining benefits from the implementation of high-speed Internet is not just for large corporations. For smaller businesses and entrepreneurs in small communities, technology creates an even playing field with companies much larger than

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2 *Connecting America: The National Broadband Plan*, Federal Communications Commission, April 2010, <http://www.broadband.gov/download-plan/>

3 Pew Internet and American Life Project <http://pewinternet.org/Trend-Data-%28Adults%29/Home-Broadband-Adoption.aspx> (suggests that 66% have access to Broadband).

4 Federal Communications Commission, *Connecting America: The National Broadband Plan*, March 17, 2010, p. 20.

5 Connected Nation, *Broadband and Business: Leveraging Technology to Stimulate Economic Growth*, <http://www.connectednation.org/survey-results/business>, 2012.

6 Connected Nation, *The 2012 Jobs and Broadband Report*, 2012

[http://www.connectednation.org/sites/default/files/cn\\_biz\\_whitepaper2012\\_final.pdf](http://www.connectednation.org/sites/default/files/cn_biz_whitepaper2012_final.pdf)

themselves. Where small businesses were once limited to whatever local customers they could attract through local advertising, e-commerce allows small or even home-based businesses to operate and sell their goods on a national and sometimes international scale.

Schools, colleges, universities, and community and technical colleges continue to find new ways and tools to educate the students of the digital age. With the evolution of social networking and mobile applications, educational institutions are using these tools to communicate effectively with students.

The healthcare sector also relies on technology. On a daily basis, doctors must keep up with the latest research; patient records have to be easily accessible and accurate; and images, test results, and prescriptions have to be delivered promptly, without errors, to practitioners, pharmacies, and insurance providers. Network-based technologies like videoconferencing and digital stethoscopes allow specialists to consult with rural patients, reducing travel time and hazards. This ability to reach rural patients through technology has allowed many people to seek treatment that otherwise may not have done so.

Families are relying more and more on technology for services, education, information, communication, news, and improving their quality of life. Digital literacy training has become the most basic means by which communities and institutions work to teach community members basic skills that allow them to navigate the Internet, perform basic functions, and become a skilled workforce for potential investors.

Local governments have also seen the importance of an online presence. Local governments provide communities with many services, offer a great deal of local information, and encourage public involvement and awareness. The demand for faster and better services has increased the need for high-speed networks.

In order to address challenges associated with the lack of high-speed access, adoption, and use, Connect Michigan is working to help communities identify their technology needs and opportunities. Bolstered by benchmarking data that has been gathered through Connect Michigan's mapping and market research, the Connected community program is drilling down to the regional and local levels to facilitate community technology planning. Through this program, regions and communities are aiming to accelerate the access, adoption, and use of technology toward creating a better business environment, more effective community and economic development, improved healthcare, enhanced education, and more efficient government. Essentially, Connect Michigan is helping communities create a forum and structure to take informed actions that help to:

- Improve a community's technology and broadband landscape.
- Identify a community's technology assets.



- Increase economic opportunity, education, healthcare, and e-government in a community.
- Connect a community to technology opportunities and partnerships.
- Leverage a community's existing technology innovations.
- Help a community make strides towards achieving goals outlined in the statewide strategic plan.



## DETAILED FINDINGS

### Mackinac County Assessment Findings

Today, residents in Mackinac County (or sections of the community) are served by 16 providers. Currently broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream. According to Connect Michigan's latest broadband mapping update, the following providers have a service footprint in the Mackinac County Community:

| Broadband Providers            | Technology Type       | Website Reference  |
|--------------------------------|-----------------------|--|
| Alphacomm.net                  | DSL                   | <a href="http://alphacomm.net">http://alphacomm.net</a>                              |
| AT&T Michigan                  | DSL                   | <a href="http://www.att.com">www.att.com</a>   |
| AT&T Mobility LLC              | Mobile Wireless       | <a href="http://www.wireless.att.com">www.wireless.att.com</a>                       |
| Big Bay Broadband, Inc.        | Fixed Wireless        | <a href="http://www.bbbmi.com">www.bbbmi.com</a>                                     |
| CenturyLink                    | DSL                   | <a href="http://www.centurylink.com">www.centurylink.com</a>                         |
| Charter Communications, Inc.   | Cable                 | <a href="http://www.charter.com">www.charter.com</a>                                 |
| Cherry Capital Connection, LLC | Fixed Wireless        | <a href="http://www.cherrycapitalconnection.com">www.cherrycapitalconnection.com</a> |
| Frontier North, Inc.           | DSL                   | <a href="http://www.frontier.com">www.frontier.com</a>                               |
| Hughes Network Systems, LLC    | Satellite             | <a href="http://www.hughesnet.com">www.hughesnet.com</a>                             |
| Lighthouse.Net                 | Cable, Fixed Wireless | <a href="http://www.lighthouse.net/highspeed">www.lighthouse.net/highspeed</a>       |
| Nodin WIFI                     | Fixed Wireless        | <a href="http://www.nodincomm.com">www.nodincomm.com</a>                             |
| Sprint                         | Mobile Wireless       | <a href="http://www.sprint.com">www.sprint.com</a>                                   |
| StarBand Communications        | Satellite             | <a href="http://www.starband.com">www.starband.com</a>                               |
| Sunrise Communications, LLC    | Cable                 | <a href="http://www.src-mi.com">www.src-mi.com</a>                                   |
| Verizon Wireless               | Mobile Wireless       | <a href="http://www.verizonwireless.com">www.verizonwireless.com</a>                 |
| ViaSat, Inc.                   | Satellite             | <a href="http://www.exede.com">www.exede.com</a>                                     |

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

| Organization Name  | Website  | Website Category |
|--|--|------------------|
| St. Ignace Chamber of Commerce                                     | <a href="http://www.saintignace.org">www.saintignace.org</a>   | Business         |
| Eastern Upper Peninsula Intermediate School District               | <a href="http://www.eupisd.com">www.eupisd.com</a>   | Education        |
| Mackinac County Government   | <a href="http://www.mackinacounty.net">www.mackinacounty.net</a>   | Government       |
| City of St. Ignace   | <a href="http://www.cityofstignace.com">www.cityofstignace.com</a>   | Government       |
| City of Mackinac Island  | <a href="http://www.cityofmi.org">www.cityofmi.org</a>   | Government       |
| Bois Blanc Township  | <a href="http://www.boisblanc township.org">www.boisblanc township.org</a>   | Government       |
| Brevort Township   | <a href="http://www.mackinacounty.net/Townships/brevort-township.html">www.mackinacounty.net/Townships/brevort-township.html</a>       | Government       |
| Clark Township   | <a href="http://www.clarktpw.org">www.clarktpw.org</a>   | Government       |
| Garfield Township  | <a href="http://www.mackinacounty.net/Townships/garfield-township.html">www.mackinacounty.net/Townships/garfield-township.html</a>     | Government       |
| Hendricks Township   | <a href="http://www.mackinacounty.net/Townships/hendricks-township.html">www.mackinacounty.net/Townships/hendricks-township.html</a>   | Government       |
| Hudson Township  | <a href="http://www.mackinacounty.net/Townships/hudson-township.html">www.mackinacounty.net/Townships/hudson-township.html</a>         | Government       |
| Portage Township   | <a href="http://www.mackinacounty.net/Townships/portage-township.html">www.mackinacounty.net/Townships/portage-township.html</a>       | Government       |
| Marquette Township   | <a href="http://www.mackinacounty.net/Townships/marquette-township.html">www.mackinacounty.net/Townships/marquette-township.html</a>   | Government       |
| Moran Township   | <a href="http://www.morantownship.com">www.morantownship.com</a>   | Government       |
| Newton Township  | <a href="http://www.mackinacounty.net/Townships/newton-township.html">www.mackinacounty.net/Townships/newton-township.html</a>         | Government       |
| St. Ignace Township  | <a href="http://www.mackinacounty.net/Townships/st-ignace-township.html">www.mackinacounty.net/Townships/st-ignace-township.html</a>   | Government       |
| Eastern Upper Peninsula Regional Planning & Development Commission | <a href="http://www.eup-planning.org">www.eup-planning.org</a>   | Government       |
| Mackinac Straits Health System                                     | <a href="http://www.mackinacstraitshealth.org">www.mackinacstraitshealth.org</a>   | Healthcare       |
| Hiawatha Behavioral Health   | <a href="http://www.hbhcmh.org">www.hbhcmh.org</a>   | Healthcare       |
| Mackinac Island Public Library                                     | <a href="http://www.mackinawareapl.michlibrary.org">www.mackinawareapl.michlibrary.org</a>   | Libraries        |
| St. Ignace Public Library  | <a href="http://www.stignacelibrary.org">www.stignacelibrary.org</a>   | Libraries        |
| Brevort Twp. Library   | <a href="http://www.librarytechnology.org/lwc-displaylibrary.pl?RC=19454">www.librarytechnology.org/lwc-displaylibrary.pl?RC=19454</a> | Libraries        |
| Curtis Public Library  | <a href="http://www.uproc.lib.mi.us/bpl/curtis.html">www.uproc.lib.mi.us/bpl/curtis.html</a>   | Libraries        |
| Engadine Public Library  | <a href="http://www.uproc.lib.mi.us/bpl/engadine.html">www.uproc.lib.mi.us/bpl/engadine.html</a>                                       | Libraries        |
| Mackinac Island Travel & Tourism                                   | <a href="http://www.mackinacisland.org">www.mackinacisland.org</a>   | Tourism          |
| Les Cheneaux Islands Chamber of                                    | <a href="http://www.lescheneaux.net">www.lescheneaux.net</a>   | Tourism          |



|                                  |  |         |
|----------------------------------|--|---------|
| Commerce                         |  |         |
| Curtis Area Chamber of Commerce  | <a href="http://www.curtischamber.com/index.php?page=Home">www.curtischamber.com/index.php?page=Home</a> | Tourism |
| The Erickson Center for the Arts | <a href="http://www.ericksoncenter.org">www.ericksoncenter.org</a>                                       | Tourism |

Below is a list of local technology companies that are providing technical services or distributing/selling technical resources.

| Company Name           | Website  | Provider Type |
|------------------------|--|---------------|
| Velvet Green Creations | <a href="http://www.velventgreencreations.com">www.velventgreencreations.com</a> | Web Developer |

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                  | Resource Type            |
|------------------------------------|--------------------------|
| Mackinac Island Public Library     | Public Computer Facility |
| St. Ignace Public Library          | Public Computer Facility |
| Brevort Twp. Library               | Public Computer Facility |
| Curtis Public Library              | Public Computer Facility |
| Engadine Public Library            | Public Computer Facility |
| Mission Point Resort               | Wireless Hotspot         |
| Mackinac Island State Dock         | Wireless Hotspot         |
| Curtis Chamber of Commerce         | Wireless Hotspot         |
| McDonalds                          | Wireless Hotspot         |
| Lakefront Electronics              | Wireless Hotspot         |
| Quality Inn                        | Wireless Hotspot         |
| CO - Quality Inn - Saint Ignace MI | Wireless Hotspot         |
| Days Inn - St. Ignace              | Wireless Hotspot         |
| St Ignace KOA                      | Wireless Hotspot         |

## Connected Summary

| <b>Community Technology Scorecard</b><br>Community Champion: Paula Ramelis<br>Community Advisor: Tom Stephenson |                               |                 |                        |
|---|-------------------------------|-----------------|------------------------|
| FOCUS AREA  | ASSESSMENT CRITERIA           | COMMUNITY SCORE | MAXIMUM POSSIBLE SCORE |
| ACCESS  | Broadband Availability        | 0               | 10                     |
|   | Broadband Speeds              | 0               | 5                      |
|   | Broadband Competition         | 0               | 5                      |
|   | Middle Mile Access            | 10              | 10                     |
|   | Mobile Broadband Availability | 4               | 10                     |
|   | <b>TOTAL ACCESS SCORE</b>     | <b>14</b>       | <b>40</b>              |
| ADOPTION  | Digital Literacy              | 6               | 10                     |
|   | Public Computer Centers       | 10              | 10                     |
|   | Broadband Awareness           | 10              | 10                     |
|   | Vulnerable Population Focus   | 10              | 10                     |
|   | <b>TOTAL ADOPTION SCORE</b>   | <b>36</b>       | <b>40</b>              |
| USE   | Economic Opportunity          | 10              | 10                     |
|   | Education                     | 10              | 10                     |
|   | Government                    | 6               | 10                     |
|   | Healthcare                    | 10              | 10                     |
|   | <b>TOTAL USE SCORE</b>        | <b>36</b>       | <b>40</b>              |
| <b>COMMUNITY ASSESSMENT SCORE</b>   |                               | <b>86</b>       | <b>120</b>             |



## ACCESS Score Breakdown

**Broadband Availability** (0 out of 10 Points Possible) – is measured by analyzing provider availability of 3 Mbps broadband service gathered by Connected Nation’s 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 October 2012 data collected by Connect Michigan, 59.43% of Mackinac County residents had access to broadband speeds of 3 Mbps or greater.**

**Broadband Speeds** (0 out of 5 Points Possible) – is measured by analyzing the speed tiers available within a community. Connected Nation will analyze broadband data submitted through its broadband mapping program. Specifically, Connected Nation will break down the coverage by the highest speed tier with at least 75% of households covered. 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 October 2012 data collected by Connect Michigan, 59.43% of Mackinac County residents had access to broadband speeds of 3 Mbps.**

**Broadband Competition** (0 out of 5 Points Possible) – is measured by analyzing the number of broadband providers available in a particular 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 the 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 October 2012 data collected by Connect Michigan, 54.13% of Mackinac County residents had access to more than one broadband provider.**

**Middle Mile Access** (10 out of 10 Points Possible) – 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. Data was collected by the community in coordination with Connected Nation.

- **Mackinac County is served by 3 or more middle mile fiber providers.**

**Mobile Broadband Availability** (4 out of 10 Points Possible) – 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 October 2012 data collected by Connect Michigan, 89.77% of Mackinac County residents had access to mobile broadband service.



**ADOPTION Score Breakdown**

**Digital Literacy** (6 out of 10 Points Possible) – 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 |
|--|---|-----------------|
| Eastern Upper Peninsular Intermediate School District BTOP Project | Basic Computer Training Sessions-Curtis, Engadine, and Cedarville   | 47              |
| Eastern Upper Peninsular Intermediate School District BTOP Project | Digital training for Budget and Debt Reduction, Identity Theft, Saving for College, Investing, and Credit Reports-St. Ignace, Engadine, and Mackinaw Island | 17              |
| <b>Total Graduates 2012-2013</b>                                   |   | <b>64</b>       |

**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 is 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 Mackinac County is below.

| Organization Name              | Number of Open Hours per Week | Number of Computers | Available Computer Hours per Week |
|--------------------------------|-------------------------------|---------------------|-----------------------------------|
| Mackinac Island Public Library | 38 hours per week             | 10                  | 380                               |
| St. Ignace Public Library      | 46 hours per week             | 13                  | 598                               |
| Brevort Twp. Library           | 20 hours per week             | 5                   | 100                               |
| Curtis Public Library          | 32.5 hours per week           | 12                  | 390                               |
| Engadine Public Library        | 22.5 hours per week           | 17                  | 382.5                             |

**Broadband Awareness (10 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 Mackinac County is below.

| Organization Name  | Campaign Description   | Community Reach |
|--|--|-----------------|
| Eastern Upper Peninsular Intermediate School District BTOP | Community training sessions for education, health, finances and business | 100%            |

**Vulnerable Population Focus (10 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 Mackinac County is listed below.

| Organization Name  | Program Description   | Vulnerable Group           |
|--|---|----------------------------|
| MiWorks  | Job finding assistance  | Unemployed Adults          |
| MiWorks Adult Learning Labs                                | Adult Learning Labs GED, GED or High School diploma, prepare for college, or improve their reading, writing, math, and keyboarding skills | Low-Income Adults          |
| MiWorks Youth services                                     | Youth skills training   | Youth                      |
| Engadine Consolidated Schools                              | Online Compass Learning   | At risk youth              |
| Department of Human Services                               | Online Public Assistance application  | Low-Income Adults          |
| Eastern Upper Peninsular Intermediate School District BTOP | Professional Learning courses   | Low-Income Adults, seniors |



### USE Score Breakdown

**Economic Opportunity (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 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 |
|---|---|------------------|
| Mackinac County   | Availability of free online banking for consumers and businesses                                      | Basic            |
| MiWorks   | Presence of program to provide virtual employment assistance programs and individualized job training | Advanced         |
| Michigan Small Business Technology and Development                      | Google online program to help small & medium businesses with technology                               | Advanced         |
| Curtis, St. Ignace, Mackinac Island, Detour Chamber of Commerce offices | 75% of local attractions online   | Basic            |



|   |  |          |
|---|--|----------|
| Eastern Upper Peninsula Regional Planning           | Resource for funding and economic development  | Advanced |
| Mackinac County                                     | Free publicly accessible wireless hotspot available  | Basic    |
| Eastern Upper Peninsula Regional Planning           | Online passage information for tourism   | Basic    |
| Mackinac County Michigan State University Extension | Availability of agriculture and farming information online   | Basic    |
| MiWorks   | Availability of computer lab for online job searches, job skills training, and business training classes | 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/<br>Advanced |
|--|--|--------------------|
| Eastern Upper Peninsula Intermediate School District | Broadband Technology Opportunities Program (BTOP) Grant - 100% of 7th – 12th graders in region get netbook computer to use at home and at school   | Advanced           |
| Eastern Upper Peninsula Intermediate School District | 100% of classrooms K-12 and higher education connected to Internet via broadband   | Basic              |
| Eastern Upper Peninsula Intermediate School District | Online Middle/High School - 100% online school option for 7th – 12th graders in region   | Advanced           |
| Eastern Upper Peninsula Intermediate School District | Various grants promoting STEM education include technology training and equipment for teachers   | Advanced           |
| Eastern Upper Peninsula Intermediate School District | Digital Literacy/21st Century Skills - All 7-12 teachers attended 2 days of PD as part of BTOP; other PD opportunities through BTOP, curriculum review teams, school improvement teams, professional learning communities; BTOP community trainings in financial, basic computing, and online entrepreneurship | Basic              |
| Eastern Upper Peninsula Intermediate School District | MOOnline Instructional Tools - Moodle, Compass, Discovery Education, Blackboard  | Basic              |
| Eastern Upper Peninsula Intermediate School District | Parent Communications Tools - school information systems, School Wires   | Advanced           |
| Eastern Upper Peninsula Intermediate School District | Regional Education Data System - Eastern Upper Peninsula Schools Cloud, Data Director, Active Directory  | Basic              |
| Eastern Upper Peninsula Intermediate School District | Regional Technology Consortium - Regional system of technology support and leadership  | Basic              |

|  |   |          |
|--|---|----------|
| Eastern Upper Peninsula Intermediate School District | Online Courses - 100% of 9th/12th grade students have access to online courses; Bay Mills Community College and LSSU offer online courses | Advanced |
|--|---|----------|

**Government (6 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/<br>Advanced |
|----------------------------|---|--------------------|
| Mackinac County            | Availability of ubiquitous, interoperable wireless public safety network                                    | Advanced           |
| Mackinac County            | Majority of local governments with websites - County website available with links to some township websites | Basic              |
| Hiawatha Behavioral Health | Board meeting video conferencing  | Basic              |
| Mackinac County            | Presence of mobile government applications  | Advanced           |

**Healthcare (10 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/<br>Advanced |
|--------------------------------|--|--------------------|
| Mackinac Straits Health System | Electronic prescriptions   | Advanced           |
| Mackinac Straits Health System | Video conferences between medical facilities                                   | Basic              |
| Mackinac Straits Health System | Webinars for education and training  | Basic              |
| Mackinac Straits Health System | Internet access for patients and residents                                     | Basic              |
| Mackinac Straits Health System | PAC's System - Online system for radiology                                     | Advanced           |
| Mackinac Straits Health System | Coding, referencing, and reporting of labs to physicians, nurses, and patients | Advanced           |
| Mackinac Straits Health System | Telemedicine - assessment and transmission of physician data                   | Advanced           |

|                                |   |       |
|--------------------------------|---|-------|
| Mackinac Straits Health System | Online listing of services, employees, and physicians | Basic |
|--------------------------------|---|-------|

## Current Community Technology Developments

During the assesment process, the community team identified projects that are currently in development or implementation. These projects are helping to enhance technology in Mackinac County:

1. In 2010, the Eastern Upper Peninsula Intermediate School District (EUPISD) received a \$3,165,000 BTOP grant that allowed the district to;
  - A. Provide netbooks (small laptop style computing devices) for every 7th -12th grade student and provide training in educational technology for teachers.
  - B. Provide community training in a variety of technology topics.
  - C. Educate students, teachers, and community members about broadband and seek to increase the use of broadband to enhance K-12 education and increase opportunities to health, finance, and educational resources for community members.
2. Sault Ste. Marie Advanced Resources and Technology, Inc. (SSMart) operates the Sault Ste. Marie SmartZone, as a collaborative partnership with the City of Sault Ste. Marie and its Economic Development Corporation, Lake Superior State University (LSSU), and the Michigan Economic Development Corporation (MEDC). The Sault Ste. Marie SmartZone is a technology center designated to promote resource collaborations between universities, industry, research organizations, government, and other community institutions with the goal of establishing technology based businesses and jobs. For more information, visit: [www.ssmartzone.com](http://www.ssmartzone.com)
3. Launched in the fall of 2012, e-Commerce and social media training sessions presented by Google and in partnership with Michigan Small Business and Technology Development Center and the Eastern Upper Peninsula Intermediate School District (EUPISD). Local businesses and non-profits from Luce, Chippewa, and Mackinac counties are represented in the workshops.
4. Charter Communications has upgraded its cable network and is now offering broadband service up to 100 Mbps download speeds and 5 Mbps upload speeds.
5. Century Link launched it "Basics Internet" program, a low cost Internet package, affordable computers, and free technology training to improve and promote broadband adoption and use by low-income consumers.
6. Digital literacy training sessions we presented by staffs of CenturyLink and the Eastern Upper Peninsular Intermediate School District Les hosted by Les Cheneaux Community Library.
7. Lighthouse Computers upgraded and improved the original cable system on Mackinac Island and launched a new Fiber Cable Internet Service in 2012 on Mackinac Island. This new service brings download speeds up to 30 Mbps to almost every home and business on the Island.
8. Lighthouse.Net has acquired existing cable networks in Curtis, Engadine, and Naubinway and will be investing in improvements to bring broadband cable Internet using fiber broadband in 2013.

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## STATEWIDE PERSPECTIVE OF BROADBAND

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### Statewide Infrastructure

As part of the Michigan State Broadband Initiative (SBI) and in partnership and at the direction of the Michigan Public Service Commission (MPSC), 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 fall of 2012 depict a geographic representation of provider-based broadband data represented by cable, DSL, fiber-to-the-home, fixed wireless, and mobile wireless services. These maps also incorporate data such as political boundaries and major transportation networks in the state. Statewide maps can be found at <http://www.connectmi.org/mapping/state>. And the county maps can be found at: [http://www.connectmi.org/community\\_profile/find\\_your\\_county/michigan/mackinac](http://www.connectmi.org/community_profile/find_your_county/michigan/mackinac).

**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 |
|-----------------------------------|----------------------------|--------------------------|----------------------------------|
| <b>At Least 768 Kbps/200 Kbps</b> | 50                         | 3,823                    | 98.71                            |
| <b>At Least 1.5 Mbps/200 Kbps</b> | 63                         | 3,810                    | 98.38                            |
| <b>At Least 3 Mbps/768 Kbps</b>   | 137                        | 3,735                    | 96.45                            |
| <b>At Least 6 Mbps/1.5 Mbps</b>   | 319                        | 3,554                    | 91.77                            |
| <b>At Least 10 Mbps/1.5 Mbps</b>  | 342                        | 3,530                    | 91.16                            |
| <b>At Least 25 Mbps/1.5 Mbps</b>  | 534                        | 3,339                    | 86.22                            |
| <b>At Least 50 Mbps/1.5 Mbps</b>  | 652                        | 3,220                    | 83.15                            |
| <b>At Least 100 Mbps/1.5 Mbps</b> | 654                        | 3,219                    | 83.12                            |
| <b>At Least 1 Gbps/1.5 Mbps</b>   | 3,873                      | 0                        | 0                                |

Source: Connect Michigan, October 2012

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, based on the 2010 Census, is 3,872,508, for a total population of 9,883,640 people. Table 1 indicates that 98.71% of households are able to connect to basic broadband at speeds of at least 768 Kbps download/200 Kbps upload. 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 49,916 households in the fall of 2012. Further, approximately 96.45% of households across Michigan have broadband available of at least 3 Mbps download/768 Kbps upload speeds. The percentage of Michigan households having fixed broadband access available of at least 6 Mbps download/1.5 Mbps upload speeds is estimated at 91.77%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.91% of Michigan households have broadband available from at least one provider at speeds of 768 Kbps download/200 Kbps upload or higher. This leaves 3,652 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 fall of 2012 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 Map. The National Broadband Map can be found here: <http://www.broadbandmap.gov> and the specific page for analyzing Michigan's data can be found here: <http://www.broadbandmap.gov/summarize/state/michigan>.

Connect Michigan also maintains an interactive version of their broadband inventory maps, My ConnectView™, available at: <http://www.connectmi.org/interactive-map>.

## Business and Residential Technology Assessments

To complement the broadband inventory and mapping data, Connect Michigan periodically conducts statewide residential and business technology assessments to understand broadband demand trends across the state. The purpose of this research is to better understand the drivers and barriers to technology and broadband adoption and estimate the broadband adoption gap across the state of Michigan. Key questions the data address are: who, where, and how are households in Michigan using broadband technology? How is this technology impacting Michigan households and residents? And, who is not adopting broadband service and why? What are the barriers that prevent citizens from embracing this empowering technology?

Through Connect Michigan's research, many insights are able to be collected. The most recent residential technology revealed the following key findings:

- Across Michigan, nearly four out of five adults (79% or approximately 5.9 million residents) have a computer, and more than three out of five adults (61%) subscribe to home broadband service. This includes 3.6 million "Power Users" who go online every day from home.
- Only 35% of Michigan residents with annual household incomes below \$25,000 subscribe to home broadband service, far below the state average.
- Over one-third of Michigan adults (36%) use mobile broadband, representing approximately 2.7 million mobile users statewide.
- One-half of Michigan households with children report that their children use home Internet service for schoolwork.
- About 869,000 adults who are not employed in Michigan use the Internet to search or apply





for jobs online.

- Approximately 451,000 Michigan residents with a high school diploma or less use the Internet or mobile devices to take online classes or conduct research for schoolwork.
- Altogether, 47% of employed Michigan adults say that they either telework now or would be willing to do so if given the opportunity by their employers.
- 46% of minority adults in Michigan use mobile broadband to stay connected.
- Over one-quarter of residents ages 65 or older (26% or approximately 349,000 adults) use the Internet to search for medical information or communicate with doctors or other healthcare professionals.
- Approximately 807,000 Michigan adults (28%) cite cost as their main barrier to adopting broadband service, including 169,000 rural Michiganders.
- Approximately 976,000 non-adopters would subscribe to home broadband service if given a price they consider reasonable.

For more information on the statewide information described, visit the Connect Michigan website at [www.connectmi.org](http://www.connectmi.org).

Additionally, an assessment on technology in businesses released in the fall of 2011 in a report titled *Technology Adoption Among Michigan Businesses* revealed the following key findings:

- Broadband-connected businesses bring in approximately \$300,000 more in annual median revenues than non-broadband adopting businesses.
- 74,000 Michigan businesses use the Internet to advertise job openings or accept job applications.
- Over one-half of home-based businesses in Michigan (53%) advertise and sell their products online.
- Two out of three minority-owned businesses in Michigan (67%) use the Internet to stay in touch with their customers.
- 70,000 businesses in Michigan are still not using broadband and are unable to actively participate in the digital global economy.

## **Analyzing Michigan's Broadband Infrastructure and Business and Technology Assessments**

Michigan broadband availability and adoption estimates were analyzed and presented as part of an initial working report titled *Broadband Infrastructure, Adoption, and Technology Usage in Michigan: First in a Series of Working Reports on the State of Broadband in Michigan*, which was released in June 2011. This report analyzes this complementary demand- and supply-side research and explores external factors, such as the impact of the federal Universal Service Fund (USF) and the policy implications of the Federal Communication Commission's (FCC) National Broadband Plan (NBP). Following the spirit of the NBP and based on the broadband availability



and adoption data collected by Connect Michigan, the report proposes a series of policy recommendations aimed to spur discussion and feedback among key stakeholders across Michigan. This report is available at:

[http://www.connectednation.org/sites/default/files/bb\\_pp/first\\_mi\\_planning\\_report\\_web\\_w\\_appendix\\_a1.pdf](http://www.connectednation.org/sites/default/files/bb_pp/first_mi_planning_report_web_w_appendix_a1.pdf)

Other reports that have been compiled by Connect Michigan include:

*Broadband Infrastructure in Michigan. Update to First Working Report on the State of Broadband in Michigan*, September 2011,

[http://www.connectmi.org/documents/MIPlanningReportUpdate\\_final.pdf](http://www.connectmi.org/documents/MIPlanningReportUpdate_final.pdf)

*Broadband in the Upper Peninsula of Michigan*, February 2011,

[http://www.connectmi.org/sites/default/files/connected-nation/Michigan/miupbroadbandbriefingdocument\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/miupbroadbandbriefingdocument_final.pdf)

*Broadband and Business. Leveraging Technology in Michigan to Stimulate Economic Growth*, May 2011, [http://www.connectmi.org/sites/default/files/connected-nation/Michigan/mi\\_biz\\_whitepaper\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/mi_biz_whitepaper_final.pdf)

*Teleworking in Michigan – Empowering Workers Through Broadband*, December 2011,

[http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_telework.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_telework.pdf)

*Broadband: Empowering Small Businesses to Grow and Thrive*, May 2012,

[http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_small\\_biz\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_small_biz_final.pdf)

*Broadband: Creating Educational Opportunities across Michigan*, September 2012,

[http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_elearning\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_elearning_final.pdf)

*Mobile Broadband Usage in Michigan*, December 2012,

[http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_mobile\\_usage\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_mobile_usage_final.pdf)

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## RECOMMENDED ACTIONS

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This project has culminated in the outlining of projects to close the gaps to becoming a certified technology Connected Community. Connect Michigan recommends the following actions:

### ACCESS: RECOMMENDED ACTIONS

#### **Broadband Availability**

##### **1) Perform Analysis of Local Policies and Ordinances**

High capital investment costs, including permit processing, pole attachment costs, and lack of effective planning and coordination with public authorities, negatively impact the case for deployment. For example, the FCC's National Broadband Plan concludes that, "the rates, terms, and conditions for access to rights of way [including pole attachments] significantly impact broadband deployment." The costs associated with obtaining permits and leasing pole attachments and rights-of-way are one of the most expensive cost functions in a service provider's plans to expand or upgrade service, especially in rural markets where the ration of poles to households goes off the charts. Furthermore, the process is time consuming. "Make ready" work, which involves moving wires and other equipment attached to a pole to ensure proper spacing between equipment and compliance with electric and safety codes can take months to complete.

Community and provider collaboration to problem solve around local pole attachment and other right of way issues is one of the most effective opportunities to encourage faster, new deployment of infrastructure.

#### *Goal:*

Ensure that local policies are conducive to broadband build out.

#### *Benefits:*

- Lowers cost barriers to improve the business case for broadband deployment.
- Encourages good public policy and provider relations.

#### *Action Items:*

- Review local policies, ordinances, and other barriers to broadband deployment and consult with community leaders, providers, utilities, and other members of the community to ensure that they are supporting policies (local ordinances, pole

attachments, rights-of-way) that are conducive to broadband build out.

- Develop an awareness campaign targeted towards community leaders to inform them of the benefits of broadband to the entire community derived from access to global resources that outweigh the need for some policies.

## **2) Develop & Issue an RFP for Build-out**

An RFP (request for proposals) is a widely used technique for establishing a selection of qualified responses from which to choose when contracting for services. The RFP should provide a guidance and due diligence framework for interested broadband providers and vendors. Furthermore, the RFP should request that interested parties provide plans for cost-effective community broadband networks, including equipment lists, locations, and itemized engineering cost estimates. In addition, the completed design should also include what technology will be needed at customer premises, the performance that can be expected, and recurring costs associated with operating and maintaining the system once it is in place.

### *Goal:*

To identify the most credible and reliable broadband provider to serve your region's households and businesses.

### *Benefits:*

- After completing an RFP, your community will have a good handle on the potential project risks, as well as benefits, associated with build out.
- An RFP lets providers know that the situation will be competitive. The competitive bidding scenario is often the best method available for obtaining the best pricing and, if done correctly, the best value.

### *Action Items:*

- **Content:** The RFP should include a project overview, background information, scope of work, and selection criteria. Additionally, the RFP should require that vendors provide a cover letter, a statement of project understanding, a business plan, a proposed project schedule, qualifications, references, and cost.
- **Distribution:** The RFP could be posted to the community's website. Alternatively, one method of efficiently distributing an RFP is to send out to a wide audience a one-page document announcing the availability of the full RFP. Vendors and consultants who are interested in your project can then contact you to obtain the full RFP.

## **3) 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.

### **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) A city, town, or incorporated area that has a population of more than 20,000 people; or (b) 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: (1) Corporation; (2) Limited liability company (LLC); (3) Cooperative or mutual organization; (4) Federally recognized Indian tribe or tribal organization; or (5) 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: (1) The service area is completely contained within a rural area; (2) At least 25 percent of the households in the service area are underserved households; (3) No part of the service area has three or more incumbent service providers; (4) No part of the funded service area overlaps with the service area of current RUS borrowers and grantees; (5) No part of the funded service area is included in a pending application before RUS seeking funding to provide broadband service.

#### *Contact Information:*

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E-mail: [kenneth.kuchno@wdc.usda.gov](mailto:kenneth.kuchno@wdc.usda.gov)

Website: [http://www.rurdev.usda.gov/utp\\_farmbill.html](http://www.rurdev.usda.gov/utp_farmbill.html)

### **Community Connect Program – USDA**

Provides community access to broadband services in unserved 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:*

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Website: [http://www.rurdev.usda.gov/utp\\_commconnect.html](http://www.rurdev.usda.gov/utp_commconnect.html)

**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.

*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](mailto:dltinfo@wdc.usda.gov)

Website: [http://www.rurdev.usda.gov/UTP\\_DLT.html](http://www.rurdev.usda.gov/UTP_DLT.html)

**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; and
- Groups of healthcare providers consisting of one or more entities described above.

*Contact Information:*

Telephone: (800) 229-5476

E-mail: [rhc-admin@usac.org](mailto:rhc-admin@usac.org)

Website: <http://www.universalservice.org/rhc/default.aspx>

**Broadband Speeds**

**4) 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:*

To understand existing and potential markets for broadband subscribers (both residential and business).

*Benefits:*

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

*Action Items:*

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

## **Broadband Competition**

### **5) 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, which 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 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:*

Fund broadband network deployment.

#### *Benefits:*

- 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.
- 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.
- A good partnership concentrates investment on non-duplicative networks and aims to ensure that all residents have access to adequate broadband service.

#### *Action Items:*

- Decide on the technology (e.g. cable, DSL, fiber, etc.).
- Issue an RFP.
- Develop a finance and ownership model.

## 6) 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:*

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

### *Benefits:*

- 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.
- The increased backhaul capacity can in turn benefit the whole community.

### *Action Items:*

- 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.

## **Middle Mile Access** – No Recommended Actions

### **Mobile Broadband Availability**

## 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:*

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

*Benefits:*

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

*Action Items:*

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

### **8) 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 condition, 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:*

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:*

- 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.

- The inventory can encourage the expansion of affordable, reliable wireless broadband services to underserved areas by shortening project development time.

*Action Items:*

- 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.
- Data to collect would include vertical asset type, owner type, minimum base elevation, minimum height above ground, and location.
- 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.

**ADOPTION: RECOMMENDED ACTIONS**

**Digital Literacy**

**9) Facilitate a Technology Summit**

Develop and host a technology summit 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:*

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:*

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

*Action Items:*

- Create community partnerships.



- Identify funding sources and hosts.
- Identify suitable speakers.
- Develop relevant content.

### 10) Distribute Digital Literacy Content

Leverage the abundant digital literacy content available online to distribute to local trainers. Currently, numerous non-profit organizations and for-profit corporations provide curriculum that can be adapted for classroom or self-paced study. Some organizations also provide additional resources for instructor use, including classroom setup information, teaching tips for each course, additional practice, test item files, and answers to frequently asked questions. Digital literacy content can be deployed via local websites (a community portal), print material, podcasts, blogs, and videos.

Additionally, your community could 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. 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.

*Goal:*

Facilitate partnerships in order to provide digital literacy training.

*Benefits:*

- Increasing the community's digital literacy facilitates widespread online access to education and other public and government services, provides equal access to opportunities such as jobs and workforce training, enables people to find information about their health, and offers the opportunity to increase levels of social interaction and civic involvement.

*Action Items:*

- Develop partnerships with local organizations and equip them with digital literacy content;
- Train staff to deliver the curriculum to potential adopters;
- Promote local organizations as a source of broadband access and training;
- Engage non-adopters with a comprehensive public outreach campaign, helping them understand the benefits of broadband service and inviting them to experience the value at their libraries;
- Provide curriculum to teach computer and Internet use, as well as the skills required to utilize the Internet effectively for essential services, education, employment, civic

- engagement, and cultural participation;
- Offer compelling promotion to participants, giving them the opportunity to adopt the technology for everyday use in their homes.

### **11) Promote the Nationwide Connect2Compete Program**

Connect2Compete (C2C) is a national nonprofit organization designed to help narrow the digital divide by making high-speed Internet access, computers, education and jobs content, and digital literacy training more accessible for Americans without home connectivity.

Connect2Compete will help Americans access technology through: free digital literacy training, discounted high-speed Internet, and low-cost computers. The program will expand to all 50 states in 2013.

Connect2Compete will implement the following broadband, PC, and digital literacy offerings:

- Multiple cable providers will offer discounted Internet service at \$9.95.
- Computers will be available for purchase - \$150 for a desktop or laptop, plus taxes and fees.
- Through a partnership with Best Buy's Geek Squad and America's public libraries, Connect2Compete will offer in-person digital literacy training in communities nationwide and free online digital literacy training.

#### *Goal:*

Ensure that low-income community members have the opportunity to purchase reduced-price computers and Internet access through the Connect2Compete Initiative.

*Eligibility:* At this time, families with a child enrolled in one of the selected pilot schools and receiving free school lunch are eligible for the \$9.95 Internet and low-cost computer offerings. In addition, for the Internet offer only, eligible families must not have subscribed to cable Internet within the last 90 days of signing up for C2C and cannot have any outstanding debt or unreturned equipment with the cable company. Families eligible for C2C will receive the reduced-price Internet for 2 years as long as they remain continuously subscribed to the Internet service. However, the computer is the family's to keep. Eligible families will be able to apply online at [www.Connect2Compete.org](http://www.Connect2Compete.org) or by phone.

### **12) 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 on 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, cybersecurity, 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:*

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:*

- Provides entrepreneurial support.
- Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
- Promotes business growth and workforce development.
- 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:*

- 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.
- Identify or develop a business awareness and training program.
- Identify or develop online training modules for businesses. For example, the Southern Rural Development Center, in partnership with the 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.

[http://srdc.msstate.edu/ebeat/small\\_business.html#](http://srdc.msstate.edu/ebeat/small_business.html#)

### **13) Create 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 students 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:* Utilize student technology knowledge to implement community programs.

*Benefits:*

- 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.
- It helps to build character by awarding students opportunities to give back to their communities and embrace responsibilities associated with community service.
- 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 a community that have experience with broadband technology and those who are currently not using it.
- 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.

### **14) Establish a "Community Technology Academy"**

Develop partnership between libraries, community centers, churches (places with computer labs for public use) and schools, community colleges, and universities (places with subject matter experts) to develop a "Community Technology Academy." Providers, local businesses and community volunteers may be included to provide financial and/or in-kind support for the program. Academy curriculum should include basic training in areas such as "Introduction to

Computers," "Internet Basics," social networking, using communication technologies, and the use of applications such as Microsoft Office, OpenOffice or Google Docs.

*Goal:*

Create a partnership to underscore a community's commitment to developing a tech-savvy workforce.

*Benefits:*

- Creates a more digitally literate and competent populace.
- Develops a community's human capital.

*Action Items:*

- Identify all organizations performing technology education and training services.
- Identify all the organizations that have computer labs.
- Compile a list of classes to be offered and developing content or leveraging content that is currently available at minimum or no cost from organizations such as Microsoft.
- Determine what classes are currently being offered in the community.
- Develop a collaborative and cooperative approach for operating the "Community Technology Academy" between all organizations.

### **15) Procure a Multipurpose Mobile Technology Center**

Partner with the public library or school system to acquire a bus (or equip a bookmobile) with laptop computers and wireless Internet service to deliver technology access and programs to unserved residents in remote areas in the community. Equipped with an instructor, the mobile technology center should provide digital literacy classes, job search assistance, e-learning programs, information during community events, and emergency assistance. Beyond training and education, the mobile technology center should be utilized to target and reach unserved or underserved members of the community and to provide them with a medium for participating in the community's technology-planning process.

Examples of existing mobile technology centers include:

- [St. Louis Community College Mobile Tech Center](#)
- [El Paso Public Library Tech-Mobile](#)
- [State Library of Ohio Mobile Technology Training Center](#)
- [Pike County Public Library District Mobile Technology Center](#)

*Goal:*

Provide unserved and underserved residents with computer and Internet access.

*Benefits:*

- Improves digital literacy skills of community.





- Provides outreach and awareness.
- Provides opportunity for residents to participate in community's technology-planning process.

*Action items:*

Equip the vehicle with:

- 10-20 laptops loaded with appropriate software.
- A wireless modem that interfaces with a wireless relay station on the vehicle. Signals can be sent from any remote site in the community to partnering organization (e.g. public library) for deployment to the web, television, or other medium.
- Large screen TV.
- Smart board for instruction.
- Wheelchair accessible workstations.
- Networked printer.
- Full-time instructor(s).
- Develop schedule of mobile technology center visits.

**Public Computer Centers**

**No Recommended Actions.**

**Broadband Awareness**

**No Recommended Actions.**

**Vulnerable Population Focus**

**No Recommended Actions.**

**USE: Recommended Actions**

**Economic Opportunity**

**No Recommended Actions.**

**Education**

**16) 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](http://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 teach teachers how to integrate PowerMyLearning into their classrooms.

*Goal:*

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

*Benefits:*

- 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.

**Government**

**17) Perform a Community IT Assessment**

Conduct a Community IT Assessment of current environment performed through an interview process (onsite, video conferencing, e-mail/web based) to determine overall IT operational efficiency. Once complete, an end deliverable provides detailed assessment results, including a relative “grade” in each area as well as suggested action plans for any areas that are found to be below standards.

*Goal:*

Determine overall IT operational efficiency and establish an informed process for strategic IT decisions.

*Benefits:*

- Eliminates performance gaps, redundancies, inefficiencies, and unintended information

silos.

- Assists in providing a clear, repeatable, streamlined and informed process for making strategic IT decisions.

*Action Items:*

- Identify a complete list of all IT equipment including age, condition and capacity/specifications currently in use.
- Assess server infrastructure (hardware, operating systems, and storage) and network topology (design, cable plant, and Internet connectivity).
- Identify all currently used applications/uses and backup procedures.
- Identify and assess security measures (firewall, perimeter, physical and wireless security).
- Identify “Best Practices” for each office as appropriate.

### **18) 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:*

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:*

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

*Action Items:*

- Create community partnerships.
- Identify funding sources and hosts.
- Identify suitable speakers.
- Develop relevant content.

### 19) Improve the Online Presence of Government

The government's website must meet the needs of the citizen; should equal or exceed the standards of private company websites; design must be uncluttered, informative, and easy to navigate; and website best practices must be continuously monitored and implemented. Further, website administrators should be funded and required to follow the latest best practices in design and web search optimization. They should have a process for archiving content that is no longer in frequent use and no longer required to be posted on the website. In addition, the local government should regularly solicit public opinion and analyze citizens' online preferences before making changes to their website or before launching a new website.

*Goal:*

The goal should be to make the website relevant, useful, convenient, and the go-to for local information and services.

*Benefits:*

- Makes government more efficient, resulting in greater public convenience and cost effectiveness.
- Improves the quality and findability of government information, and helps agencies deliver the services most requested by their customers.

*Action Items:*

- Review the current e-government applications to identify gap areas. Compare current applications to other comparable government websites of like size from around the state to identify improvement areas.
- Conduct an assessment of the usability of current applications.
- Use current and draft survey instruments to identify applications of public interest. Use this survey to examine potential e-government applications.
- Identify high-volume services to target for online automation. Emergency and first responder applications will be included.
- Identify partners and entities to assist in implementation.
- Develop and launch applications.

### 20) Seek Funding for Improving the Public Safety Network

Seek grant funding to improve the public safety network by developing an interoperable network. Interoperability gives public safety personnel and first responders the ability to communicate across state and local agencies, on demand, and in real time. Interoperability is essential in order to reduce the risks to law enforcement and emergency services personnel, alert first responders to any immediate hazards, and support decision-making at an individual level or as a collective group.

Relevant funding opportunities include:

- [Assistance to Firefighters Grants \(AFG\)](#) The primary goal of the AFG Program is to meet the firefighting and emergency response needs of fire departments and non-affiliated emergency medical service organizations. AFG funds have helped firefighters and other first responders to obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards.
- [Community Connect Grant Program](#) The Community Connect Grant Program provides financial assistance to furnish broadband service in unserved, often isolated, rural communities. The grants are used to establish broadband service for critical facilities such as fire or police stations, while also providing service to residents and businesses.
- [First Responder Network Authority \(FirstNet\)](#) FirstNet is as an independent authority established within the National Telecommunications and Information Administration (NTIA) to ensure the establishment of a nationwide, interoperable public safety broadband network. Funds of up to \$135 million are available to assist states and localities identify and plan the most effective way to use and integrate the infrastructure, equipment, and architecture associated with the nationwide network. In total, \$7 billion will be available to construct a nationwide network. Subject to the activities of FirstNet, NTIA anticipates that it will release in 1Q2013 a Federal Funding Opportunity (FFO) notice that will provide information on grant implementation rules including the amount of funding available for award and an application process.

*Goal:*

Provide safety personnel and first responders the ability to communicate on demand and in real time.

### **21) 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 infrastructures that prevent 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-system 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:*

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, which will enable better-informed decisions, resulting in better outcomes and, ultimately, a safer community. By capitalizing on advances in technologies, you are enabling:

- Quicker and more accurate information to responders
- Better and more useful forms of information
- More flexible, secure, and robust PSAP operations
- Lower capital and operating costs

*Action Steps:*

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:

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

## **22) 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:*

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

*Benefits:*

- Facilitates business interaction with government, especially for urban planning, real estate development, and economic development.
- 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.
- e-Government provides a greater amount of information to businesses and provides it in a more organized and accessible manner.

*Action Items:*

- 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.
- 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.

## **Healthcare**

### **No Recommended Actions.**



## PROPOSED COMMUNITY PROJECTS

### 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>.

#### *Goal:*

Connect IT training and education with remote employment opportunities.

#### *Benefits:*

- This type of project can educate, train, and employ, and has the potential to ultimately increase the productivity and economic competitiveness of your community's workforce.
- The physical infrastructure and training exposes a broad spectrum of residents to the benefits of telecommunications and productive uses of the Internet.
- 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:*

- 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.
- Identify the physical, financial, and technological resources needed to establish a digital



factory.

- A 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.
- Develop partnerships with companies who would provide contractual employment to program graduates.
- 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, turn-key training lab solution, including refurbished or new computers, presentation equipment, training curriculum, and broadband service.

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## APPENDIX 1: PARTNER AND SPONSORS

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**Connect Michigan**, in partnership with the 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.

<http://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. It views promoting broadband through Connect Michigan activities as complementary to its mission, according to its website, 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>

**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, 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.

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 NTIA to update the National Broadband Map, the first public, searchable nationwide map of broadband availability launched February 17, 2011.

## APPENDIX 2: 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 Certification Process



The Connected certification process consists of a 4-step process to community certification:

**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 Mackinac County Broadband Committee will work with community members to determine their overall broadband and technology grade on a 13-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

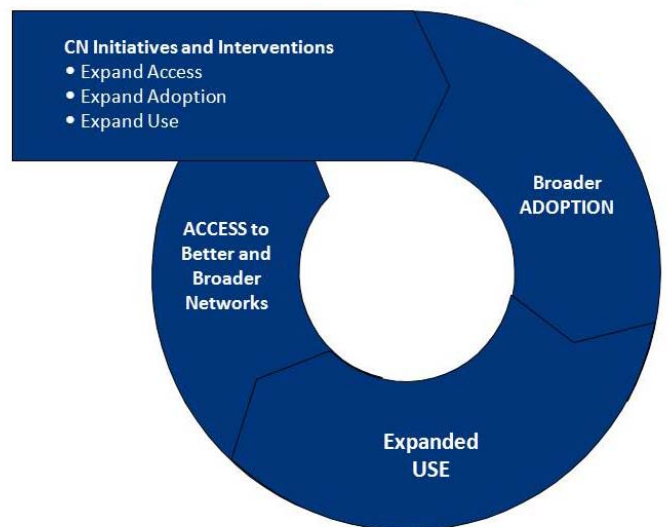
**Step 3: Action Planning & Implementation.**

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.

**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.

**Broadband Catalysts for Change**





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## APPENDIX 3: LINKS TO MAPS AND REPORTS

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Creating accurate broadband maps is one of the first steps to promoting access, adoption, and use of broadband across the state. The Connect Michigan mapping initiative is working closely with multiple broadband providers from across the state to develop a variety of broadband inventory maps. Currently, broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream.

These maps, which contain data in beta version, highlight where broadband is and is not available in the state, a key component in promoting access, adoption, and use of broadband.

**Map Title: *Broadband Service Inventory for the State of Michigan, Advertised Speeds of at Least 768 Kbps Downstream and 200 Kbps Upstream***

This map depicts a geographic representation of provider-based broadband data represented by cable, DSL, wireless, fiber-to-the-home, fixed wireless, and mobile wireless services. This map also incorporates data such as political boundaries and major transportation networks in the state.

[http://www.connectmi.org/connectednationftp/michigan/Statewide\\_Maps/MI\\_Statewide\\_Broadband.pdf](http://www.connectmi.org/connectednationftp/michigan/Statewide_Maps/MI_Statewide_Broadband.pdf)

**Map Title: *Broadband Service Inventory for the State of Michigan, Advertised Speeds of at Least 3 Mbps Downstream and 768 Kbps Upstream***

This map depicts a geographic representation of provider-based broadband data represented by cable, DSL, wireless, fiber-to-the-home, fixed wireless, and mobile wireless services with advertised speeds of at least 3 Mbps downstream and 768 Kbps upstream. The advertised speed threshold is the closest match to the threshold presented in the National Broadband Plan.

[http://www.connectmi.org/connectednationftp/michigan/Statewide\\_Maps/MI\\_Statewide\\_Broadband3M.pdf](http://www.connectmi.org/connectednationftp/michigan/Statewide_Maps/MI_Statewide_Broadband3M.pdf)

**Map Title: *Density of Households Unserved by a Broadband Provider, by Census Block***

This presentation of data uses the smallest geographic region that the U.S. Census acknowledges, the Census Block, and the broadband data to create a representation of how many households per square mile do not have service available in any give Census Block.

[http://www.connectmi.org/connectednationftp/michigan/Statewide\\_Maps/MI\\_Statewide\\_Density.pdf](http://www.connectmi.org/connectednationftp/michigan/Statewide_Maps/MI_Statewide_Density.pdf)

**Map Title: *Maximum Residential Broadband Download Speed***

This map depicts providers' maximum advertised download speed by speed tier across the state. The inclusion of maximum advertised speed data is a refinement made possible to the state by its participation in the SBI program.

[http://www.connectmi.org/connectednationftp/michigan/Statewide\\_Maps/MI\\_Statewide\\_MaxDownloadSpeed.pdf](http://www.connectmi.org/connectednationftp/michigan/Statewide_Maps/MI_Statewide_MaxDownloadSpeed.pdf)

**County Maps**

The following maps are available at

[http://www.connectmi.org/community\\_profile/find\\_your\\_county/michigan/mackinac](http://www.connectmi.org/community_profile/find_your_county/michigan/mackinac) for all Michigan counties. Select the county name from the drop-down list.

- *Broadband Service Inventory*
- *Broadband Service Inventory - with Township Boundaries*
- *Broadband Service Inventory (Advertised Speeds of at Least 3 Mbps Downstream and 768 Kbps Upstream)*
- *Broadband Service Inventory (Advertised Speeds of at Least 3 Mbps Downstream and 768 Kbps Upstream) - with Township Boundaries*
- *Density of Households Unserved by a Broadband Provider*
- *Maximum Advertised Download Speed*
- *Density of Providers*
- *Multiple/Single Platform*

For additional maps and other related information, visit:

<http://www.connectmi.org/broadband-landscape>.

**Interactive Map**

Connect Michigan provides My ConnectView™, an interactive mapping application 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>

**Studies and Reports prepared by Connect Michigan**

*Broadband Infrastructure in Michigan. Update to First Working Report on the State of Broadband in Michigan, September 2011,*

[http://www.connectmi.org/documents/MIPlanningReportUpdate\\_final.pdf](http://www.connectmi.org/documents/MIPlanningReportUpdate_final.pdf)



*Broadband in the Upper Peninsula of Michigan*, February 2011,  
[http://www.connectmi.org/sites/default/files/connected-nation/Michigan/miupbroadbandbriefingdocument\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/miupbroadbandbriefingdocument_final.pdf)

*Broadband and Business. Leveraging Technology in Michigan to Stimulate Economic Growth*, May 2011, [http://www.connectmi.org/sites/default/files/connected-nation/Michigan/mi\\_biz\\_whitepaper\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/mi_biz_whitepaper_final.pdf)

*Teleworking in Michigan – Empowering Workers Through Broadband*, December 2011, [http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_telework.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_telework.pdf)

*Broadband: Empowering Small Businesses to Grow and Thrive*, May 2012, [http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_small\\_biz\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_small_biz_final.pdf)

*Broadband: Creating Educational Opportunities across Michigan*, September 2012, [http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_elearning\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_elearning_final.pdf)

*Mobile Broadband Usage in Michigan*, December 2012, [http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi\\_mobile\\_usage\\_final.pdf](http://www.connectmi.org/sites/default/files/connected-nation/Michigan/files/mi_mobile_usage_final.pdf)

To view 2011 Business Technology Survey results, featuring data from 800 businesses across the state, visit: <http://www.connectmi.org/survey-results/business>

To view 2011 Residential Technology Survey results, featuring data from 3,600 residents across the state, visit: <http://www.connectmi.org/survey-results/residential>

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## APPENDIX 4: GLOSSARY OF TERMS

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### #

**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 implementations 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.

## C

**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](http://www.census.gov).

## M

**MAN - Metropolitan Area Network** - A high-speed data 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. Multiplexing, 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 unserved 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.