# MARQUETTE COUNTY COMMUNITY

## TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT MICHIGAN

AND THE

MARQUETTE COUNTY BROADBAND INITIATIVE

**CONNECT Michigan.**

**CONNECTED** ℠
Community Engagement Program

MAY 8, 2013

ACCESS        ADOPTION        USE

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# |INTRODUCTION

The purpose of this report is to summarize the community's assessment of local broadband access, adoption, and use, as well as the best next steps for addressing any deficiencies or opportunities for improving the local technology ecosystem.

## Background

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. The success of a community has also 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. As noted in the National Broadband Plan, broadband Internet is "a foundation for economic growth, job creation, global competitiveness and a better way of life."[1]

Despite the growing dependence on technology, as of 2012, 30% of Americans did not have a high-speed connection at home.[2] 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 also 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.[3]

Deploying broadband infrastructure, services, and application, as well as supporting the universal adoption and meaningful use of broadband, are challenging - but required - building blocks of a twenty-first century community. To assist communities, Connected Nation developed the Connected Community Engagement Program to help your community identify local technology assets, complete an assessment of local broadband access, adoption, and use, and develop an action plan for pursuing solutions.[4]

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

## Methodology

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

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

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expansion programs with core competencies centered around the mission to improve digital inclusion for people and places previously underserved or overlooked.

# CONNECTED ASSESSMENT

The Connected assessment framework is broken into 3 areas: *ACCESS*, *ADOPTION,* and *USE*. Each area has a maximum of 40 points. To achieve Connected Certification, the community must have 32 points in each section and 100 points out of 120 points overall.

The *ACCESS* focus area checks to see whether the broadband and technology foundation exists for a community. The criteria within the *ACCESS* focus area endeavors to identify gaps that could affect a local community broadband ecosystem including: last and middle mile issues, cost issues, and competition issues. As noted in the National Broadband Plan, broadband *ACCESS* "is a foundation for economic growth, job creation, global competitiveness and a better way of life."

Broadband *ADOPTION* is important for consumers, institutions, and communities alike to take the next step in fully utilizing broadband appropriately. The *ADOPTION* component of the Connected Assessment seeks to ensure the ability of all individuals to access and use broadband.

Broadband *USE* is the most important component of *ACCESS*, *ADOPTION,* and *USE* because it is where the value of broadband can finally be realized. However, without access to broadband and *ADOPTION* of broadband, meaningful *USE* of broadband wouldn't be possible. As defined by the National Broadband Plan (NBP), meaningful *USE* of broadband includes those areas of economic opportunity, education, government, and healthcare where values to individuals, organizations, and communities can be realized.

## Analysis of Connected Assessment

- Marquette County achieved a score of 111 points out of 120 for overall broadband and technology readiness which indicates that the community exhibits advanced broadband access, adoption, and use.
- The County scored 31 out of a possible 40 points in broadband access primarily because of some gaps in broadband availability. In Marquette County, 90.38% of households have access to 3 Mbps download speeds, compared to the state average of 96.5%.
- Marquette County has not exceeded the 32 points in each focus area that are required for certification and thus has not qualified for Connected 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.

# Community Technology Scorecard

| Community Advisor:  Tom Stephenson | | | |
|---|---|---|---|
| **FOCUS AREA** | **ASSESSMENT CRITERIA** | **COMMUNITY SCORE** | **MAXIMUM POSSIBLE SCORE** |
| **ACCESS** | Broadband Availability | 6 | 10 |
| | Broadband Speeds | 5 | 5 |
| | Broadband Competition | 2 | 5 |
| | Middle Mile Access | 10 | 10 |
| | Mobile Broadband Availability | 8 | 10 |
| | **TOTAL ACCESS SCORE** | **31** | **40** |
| **ADOPTION** | Digital Literacy | 10 | 10 |
| | Public Computer Centers | 10 | 10 |
| | Broadband Awareness | 10 | 10 |
| | Vulnerable Population Focus | 10 | 10 |
| | **TOTAL ADOPTION SCORE** | **40** | **40** |
| **USE** | Economic Opportunity | 10 | 10 |
| | Education | 10 | 10 |
| | Government | 10 | 10 |
| | Healthcare | 10 | 10 |
| | **TOTAL USE SCORE** | **40** | **40** |
| | | | |
| **COMMUNITY ASSESSMENT SCORE** | | **111** | **120** |

## Itemized Key Findings

The Marquette County Broadband Committee identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment. The Committee did not develop a comprehensive list as part of the technology assessment.  It is expected that additional technological-related resources exist within the community that have yet to be identified.

### ACCESS

- 15 last-mile broadband providers currently provide service in Marquette County:
  - 90.38% of households have access to 3 Mbps.
  - 88.53% of Marquette County households have access to at least 50 Mbps service.
  - 75.96% of Marquette County households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from multiple providers in Marquette County.
- 97.42% of Marquette County households have access to mobile broadband.

## ADOPTION

- 8 Digital Literacy Programs exist in the community resulting in 712 graduates over the past year.
- 9 Public Computer Centers (PCC) with a total of 160 computers are open to the public.
- 7 Broadband Awareness Campaigns are reaching 100% of Marquette County.
- 7 organizations are working with vulnerable populations.

## USE

- At least 11 uses of broadband were identified in the area of economic opportunity including 7 advanced uses and 4 basic uses.
- At least 6 uses of broadband were identified in the area of education including 4 advanced uses and 2 basic uses.
- At least 6 uses of broadband were identified in the area of government including 5 advanced uses and 1 basic use.
- At least 7 uses of broadband were identified in the area of healthcare including 3 advanced uses and 4 basic uses.

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

**Technology Providers**
- 15 broadband providers were identified in Marquette County
- 5 hardware providers
- 2 network integrators
- 3 web developers
- 1 software provider

**Technology Facilities**
- 9 public computing centers
- 17 wireless hotspots

**Community Websites**
- 2 Agriculture-relates websites
- 1 Business-related website (excluding private businesses)
- 2 Education-related websites
- 27 Government-related websites
- 1 Healthcare-related website
- 6 Library-related websites
- 2 Tourism-related websites

## Priority Projects

This exercise has culminated in the outlining of projects to allow Marquette County to continue its recognized excellence in technology and broadband planning across the community. Below are four priority projects.

1. Identify, Map, and Validate Broadband Demand
2. Digital Literacy and Low-Cost Broadband Program
3. Develop Program Supporting Schools' New Technology Initiatives
4. Promote Telemedicine in Remote Areas

## Complete List of Recommended Actions

Below is a complete list of 23 recommended actions. 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 an Analysis of Local Policies and Ordinances
2. Develop & Issue an RFP for Build-out
3. Perform a Broadband Build-out Analysis in Unserved Areas
4. Facilitate the Expansion of the Fiber Network to the Local Manufacturers and Businesses

**Broadband Speeds** – No recommended actions.

**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. Complete a Vertical Assets Inventory
8. Identify and Expand Wireless Hotspots in the Community

### ADOPTION

**Digital Literacy**
9. Create Technology-Mentoring Programs for High School or College Students or Volunteers

**Public Computer Centers**
    10. Increase Awareness of Public Computer Centers in the Community

**Broadband Awareness**
    11. Facilitate a Technology Summit
    12. Partner with Media to Market Broadband Access to the Community
    13. Develop a Database of Local Providers and Public Computer Centers

**Vulnerable Population Focus**
    14. Open Computer Centers and Training Programs at Senior Citizen Centers

## USE
**Economic Opportunity**
    15. Determine the Broadband Needs of the Agriculture Community
    16. Develop Digital Economic Incubator Sites to Attract 21st Century Jobs to the Region
    17. Facilitate the Expansion of the Fiber Network to the Local Manufacturers and Businesses

**Education**
    18. Improve Education through Digital Learning
    19. Create a Program Focused on Improving STEM Education
    20.  Improve Educational Technology Hardware

**Government**
    21. Improve Online Business Services Offered by the Government
    22. Improve the Presence of Government Online
    23. Perform a Municipal IT Assessment

## DETAILED FINDINGS

## Current Community Technology Developments in Marquette County

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

- Northern Michigan University is one of the largest notebook computer campuses in the United States, with all full-time students receiving either a ThinkPad or iBook as part of tuition. The University has garnered national and international awards for its innovation work in the area of technology in higher education.
- Northern Michigan University has the largest educational WiMAX network in the United States and is one of the first universities to deploy a WiMAX network. With more than two-thirds of NMU students living off campus, being able to provide Internet access off campus helps expand the learning environment.
- The recently created U.P. Food Exchange (UPFE) connects local food activity within each of the Upper Peninsula's three distinct regions (Eastern, Central, and Western), and coordinates local food efforts between the regions. This project aims to establish both online and physical aggregation sites for farm products, improve local food storage capacity, and educate consumers, farmers, and institutional purchasers about the resources and benefits available to them via this network. The resources required for this project fall into three categories: infrastructure improvement costs, technology integration, and personnel. The results of this project will affect local agriculture throughout the U.P., as evidenced by an increase in the number of farmers listing their products through the online network, an increase in the number of farmers listing their farms in the U.P. Food & Farm Directory, and an increase in the farm products moving between the regions. UPFE will create and/or formally designate a food aggregation site in each of the three regions of the U.P., Eastern, Central & Western, in order to provide each region with the resources needed to establish operational activities that will respond to the developing food needs of each region, as well as create an umbrella entity to tie each of the three regions' activities together in a synergistic network.
- The Upper Peninsula 9-1-1 Authority was created through an agreement entered into Michigan's Urban Cooperating Act ("Enabling Agreement"). This legal entity includes all fifteen counties in the Upper Peninsula. The UP 9-1-1 Authority is responsible for coordinating and providing a variety of services with respect to 911 emergency call answering and service dispatching across Michigan's Upper Peninsula. Under the Authority, call centers work together and are/will be connected via a broadband network.

**Other Opportunities in Marquette County**

During the assessment process, the community team identified the following opportunities for improvement in Marquette County:

- There are four senior centers located in Marquette County. Only two of them have a public computer, and no computer courses are offered at the centers. The Marquette Senior Center, in partnership with the Peter White Public Library, has classes for seniors with topics ranging from how to use a mouse, computer basics, exploring the Internet, and social media (Facebook). The seniors love the classes, which are limited to 12 participants, and the classes are always full. Through this assessment process, it has become clear that our senior population has a strong need for additional computer literacy courses as well as access opportunities. As our society grows more dependent on "young" technology, the senior population is vulnerable and can become "left behind."
- Our assisted living centers have extremely limited, if any, access to broadband. With an aging population, this gap will only increase.
- It is a priority to increase literacy and access for our senior population. Opportunities need to be realized to establish and maintain/update computer centers in pockets of vulnerable populations.
- Another vulnerable population that might require attention for both usage and adoption improvements are those in the behavioral healthcare arena - both patient and provider.
- In order for the young population to exceed in the world, the Marquette County Broadband Initiative and Connect Michigan should work together with the Department of Education to assure that opportunities for technology grants, such as the purchase of tablets for students, are sought after and successfully obtained in Marquette County.

## Marquette County Assessment Findings

Residents of Marquette County (or sections of the community) are served by 15 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 Marquette County Community:

| Broadband Providers | Technology Type | Website Reference |
|---|---|---|
| Alphacomm.net | DSL | http://alphacomm.net |
| AT&T Michigan | DSL | www.att.com |
| AT&T Mobility LLC | Mobile Wireless | www.wireless.att.com |
| Cable America | Cable | www.cableamerica.com |
| Charter Communications, Inc. | Cable | www.charter.com |
| Hughes Network Systems, LLC | Satellite | www.hughesnet.com |
| IronBay.Net | Fixed Wireless | www.ironbay.net/wireless.htm |
| Iserv | DSL | www.iserv.net |
| Pasty.net | Fixed Wireless | www.pasty.net |
| SonicNet, Inc. | Fixed Wireless | www.sonicnet.us |
| StarBand Communications | Satellite | www.starband.com |
| TDS Telecom | DSL | www.tdstelecom.com |
| U.P. Logon | Fixed Wireless | http://uplogon.com |
| Verizon Wireless | Mobile Wireless | www.verizonwireless.com |
| ViaSat, Inc. | Satellite | www.exede.com |

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

| Organization Name | Website | Website Category |
|---|---|---|
| U.P. Food Exchange (UPFE) | http://marquettefood.coop | Agriculture |
| Marquette County Michigan State University Extension | www.co.marquette.mi.us/departments/msu_coop_extension/index.htm | Agriculture |
| Lake Superior Community Partnership | www.marquette.org | Business |
| Marquette-Alger Regional Educational Service Agency | www.maresa.org | Education |
| Northern Michigan University | www.nmu.edu/rural | Education |
| Marquette County Government | www.co.marquette.mi.us | Government |
| Champion Township | www.championmichigan.org | Government |

| | | |
|---|---|---|
| Chocolay Township | www.chocolaytownship.org | Government |
| Ely Township | www.infomi.com/township/ely | Government |
| Ewing Township | www.infomi.com/township/ewing | Government |
| Forsyth Township | www.forsythtwpmi.org | Government |
| Humboldt Township | www.humboldttownship.org | Government |
| Ishpeming Township | www.ishpemingtownship.com | Government |
| Marquette Township | www.marquettetownship.org | Government |
| Michigamme Township | www.michigammetownship.com | Government |
| Negaunee Township | www.negauneetownship.org | Government |
| Powell Township | www.infomi.com/township/powell/gov.html | Government |
| Republic Township | www.republicmichigan.com | Government |
| Richmond Township | www.richmondtwp.org | Government |
| Sands Township | www.sandstownship.org | Government |
| Skandia Township | www.infomi.com/township/skandia/gov.html | Government |
| Tilden Township | www.infomi.com/township/tilden | Government |
| Turin Township | www.infomi.com/township/turin/gov.html | Government |
| Wells Township | www.city-data.com/township/Wells-Marquette-MI.html | Government |
| West Branch Township | www.city-data.com/township/West-Branch-Marquette-MI.html | Government |
| City of Ishpeming | www.ishpemingcity.org/ | Government |
| City of Marquette | www.mqtcty.org/ | Government |
| City of Negaunee | www.cityofnegaunee.com/ | Government |
| YMCA of Marquette County | www.ymcamqt.org/ | Government |
| Negaunee Senior Center | www.cityofnegaunee.com/SeniorCenter.html | Government |
| Sawyer International Airport | www.sawyerairport.com | Government |
| Central Upper Peninsula Planning & Development Regional Commission | www.cuppad.org | Government |
| Marquette General Hospital | www.mgh.org/ | Healthcare |
| Peter White Public Library | www.uproc.lib.mi.us/pwpl/ | Libraries |
| Ishpeming Library | www.uproc.lib.mi.us/ish/ | Libraries |
| Negaunee Library | www.als2.web.uproc.lib.mi.us/Negaunee | Libraries |
| Forsyth Library | http://joomla.uproc.lib.mi.us/Forsyth | Libraries |
| Richmond Library | http://joomla.uproc.lib.mi.us/Richmond | Libraries |
| Northern Michigan University Library | http://library.nmu.edu | Libraries |
| Downtown Marquette | http://downtownmarquette.org | Tourism |
| Greater Ishpeming-Negaunee Area Chamber of Commerce | www.gincc.org | Tourism |

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

| Company Name | Website | Provider Type |
|---|---|---|
| UP North SEO | www.upnorthseo.com | Web Developer |
| Computer Associates of Marquette-Compudyne | www.computerassociatesofmarquette.com | Network Integrator |
| Johnson Telecommunications | www.johnsontelecommunications.com | Network Integrator |
| Lasco | www.lascoinc.com | Hardware Provider |
| Radio Shack | www.radioshack.com | Hardware Provider |
| 906 Technologies | www.906technologies.com | Software Provider |
| Elegant Seagulls Design | www.elegantseagulls.com | Web Developer |
| La Dolce Video & Design | www.ladolcevideo.com | Web Developer |
| American of Marquette | www.americantv.com | Hardware Provider |
| Cooper Office Equipment Inc. | www.cooperoffice.com | Hardware Provider |
| Superior Eagle Communications & Data | www.superioreagleinc.com | Hardware Provider |

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 |
|---|---|
| Peter White Public Library | Public Computer Facility |
| Ishpeming Library | Public Computer Facility |
| Negaunee Library | Public Computer Facility |
| Forsyth Library | Public Computer Facility |
| Richmond Library | Public Computer Facility |
| Marquette General Hospital | Public Computer Facility |
| Northern Michigan University Library | Public Computer Facility |
| YMCA of Marquette County | Public Computer Facility |
| Negaunee Senior Center | Public Computer Facility |
| Border Grill | Wireless Hotspot |
| Border Grill | Wireless Hotspot |
| Border Grill | Wireless Hotspot |
| Comfort Suites | Wireless Hotspot |
| Days Inn Marquette Mi | Wireless Hotspot |
| Econo Lodge Lakeside | Wireless Hotspot |
| Gitche Gumee RV Park | Wireless Hotspot |

| | |
|---|---|
| Hampton Inn Marquette Waterfront, MI | Wireless Hotspot |
| Holiday Inn - Marquette | Wireless Hotspot |
| McDonald's 14320 | Wireless Hotspot |
| McDonald's 02083 | Wireless Hotspot |
| McDonald's 32123 | Wireless Hotspot |
| Ramada Inn | Wireless Hotspot |
| Sophisticated Suds Laundromat | Wireless Hotspot |
| Starbucks | Wireless Hotspot |
| Third Street Bagel Co. | Wireless Hotspot |
| Dead River Coffee | Wireless Hotspot |

## Connected Assessment Summary

| Community Technology Scorecard<br>Community Advisor:  Tom Stephenson | | | |
|---|---|---|---|
| FOCUS AREA | ASSESSMENT CRITERIA | COMMUNITY SCORE | MAXIMUM POSSIBLE SCORE |
| ACCESS | Broadband Availability | 6 | 10 |
| | Broadband Speeds | 5 | 5 |
| | Broadband Competition | 2 | 5 |
| | Middle Mile Access | 10 | 10 |
| | Mobile Broadband Availability | 8 | 10 |
| | TOTAL ACCESS SCORE | 31 | 40 |
| ADOPTION | Digital Literacy | 10 | 10 |
| | Public Computer Centers | 10 | 10 |
| | Broadband Awareness | 10 | 10 |
| | Vulnerable Population Focus | 10 | 10 |
| | TOTAL ADOPTION SCORE | 40 | 40 |
| USE | Economic Opportunity | 10 | 10 |
| | Education | 10 | 10 |
| | Government | 10 | 10 |
| | Healthcare | 10 | 10 |
| | TOTAL USE SCORE | 38 | 40 |
| | | | |
| COMMUNITY ASSESSMENT SCORE | | 111 | 120 |

**A** ACCESS **Score Breakdown**

**Broadband Availability** (6 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, 90.38% of Marquette County residents had access to broadband speeds of 3 Mbps or greater.**

**Broadband Speeds** (5 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, 88.53% of Marquette County residents had access to broadband speeds of 50 Mbps.**

**Broadband Competition** (2 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, 75.96% of Marquette 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.

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

**Mobile Broadband Availability** (8 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, 97.42% of Marquette County residents had access to mobile broadband service.**

### ADOPTION Score Breakdown

**Digital Literacy** (10 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 |
|---|---|---|
| Peter White Public Library | Computer Classes | 115 |
| Peter White Public Library | Senior Computer Classes | 360 |
| Forsyth Twp. Library | Computer Classes | 24 |
| Northern Michigan University | Corporate and Community Education | 30 |
| Northern Michigan Public Service Academy | Computer Classes | 21 |
| Community Schools/ Adult Education | Computer Classes | 50 |
| Marquette Downtown Development | Business Computer Classes | 12 |
| Northern Initiatives | Business Computer Classes | 100 |
| **Total Graduates 2012-2013** | | **712** |

**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 Marquette County is below.

| Organization Name | Number of Open Hours per Week | Number of Computers | Available Computer Hours per Week |
|---|---|---|---|
| Peter White Public Library | 64 | 72 | 4,608 |
| Ishpeming Library | 42 | 11 | 462 |
| Negaunee Library | 45 | 12 | 540 |
| Forsyth Library | 35 | 9 | 315 |
| Richmond Library | 26 | 7 | 182 |
| Marquette General Hospital | 98 | 20 | 1,960 |
| Northern Michigan University Library | 93 | 12 | 1,116 |
| YMCA of Marquette County | 93.5 | 16 | 1,496 |
| Negaunee Senior Center | 32 | 1 | 32 |

**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 Marquette County is below.

| Organization Name | Campaign Description | Community Reach |
|---|---|---|
| Public School Districts | Newsletters promoting digital learning and the use of technology | 100% |
| Public Libraries | Newsletters promoting computer classes | 100% |
| Charter Communications | Broadband awareness and options public on the public service channel | 88% |
| President Obama Visit | Highlight the innovative use of broadband by Northern Michigan University | 100% |
| Marquette DDA | Website and social media awareness campaign | 20% |
| Northern Initiatives | Promote website and social media for small business | 15% |
| Northern Michigan University | Recruitment efforts in computer and technology related fields | 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 Marquette County is listed below.

| Organization Name | Program Description | Vulnerable Group |
|---|---|---|
| Michigan Works | Helps users find jobs through web-based searches and aids them in learning how to further their educations | Unemployed/ Uneducated |
| Marquette-Alger Regional Educational Services Agency | Assistive Technology Center has a variety of technologies available that are tailored to specific disabilities | Disabled and/or at-risk youth |
| YMCA/ Lake Superior Village | Computerized homework center for youth | Low-income youth |
| YMCA/ KI Sawyer Community Center | Computer center to assist with family registration for services | Low-income families |
| Northern Michigan University | WI-Max development available to all students | Non-traditional students |
| MI Works Adult Learning | Adult Learning Labs GED, GED or high school diploma, prepare for college, or improve their reading, writing, math, and keyboarding skills | Low-income adults |
| MI Works Youth Services | Youth skills training | Youth and at-risk youth |



## U<sup>SE</sup> 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 |
|---|---|---|
| Regional Banks | Free online banking for consumers and businesses | Basic |
| Michigan Works | Provides virtual employment assistance and individualized job training | Advanced |

| | | |
|---|---|---|
| Lake Superior Community Partnership | Comprehensive business resources online | Advanced |
| Convention and Visitors Bureau | Comprehensive portal of tourism information, maps, and events | Advanced |
| Northern Initiatives | Online database for resources and funding opportunities. Also online loan applications. | Advanced |
| Michigan Small Business Technology Development Center | Free business research | Advanced |
| Michigan Small Business Technology Development Center | Google Online Website development workshops | Advanced |
| Michigan Works | Computer lab with 20 computers for job searching and business training | Basic |
| Lake Superior Community Partnership | 1 free publicly accessible wireless hotspot available per 5,000 residents | Basic |
| Marquette County Michigan State University Extension | Availability of agriculture and farming information online | Basic |
| U.P. Food Exchange (UPFE) | Connects local food activity within each of the Upper Peninsula's three distinct regions (Eastern, Central, and Western). | Advanced |

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

| Application Provider | Description | Basic/ Advanced |
|---|---|---|
| Connectivity of public school classrooms | 100% of classrooms are connected to the internet via broadband | Basic |
| Connectivity of public school libraries | 100% of school libraries are connected to the Internet via broadband | Basic |
| Online interaction between school and parents | Parents are able to look up class grades, homework status, and interact with teachers and administration | Advanced |
| Online courses available to students | Online courses are available in at least two school districts. | Advanced |
| Marquette General Health System | Online educational exchanges with K-12 and NMU. | Advanced |
| Online courses available to students, connectivity, online interaction, etc. | Northern Michigan University is a laptop-required university.  It has WI-MAX and distance education programs | Advanced |

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

| Application Provider | Description | Basic/ Advanced |
|---|---|---|
| Marquette County Police/Fire/EMS | Presence of mobile government applications- use of in-car computers. | Advanced |
| Marquette County Police/Fire/EMS | Next generation 911 capabilities | Advanced |
| NEXEL and NMU | Emergency e-mail notification system for phones. | Advanced |
| County of Marquette | Majority of local governments with websites | Basic |
| UP 911 Dispatch Authority | All dispatch centers in the Upper Peninsula are interconnected via a public safety network. | Advanced |
| County of Marquette and City of Marquette | Online access to essential government services. | 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/ Advanced |
|---|---|---|
| Marquette General Hospital Online listing of healthcare professionals | Online listing of healthcare professionals located at ww4.mgh.org/directory/sitepages/home.aspx | Basic |
| Marquette General Hospital | Availability of telemedicine (send or receive)- ww4.mgh.org/telehealth/sitepages/home.aspx | Advanced |
| Marquette General Hospital | Eprescibing - electronic medication prescribing | Basic |
| Marquette General Hospital | Transit radiological images and lab testing for review by providers | Basic |
| Marquette General Hospital | Remote patient monitoring services | Advanced |
| Upper Peninsula Health Plan | Upper Peninsula-wide electronic health information exchange and electronic claims. | Advanced |
| Marquette County Health Dept. | Online restaurant health inspection scores and critical health indicators. | Basic |

# ACTION PLAN

## Priority Projects

This exercise has culminated in the outlining of projects to allow Marquette County to continue its recognized excellence in technology and broadband planning across the community. Through the course of the assessment process, members of the team made a number of key observations:

1.  A large number of businesses in Marquette County do not have websites or use other social media functions to promote their businesses.
2.  The lack of high-speed broadband in rural areas is inhibiting the migration of highly skilled teleworkers to Marquette County.
3.  In Marquette County, the access to public computer and digital literacy training is limited in areas where pockets of vulnerable populations are located.
4.  Through this assessment process, it has become clear that our senior population has a strong need for additional computer literacy courses as well as access opportunities.
5.  There are four senior centers located in Marquette County, but only two of them have a public computer, and no computer courses are offered at the centers.
6.  The Marquette Senior Center, in partnership with the Peter White Public Library, has classes for seniors with topics ranging from how to use a mouse, computer basics, exploring the Internet, and social media (Facebook).  The seniors love the classes, which are limited to 12 participants, and the classes are always full.

Listed below are four priority projects as identified by the Marquette County Broadband Initiative, each describing a project plan with suggested steps for action:

### 1. 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.

*Goals*:
*   Understand existing and potential markets for broadband subscribers (both residential and business).
*   Perform a broadband build-out analysis in unserved areas

*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 Marquette County Broadband Initiative to develop a marketing survey and methods of implementation utilizing best practice plans and survey samples from other communities participating in the Connect Michigan Community Engagement Program.
   a. Survey mailing samples from the Charlevoix County and Oscoda County teams are readily available and currently loaded on the web portals of Marquette County located on the Connect Michigan website: www.connectmi.org
   b. A sample of a press release developed by the Charlevoix team is also loaded on the web portal of Marquette County.
3. The project team should then tabulate the data and use GIS to display the data in a map form showing clusters of homes in need of greater access to broadband. The survey results and maps then can be placed on a public website for review by all the broadband providers who provide broadband service in Marquette County. A best practice sample of similar survey results tabulated by the HARBOR, Inc. Broadband Committee can be found on their website: http://www.harborinc.org/broadband.asp .

*Implementation Team:* A task force comprised of members of the Marquette County Broadband Initiative and other volunteers from outside the team is currently developing a marketing survey and methods of implementation.

## 2. Develop a Digital Literacy and Low-Cost Broadband Program

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 (ECO) 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.

ECO is based on five core innovative principles:
1. Bridging the digital divide by enabling underprivileged individuals with access to affordable computers offers true broadband performance and experience.

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

*Goals:*
1. Increasing technology adoption – Bridging the digital divide by providing free digital literacy training and access to reduced-cost computers and discounted broadband.
2. Increasing technology use – Introducing meaningful applications that improve lives through technology.
3. Increase the number of digital literacy training programs that focus on the senior citizens of Marquette County in addition to increasing the access to broadband at senior centers and senior living facilities.
4. Increase access to the Internet for vulnerable population concentrations, such as the KI Sawyer community.

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

*Implementation Team:* A task force group comprised of members of the Marquette County Broadband Initiative and other volunteers from outside the team is currently being formed.

### 3. Develop Program Supporting Schools' New Technology Initiatives
A large number of Michigan's public school districts are requesting and receiving technology bond issues in order to implement e-learning programs such as the iPad 1:1 Initiative, and because of the value of these programs, communities need to develop a program to support these new technology initiatives. Research conducted by Connect Michigan reveals that broadband adoption rates among low-income groups with children ranges from 37% to 45% (or

56% in rural communities), thereby creating a digital divide and logistical problems for those school districts implementing e-learning programs.

Placing computing devices in students' hands is a critical component to the anytime, anywhere approach to learning that is foundational to twenty-first century education. Some school districts have passed bonds for replacement or addition of technology devices. Other potential sources of computers may include donors or some sort of bring your own device plan, as so many of today's students have broadband enabled cell phones or their own laptops. Every idea for student computer replacement has pros and cons and issues 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.

*Goals:*
1. Improve education through digital learning.
2. Increase digital literacy and access for all.

*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 e-Learning 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 districts, 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.

### 4. Promote Telemedicine in Remote Areas

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

*Goals:*
1. Deliver improved healthcare services to rural residents.
2. Improve usage and adoption especially in the behavioral healthcare arena, both patient and provider.
3. Support the expansion of telemedicine and telemonitoring in remote areas.

*Relevant Funding Opportunities Include:*
- [Distance Learning and Telemedicine Loans and Grants Program](#) – USDA provides loans and grants to rural community facilities (e.g. schools, libraries, hospitals, and tribal organizations) for advanced telecommunications systems that can provide healthcare and educational benefits to rural areas.  Three kinds of financial assistance are available: a full grant, grant-loan combination, and a full loan.

# Recommended Actions

## ACCESS:  Recommended Actions

### Broadband Availability

### 1. Perform an 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, right-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 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:*
Identify the most credible and reliable broadband provider to serve the 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 a one-page document announcing the availability of the full RFP to a wide audience. Vendors and consultants who are interested in your project can then contact you to obtain the full RFP.

### 3. 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.

## 4. Facilitate the Expansion of the Fiber Network to the Local Manufacturers and Businesses

With the ever-evolving technology landscape, fiber is one of the primary broadband technologies for the ultra-high bandwidth Internet access. Continuing to push it out in communities will allow for growth in businesses throughout the community. In order to continue to facilitate expanded local commerce and development, the community can facilitate the expansion of fiber to key organizations, businesses, and institutions. In order to make the most efficient use of local resources, any fiber expansion should be done in cooperation with local providers.

*Action Items:*
One of the initial steps should include identifying local use of broadband by key anchor institutions, businesses, and major organizations. Additional usage data should be collected including potential capacity needs. The collected data should be incorporated with last mile data needs in areas to ensure the appropriate business case for expansion.

**Broadband Speeds** – No recommended actions.

**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 that the other doesn't have or can't easily acquire. The community can offer infrastructure (publicly-owned building rooftops, light poles, towers, and other vertical assets for mounting infrastructure) for the deployment of the system, as well as committed anchor tenants. Private-sector partners bring network-building and operations experience.

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

The lack of easily accessible and readily usable information regarding the number and location of vertical assets prevents the expansion of affordable, reliable wireless broadband service. Wireless broadband providers must determine if it is worth the effort and expense to collect and analyze this data when making investment decisions.

Public sector organizations are faced with the same challenges. A centralized and comprehensive vertical assets inventory can help wireless broadband providers expedite decisions regarding the deployment of affordable, reliable broadband service in rural areas.

*Goal*:
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.

## 8. Identify and Expand Wireless Hotspots in the Community

In order to maximize the benefits that wireless hotspots provide, a community must ensure there are an appropriate number of hotspots available, along with a published inventory of the locations of each wireless hotspot.

Wireless hotspots are classified as free or fee. Hotspots are often found at restaurants, train stations, airports, libraries, hotels, hospitals, coffee shops, bookstores, fuel stations, department stores, supermarkets, RV parks and campgrounds, public pay phones, and other public places. Many universities and schools have wireless networks on their campuses as well.

*Goal*:
Expand free access to broadband.

*Benefits:*
- Wireless hotspots in the community are a benefit to local residents without broadband at home, as well as tourists traveling to the region.

*Action Items:*
- Develop a community Wi-Fi inventory.
- Conduct an analysis to identify key areas and organizations for the expansion of local wireless hotspots.
- The local chamber of commerce and tourism groups should promote the hotspots to ensure maximum visibility in the community.

**Digital Literacy**
### 9. Create a Technology-Mentoring Program for High School Students, Volunteers or College Students

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.

**Public Computer Centers**

### 10. Increase Awareness of Public Computer Centers in the Community

Develop a strategy to publicize and promote local computing resources that are available to those who do not have access at home or may be experiencing temporary need for computers due to loss of income or other unforeseen circumstances.

*Goal*:
Increase awareness of public computer centers in the community.

*Action Items:*
These computing centers may be publicized via city, county, or township websites, newspapers, social media, e-mail, Public Service Announcements (PSAs), or newsletters.

**Broadband Awareness**

## 11. 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.

## 12. Partner with Media to Market Broadband Access to the Community
Broadband awareness is essential in today's global economy, where abundant resources are available via the Internet. There are opportunities to leverage existing resources to expand and enhance workforce-training programs, encourage more post-secondary education, and create additional awareness within the community in regard to global resources. Partner with the media organizations (local radio stations, television, newspapers, and bloggers) to develop PSAs

to promote and deliver broadband technology awareness program for the community.

*Goal:*
Develop a strategy to help the community become more aware of the benefits associated with high-speed Internet and computer adoption in their daily lives and activities.

*Benefits*:
It is important to support the outcomes of awareness campaigns with the digital literacy training programs that will then teach community members how to use the technology. Marquette County can surpass the current level of success when the community experiences increased usage of computers and the Internet, improved basic computer skills, increased use of technology in day-to-day operations of a community, and increased access to economic opportunities.

*Action Items:*
Methods of delivery include, but are not limited to:
- Classroom-style awareness sessions at the library
- Press conferences led by community leaders
- Speakers at community events, and
- Advertisements such as community posters, handouts, and public service announcements.

### 13. Develop a Database of Local Providers and Public Computer Centers
As the school districts in the state of Michigan begin to implement advance technology networks and e-learning programs such as the iPad 1:1 initiative, they have discovered that it is also important to develop a database or listing of the local broadband providers and public computer centers for the students and their parents. Research conducted by Connect Michigan reveals that broadband adoption rate among low-income groups with children range from 37% to 45% (or 56% in rural communities), thereby creating logistical problems for those school districts implementing e-learning programs. By developing these databases, the school districts will be able to provide the parents a listing and contact information of all the local broadband providers, the location of all the public computer centers and their operating hours, and the community's free hot spots.

*Goal*:
Increase broadband adoption and the utilization of public computer centers

**Vulnerable Population Focus**

### 14. Open Computer Centers and Training Programs at Senior Citizen Centers
Assist senior centers in Marquette County to provide access to computers and Internet within the community.

*Goal*:
Increase technology engagement among senior citizens

*Action Items:*
This technology plan recommends the following 8 critical steps to developing a successful computer center and training programs for seniors; some of these steps may occur concurrently.

1. Understand and Target the Community
2. Outline the Scope of the Training Plan
3. Develop Local Partnerships
4. Determine Training Needs
5. Outfit a Suitable Computer Lab
6. Identify and Train Instructors
7. Establish Training Logistics
8. Facilitate and Support Outreach and Awareness Efforts

## USE: RECOMMENDED ACTIONS

### Economic Opportunity

### 15. Determine the Broadband Needs of the Agriculture Community
The agricultural sector is a technology-intensive industry and has access to a unique set of broadband-enabled tools that should be effectively and efficiently communicated via education and demonstration. Broadband awareness efforts should focus on education that leads to initial adoption, full utilization of available applications, and knowledge of technology trends as they relate to the agricultural sector.  In order to successfully promote broadband within the agriculture community, steps should be taken to complete an inventory of broadband availability and adoption within the community's agricultural areas, along within current and potential uses.

When utilized, broadband can reduce the costs of interaction between remote market participants; provide real-time access to information relevant for both production and marketing decisions; speed access to accurate and current weather and pricing information for inputs and outputs; and can facilitate farm management, resulting in increased efficiency and productivity, and ultimately leading to higher profits and a stronger agricultural sector.

It is also critical that the applications made possible by mobile broadband are communicated to the agricultural community. For example, farmers are increasingly utilizing GPS satellite

technology via a mobile device to create crop yield maps coupled with overlay maps for fertilizing, which enables the farmer to know precisely where to apply more fertilizer.

In addition, new "cloud" based technologies enable farmers to better manage various aspects of their operations, from managing inventory to monitoring yields, chemical applications, weather, and markets. For example, the state of Michigan utilizes a cattle RFID system to collect health data in a central database to help prevent the spread of bovine tuberculosis. While slaughterhouses are required to collect this data, broadband-connected cattle raisers are collecting data about their own herd and then sending it to the state's central database, where they can compare how their herd stacks up to others.

*Goal:*
Promote broadband among the agricultural sector as an effective tool for reducing costs, making data-driven decisions, and increasing competitiveness.

*Action Items:*
- Survey: Develop a survey that seeks to better understand how farmers, ranchers, breeders, and producers value and use broadband, as well as their desire for increased bandwidth.
- Identify funding opportunities for hardware and service delivery: Opportunities provided by the USDA, university and extension offices, the state Department of Agriculture, and other relevant organizations should be investigated and promoted.
- Develop a broadband education campaign targeting the agricultural sector: To increase adoption of these technologies, farmers and other members of the agricultural community need to understand the urgency, importance, and benefits of adopting broadband technologies. Utilizing traditional marketing methods, partner with local organizations to develop a campaign to educate the agricultural sector on the benefits of broadband.
- Generate a local network of agricultural organizations and individuals who can communicate and promote the "what, why, and how" of broadband adoption and use. Utilize this network to initiate public meetings to discuss how broadband-enabled tools can best be utilized to benefit Marquette County's agriculture sector. For example, the American Farm Bureau Federation advocates for the agriculture community across the country on a range of topics including technology and would be a good resource when planning for technology uses in any community.

*Implementation Team:* To be determined.

### 16. Develop Digital Economic Incubator Sites to Attract 21st Century Jobs to the Region
With the expansion of the fiber infrastructure throughout the state of Michigan, several communities are developing digital economic incubator sites to attract twenty-first century jobs

and further economic expansion within their regions. Communities in Michigan are looking at several different incubator models, such as:

- The Stream™ in Newaygo Michigan, http://newaygostream.com/, which provides the space and technology for the teleworker or as a business incubator for the entrepreneur starting or growing a business.
- The Gigabit Ready™ initiative, http://gigabitready.com/, developed by the Greater Lansing Gig.U coalition, comprised of the Prima Civitas Foundation, the Lansing Economic Area Partnership, Connect Michigan, Michigan State University (MSU), and many regional partners whose mission is to encourage the development and adoption of ultra-high speed or "gigabit" broadband throughout Greater Lansing.
- In addition, the Lansing Gig.U coalition has launched the Gigabit Certified Building Program for both businesses and the community. This program will offer to building owners, developers, and businesses currently connected to gigabit speed infrastructure the opportunity to certify their properties through a first of its kind building accreditation program. By utilizing these almost limitless broadband infrastructures, communities can create infinite possibilities for their businesses and the community, thereby creating a vibrant twenty-first century economy that can compete in today's dynamic work economic environment.

### 17. Facilitate the Expansion of the Fiber Network to the Local Manufacturers and Businesses

With the ever-evolving technology landscape, fiber is one of the primary broadband technologies for the ultra-high bandwidth Internet access. Continuing to push it out will allow for growth in businesses throughout the community. In order to continue to facilitate expanded local commerce and development, the community can facilitate the expansion of fiber to key organizations, businesses, and institutions. In order to make the most efficient use of local resources, any fiber expansion should be done in cooperation with local providers.

*Action Items:*
One of the initial steps should include identifying local use of broadband by key anchor institutions, businesses, and major organizations. Additional usage data should be collected, including potential capacity needs. The collected data should be incorporated with last mile data needs in areas to ensure the appropriate business case for expansion.

### Education

### 18. Improve Education through Digital Learning

Several digital learning platforms are available for K-12 implementation. For example, CFY is a national education nonprofit that helps students in low-income communities, together with their teachers and families, harness the power of digital learning to improve educational outcomes. The organization is unique in that it operates both "in the cloud" (through PowerMyLearning.com, a free K-12 online learning platform) and "on the ground" (through its

Digital Learning Program, a whole school initiative that works hands-on with all three of the constituents that impact student achievement: teachers, parents, and students).

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

## 19. Create a Program Focused on Improving STEM Education
Seek funding from the federal government, private companies, foundations, non-profits, and science and engineering societies to fund science, technology, engineering, and mathematics (STEM) via the "Educate to Innovate" Program.  The "Educate to Innovate" campaign was launched to improve the participation and performance of America's students in STEM.

As part of the "Educate to Innovate" effort, five major public-private partnerships are harnessing the power of media, interactive games, hands-on learning, and community volunteers to reach millions of students over the next four years, inspiring them to be the next generation of inventors and innovators: Time Warner Cable's "Connect a Million Minds" (CAMM), which pledges to connect children to after-school STEM programs and activities in their areas; Discovery Communications' "Be the Future" will broadcast dedicated science programming to more than 99 million homes and offer interactive science education to approximately 60,000 schools; Sesame Street's "Early STEM Literacy" commits to a two-year focus on STEM subjects; National Lab Day will promote hands-on learning with 100,000 teachers and 10 million students over the next four years, and foster communities of collaboration between volunteers, students, and educators in STEM education. These initiatives will then culminate in a nationally recognized day centered on science activities; and the National STEM Video Game Challenge promotes the design and creation of STEM-related video

games.

*Goal:*
Increase STEM education so that students become critical thinkers and gain deeper understanding and interest in science, technology, engineering, and mathematics.

*Benefits*:
- Educational programs in science, technology, engineering, and mathematics (STEM), which foster an interest in, knowledge of, and study in science, technology, engineering, and mathematics ensure an educated and well-prepared workforce.

*Action Items*:
- Assess current K-12 STEM needs.
- Develop an afterschool STEM focused program.
- Seek federal funding for STEM programs.
- Elevate STEM education as a community priority.

## 20. Improve Educational Technology Hardware

Deploy new technologies across school districts, focusing on technologies for the classroom and infrastructure needed to support the classroom. Technologies to consider include, but are not limited to, computers and mobile devices for students and teachers, interactive whiteboards, LCD projectors for the classrooms, and on-demand educational content. These devices transform classrooms from a place where students sit and observe to a model of engagement in which each student becomes a resource in the classroom. Further, smartphones can be utilized to easily automate district initiatives to cut truancy, report problems, and distribute emergency plans.

*Goal:*
Utilize educational technology to better engage students.

*Benefits*:
- Laptops, netbooks, and tablets enable greater instruction flexibility and formative assessment, key components of individual learning plans.
- Used to support both teaching and learning, these technologies infuse classrooms with digital learning tools, expand course offerings and learning materials, increase student engagement and motivation, and accelerate learning by empowering educators to customize the curriculum to student needs.
- Adding technology to the classroom can create a learning environment that's collaborative and meaningful to students; rather than just learning by rote, students can use technology to discover and synthesize information, putting it in a context that has meaning and validity.

*Action Items*:
- Encourage your community's educational leaders to keep careful data and do their own research on what technologies are most appropriate for their student and instructor needs.
- Assess which technology will give your school districts the best return for their investment and  what kind of infrastructure is needed to support the technology.
- Investigate funding sources for technology purchases. Providers, such as AT&T, assist schools in deploying technologies through the use of a variety of professional services, beginning with web security and filtering options for CIPA compliance, to deployment services like laptop imaging, asset tagging, direct drop shipment, reporting, comprehensive support options for either the student or the IT shop and a variety of leasing options.

## Government

### 21. 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:

- o Hours of operation and location of facilities.
- o Contact information of key staff and departments.
- o An intuitive search engine.
- o Access to documents (ideally a centralized repository of online documents and forms).
- o Local ordinances, codes, policies, and regulations.
- o Minutes of official meetings and hearings.
- o News and events.

## 22. 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:*
Make the local government 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 accessibility 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.

## 23. Perform a Municipal 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.

# APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND

## Statewide Infrastructure

As part of the Michigan State Broadband Initiative (SBI), and in partnership and at the direction of the 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/ecommunity_strategies/find_your_county/michigan/marquette.

| Table 1:  Estimate of Broadband Service Availability in the State of Michigan By Speed Tier Among Fixed Platforms | | |
|---|---|---|
| **SBI Download Speed Tiers** | **Unserved Households ('000)** | **Served Households ('000)** | **Percent Households by Speed Tier** |
| At Least 768 Kbps/200 Kbps | 50 | 3,823 | 98.71 |
| At Least 1.5 Mbps/200 Kbps | 63 | 3,810 | 98.38 |
| At Least 3 Mbps/768 Kbps | 137 | 3,735 | 96.45 |
| At Least 6 Mbps/1.5 Mbps | 319 | 3,554 | 91.77 |
| At Least 10 Mbps/1.5 Mbps | 342 | 3,530 | 91.16 |
| At Least 25 Mbps/1.5 Mbps | 534 | 3,339 | 86.22 |
| At Least 50 Mbps/1.5 mbps | 652 | 3,220 | 83.15 |
| At Least 100 Mbps/1.5 Mbps | 654 | 3,219 | 83.12 |
| At Least 1 Gbps/1.5 Mbps | 3,873 | 0 | 0 |

*Source:  Connect Michigan, November 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.

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

becoming increasingly aware of what broadband capabilities and possibilities exist in their area, city, county, or state. My ConnectView™ is available at: http://www.connectmi.org/interactive-map.

For additional maps and other related information, visit:
http://www.connectmi.org/community_profile/find_your_county/michigan/marquette

## 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 and 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 2012 Residential Technology Assessment revealed the following key findings:

- Statewide, **71% of Michigan residents subscribe to home broadband service**.  Even though this represents a 10 percentage point gain from 2011, it means that more than 2.1 million Michigan adults still do not subscribe to home broadband service.
- Despite the statewide growth in home broadband adoption, not all Michigan residents are subscribing at the same rate. **African Americans, rural Michiganders, low-income households, and adults with disabilities** are all less likely to subscribe to home broadband service.
- Broadband empowers Michigan workers to search for jobs or find better jobs. Statewide, **40% of Michigan Internet users search for jobs online**, including 55% of low-income Internet users.
- Mobile broadband is growing in popularity across Michigan – **nearly one-half of Michigan adults (47%) use mobile broadband service**, up from 36% just a year ago.

Additionally, an assessment on technology in businesses released in the spring of 2013 in a report titled *Broadband's Economic Impact in Michigan* revealed the following key findings:

- Connect Michigan estimates that a **one percentage point increase** in broadband penetration could create or save approximately **12,388** jobs statewide.
- Michigan residents conduct **17.1 million** online transactions with Michigan businesses and spend nearly **$1.1 billion** in online sales with these businesses annually.
- Approximately **1.16 million** Michigan residents take advantage of the Internet to sell goods

or services through home-based businesses, through individual online sales, and via auctions. This accounts for **$467 million** in annual revenue statewide.

- Approximately **732,000** employed Michigan residents are teleworkers. Statewide, teleworkers save **$362.8 million** in car maintenance and fuel.
- Statewide, **804,000** Michigan e-Learners report that they have some college education but have not yet earned a bachelor's degree. Census estimates suggest if these Michigan residents use online learning to earn their bachelor's degrees, they could bring in a total of **$3.8 billion** in additional household income to the state.

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

# APPENDIX 2: PARTNER AND SPONSORS

**Partners of the Marquette County Broadband Initiative include:**

- Marquette County Planning is a division of the Resource Management and Development Department. The division provides guidance in the implementation of the Marquette County Comprehensive Plan and assists communities in planning and development activities.
- The Lake Superior Community Partnership is the region's leading resource for economic development. Their mission is to stimulate and sustain a vibrant regional economy by facilitating economic growth and prosperity.
- NMU's Center for Rural Community and Economic Development is a starting point for connecting resources that benefit economic growth and strengthen local communities. "The center helps leaders match their ideas with resources at NMU where assistance with research, training, business development and idea creation is available."
- Participating providers include AT&T, Charter Communications, Hiawatha Communications, Merit Network, Pasty.net, Peninsula Fiber Network, and Sonic.net.

**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 Connect Michigan activities as complementary to its mission to "grow Michigan's economy and enhance the quality of life of its communities by assuring safe and reliable energy, telecommunications, and transportation services at reasonable rates." http://www.michigan.gov/mpsc

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

The **National Telecommunications and Information Administration** (**NTIA**) is an agency of the United States Department of Commerce that is serving as the lead agency in running the State Broadband Initiative (SBI).  Launched in 2009, the NTIA's State Broadband Initiative (SBI) implements the joint purposes of the Recovery Act and the Broadband Data Improvement Act, which envisioned a comprehensive program, led by state entities or non-profit organizations working at their direction, to facilitate the integration of broadband and information technology into state and local economies.  Economic development, energy efficiency, and advances in education and healthcare rely not only on broadband infrastructure, but also on the knowledge and tools to leverage that infrastructure.

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

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

# APPENDIX 3: THE NATIONAL BROADBAND PLAN

The National Broadband Plan, released in 2010 by the Federal Communications Commission, has the express mission of creating a high-performance America — a more productive, creative, efficient America in which affordable broadband is available everywhere and everyone has the means and skills to use valuable broadband applications. The plan seeks to ensure that the entire broadband ecosystem—networks, devices, content, and applications— is healthy.

The plan recommends that the country adopt and track the following six goals to serve as a compass over the next decade:

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

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

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

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

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

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

To learn more, visit www.broadband.gov.

# APPENDIX 4: 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
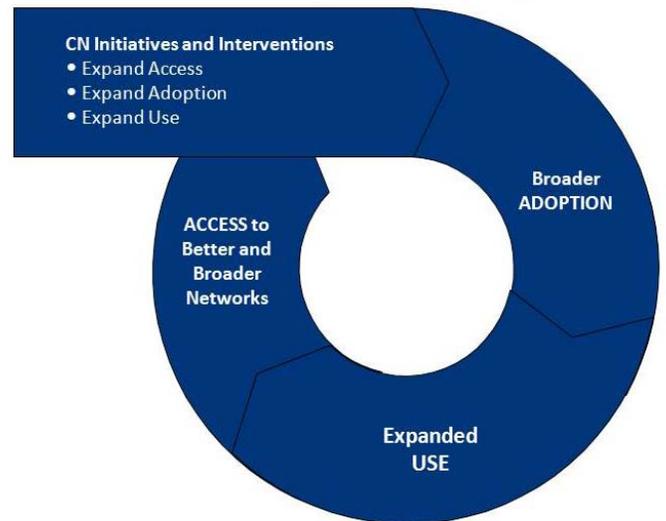- Libraries
- Healthcare

**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 Marquette 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.

**Broadband Catalysts for Change**

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

ACCESS to Better and Broader Networks

Broader ADOPTION

Expanded USE

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

# APPENDIX 5: GLOSSARY OF TERMS

## #

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

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

## A

**ARRA -** American Recovery and Reinvestment Act.

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

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

## B

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

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

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

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

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

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

**BTOP - Broadband Technology Opportunities Program -** Part of the American Recovery and Reinvestment Act (ARRA), BTOP is the program created by the U.S. Department of Commerce

focused on expanding broadband access, expanding access to public computer centers, and improving broadband adoption.

## 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.

## M

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

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

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

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

**N**

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

**NIST -** National Institute of Standards and Technology.

**O**

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

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

**P**

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

**R**

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

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

**RUS - Rural Utility Service -** A division of the United States Department of Agriculture that promotes universal service in 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.