ROSCOMMON COUNTY

TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT MICHIGAN
AND THE
ROSCOMMON COUNTY TECHNOLOGY PLANNING TEAM

JUNE 17, 2013

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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 Roscommon County Technology Planning Team is boosting the community's capabilities in education, healthcare, and public safety, and stimulating economic growth and spurring job creation. The Roscommon County Technology Planning Team has collaborated with multiple community organizations and residents to:

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

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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

The Community Technology Scorecard provides a summary of the community's Connected Assessment. The Connected Assessment's criteria are reflective of the recommendations made by the Federal Communications Commission's National Broadband Plan. Lower scores indicate weaknesses in the community's broadband ecosystem, but do not necessarily signify a lack of service.

- Roscommon County achieved a score of 107 points out of 120 for overall broadband and technology readiness which indicates that the community is exhibiting high success in technology access, adoption, and use, and has surpassed the score of 100 required for Connected certification.
- Roscommon County exceeded the 32 points in each focus area that are required for certification and has qualified for full certification.

Community Technology Scorecard

Community Champions: Rosalie Myers
Community Advisor: Tom Stephenson

FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	95% to 97.9% of homes have access to 3 Mbps	8	10
	Broadband Speeds	75% of households with access to at least 50 Mbps	5	5
	Broadband Competition	95.0% to 100% of households with access to more than 1 Broadband Provider	5	5
	Middle Mile Access	Availability of last mile infrastructure at speeds of at least 50 Mbps	4	10
	Mobile Broadband Availability	99.0% to 100.0% of households with access to mobile broadband	10	10
	Total Access Score		32	40
ADOPTION	Digital Literacy	Program grads are greater than 10 per 1000 residents over the past year	10	10
	Public Computer Centers	500 computer hours per 1000 low income residents per week	10	10
	Broadband Awareness	Campaigns reach 100% of the community	10	10
	Vulnerable Population Focus	At least 5 groups	10	10
	Total Adoption Score		40	40
USE	Economic Opportunity	3 advanced, 5 basic uses	10	10
	Education	4 advanced, 8 basic uses	10	10
	Government	2 advanced, 1 basic uses	5	10
	Healthcare	5 advanced, 3 basic uses	10	10
	Total Use Score		35	40
	Community Assessment Score		**107**	**120**

The assessment results indicate that Roscommon County has made great strides and investments in technology, and this technology plan will provide some insight and recommendations that will help the community continue to improve and expand that access, and to further enhance broadband adoption and use across the county.

Itemized Key Findings

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

ACCESS

- 12 last-mile broadband providers currently provide service in Roscommon County:
  - 97.36% of households have access to 3 Mbps.
  - 95.83% of Roscommon County homes have access to 50 Mbps service.
  - 96.96% of Roscommon County households have access to more than 1 provider.
- 99.47% of Roscommon County households have access to mobile broadband.

ADOPTION

- 13 Digital Literacy Programs exist in the community resulting in an estimated 2,969 graduates over the past year.
- 4 Public Computer Centers (PCC) with a total of 72 computers are open to the public.
- 5 Broadband Awareness Campaigns are reaching 100% of Roscommon County.
- 6 organizations are working with at least five vulnerable populations to support their access, adoption, and use of broadband.

USE

- At least 8 uses of broadband were identified in the area of economic opportunity including 3 advanced uses and 5 basic uses.
- At least 12 uses of broadband were identified in the area of education including 4 advanced uses and 8 basic uses.
- At least 3 uses of broadband were identified in the area of government including 2 advanced uses and 1 basic use.
- At least 8 uses of broadband were identified in the area of healthcare including 5 advanced uses and 3 basic uses.

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

Technology Providers
- 17 broadband providers were identified in Roscommon County

- 4 web developers

Technology Facilities
- 5 public computing centers
- 12 wireless hotspots

Community Websites
- 4 Business-related websites (excluding private businesses)
- 4 Tourism-related websites
- 5 Education-related websites
- 4 Library-related websites
- 16 Government-related websites
- 1 Healthcare-related website
- 1 Agriculture-related website

Priority Projects

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

Identify, Map, and Validate Broadband Demand

Digital Literacy and Low-Cost Broadband Program

Develop Program Supporting Schools' New Technology Initiatives

Host Website and Social Media Classes for the Local Businesses

Complete List of Recommended Actions

Below is a complete list of 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. Perform a Broadband Build-out Analysis in Unserved Areas
3. Identify, Map, and Validate Broadband Demand

Broadband Speeds – No recommended actions.

Broadband Competition – No recommended actions.

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

Mobile Broadband Availability
6. Complete a Vertical Assets Inventory

ADOPTION

Digital Literacy – No recommended actions.

Public Computer Centers – No recommended actions.

Broadband Awareness
7. Facilitate a Technology Summit

Vulnerable Population Focus - No recommended actions.

USE

Economic Opportunity
8. Establish a "Digital Factory"

Education
9. Improve Education through Digital Learning

Government
10. Improve Public Safety Communications
11. Perform a Municipal Information Technology Assessment
12. Improve the Online Presence of Government
13. Pursue Next Generation 911 Upgrades
14. Improve Online Business Services Offered by the Government

Healthcare
15. Promote Telemedicine in Remote Areas

DETAILED FINDINGS

Current Community Technology Developments in Roscommon 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 Roscommon County.

1. Houghton Lake Public Library
   a. The Houghton Lake Public Library has a Roscommon County Foundation Fund that is earmarked for the addition of a teen room. It is the goal of the library to provide a state of the art teen area that provides both entertainment and educational resources to local and visiting teens.
   b. Currently, there are no diagrams or blueprints, but the "must have" list includes computers, software, and gaming technology (I.e. Xbox) and games. The room will be equipped with comfortable and durable furnishings that include computer stations, multiple seating areas for doing homework or research, and plain conversation areas where teens can gather and socialize with their friends.
   c. The new broadband connection makes it now possible to extend wireless access to more areas and will be pushed out into the teen area to make it possible for more teens to bring their own devices into the library to access Internet.
   d. The library has expanded its training sessions and in this calendar year has already provided more sessions than 2012. It anticipates adding several new BYOD sessions in the near future. One-on-one training will continue at about the same rate, but library users bringing their own equipment and using the wireless access has already increased by about 20%.
   e. The wireless has been extended further outside the building and now covers the bike path north of the building, south to the access drive, west to the middle school, and east to 50 feet beyond the building. Plans to extend that access to the ingress drive are still in the works.
   f. The library is investigating the possibility of setting up programs that will allow interaction with other groups around the state and eventually the globe. One program will link the crafter's group with a library crafter's group in Texas. This session will allow for the exchange of ideas and techniques between the participants. If this proves to be successful, more programs will be added for both children and adults.
   g. Other than the addition of the Teen area, there are no plans for expansion of the library since the building was just completely renovated and expanded in 2001. The current meeting room is equipped with a 72" SmartBoard, hard-wired projector,

lectern that includes a wireless sound system, a computer that controls all the room's equipment via a Crestron System that accommodates all types of media, software for presenters to use for training or to open documents to share with meeting and session attendees, a document camera that projects hard copy documents or 3-dimensional objects, Internet access and the ability to print from both the computer and SmartBoard to a Xerox WorkCenter 7545. The room is also equipped with conference tables and comfortable chairs that can be taken down or arranged in a multitude of ways depending on the needs of the group.

    h. Houghton Lake Public Library is beginning the process of purchasing new laptops for training and use throughout the building. Before the installation of the fiber there was not sufficient bandwidth to run all the laptops at once; now the library can accommodate more devices.

2. Roscommon Area District Library
    a. The Roscommon Area District Library will begin construction on a new library building within a few months. With the building of the new library building it will be able to provide additional services to patrons. Patron computer access will be increased from the current 9 computers to 16 virtual desktops plus an additional four desktop kiosks for quick lookups.
    b. The main computer area will be equipped with a large video display to be used for onsite training along with displaying event messaging to patrons.
    c. Wireless access will be supplied throughout the facility for patron-supplied computers and for iPads to be used in the children's area. In addition, wired connection outlets will be strategically placed around the facility for patrons requiring a direct connection to the Internet.
    d. A new Community Room will be available to the public for meetings and training programs. The room will be equipped with two video projectors, a sound system, and an interactive whiteboard to facilitate presentations and provide a venue for media viewing.

3. Charter Communications expanded services so that 95% of households have access to 100 Mbps download speeds.
4. Frontier Communications has announced it is upgrading its network in the Houghton Lake area.
5. MiSpot.Net has launched its 4G LTE fixed wireless service in the Houghton Lake area.
6. Merit Network, Inc. completed their REACH-3MC network in Roscommon County.
7. Roscommon Voice launched a program that produces monthly articles to create broadband awareness.
8. The Houghton Lake Public Schools has 150 android-based tablets used by K-12 students (34 elementary, 36 middle, 80 high school). The tablets are not used in one-to-one training courses and stay at school. Houghton Lake Public Schools is increasing the number of

android-based tablets at a rate of 30-90 per year. Currently, there is no funding to support a K-12 one-to-one program in the Houghton Lake Public School District.

9. The iPad initiative at Roscommon Area Public Schools; it currently has 700 iPads in-use with all grades K thru 12. The iPads are not deployed on a one-to-one basis and do not go home with students, but are used only in school. There are no plans for future purchases of iPads at this time.

Roscommon County Assessment Findings

Today, residents in Roscommon County (or sections of the community) are served by 17 broadband 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 Roscommon County Community:

Broadband Providers	Technology Type	Website Reference
Agri-Valley Broadband, Inc.	Fixed Wireless	http://mispot.net
Cellco Partnership and its Affiliated Entities	Mobile Wireless	http://www.verizonwireless.com
Charter Communications, Inc.	Cable	http://www.charter.com
Cherry Capital Connection, LLC	Fixed Wireless	http://www.cherrycapitalconnection.com
Custom Software, Inc.	Fixed Wireless	http://www.m33access.com
Endless Journey, Inc.	Fixed Wireless	http://www.ejourney.com
Frontier North, Inc.	DSL	http://www.frontier.com
Hughes Network Systems, LLC	Satellite	http://www.hughesnet.com
I-2000, Inc.	DSL, Fixed Wireless	http://www.i2k.net
ISP Management, Inc.	Fixed Wireless	http://interactive.ispmgt.com/pages/Wireless_Internet
Michigan Access, Inc.	DSL	http://www.m33access.com
Michigan Bell Telephone Company	DSL	http://www.att.com
Skycasters	Satellite	http://www.skycasters.com
Spacenet, Inc.	Satellite	http://starband.com
Sprint Nextel Corporation	Mobile Wireless	http://www.sprint.com
The Iserv Company, LLC	DSL	http://www.iserv.net
ViaSat, Inc.	Satellite	http://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
Roscommon County MSUE Extension	www.msue.msu.edu/portal/default.cfm?pageset_id=28552	Agriculture
Roscommon County Economic Development Corporation	www.877muvonup.com	Business
Houghton Lake Resorter	www.houghtonlakeresorter.com	Business
Roscommon County Voice	www.roscovoice.com	Business
Roscommon County Weekly	http://www.roscoweekly.com/	Business
Roscommon Area School District	www.rapsk12.net	Education
Houghton Lake Community Schools	www.hlcsk12.net	Education
COOR Intermediate School District	www.coorisd.net	Education
Kirtland Community College	www.kirtland.edu	Education
Charlton Heston Academy	www.charltonhestonacademy.com	Education
Roscommon County Government	www.roscommoncounty.net	Government
AuSable Township	www.roscommoncounty.net/county-townships/ausable	Government
Backus Township	www.roscommoncounty.net/county-townships/backus	Government
Denton Township	www.dentontownship-mi.org	Government
Gerrish Township	http://www.gerrishtownship.org/	Government
Higgins Township	http://www.higginstownship.com/	Government
Lake Township	http://www.roscommoncounty.net/county-townships/lake	Government
Lyon Township	http://www.lyontownship.org/	Government
Markey Township	http://www.markeytownship.org/	Government
Nester Township	www.roscommoncounty.net/county-townships/nester	Government
Richfield Township	http://www.richfieldtownship.org/	Government
Roscommon Township	http://www.roscommontownship.com/	Government
Village of Roscommon	www.roscommonvillage.com	Government
Roscommon County Council on Aging	www.roscommoncounty.net/county-departments/senior-centers	Government
Roscommon County Emergency Management	www.roscommoncounty.net/county-departments/emergency-management	Government
Roscommon County Central Dispatch 911	www.roscommoncounty.net/county-departments/e911	Government

Central Michigan District Health Department	http://www.cmdhd.org/	Healthcare
Richfield Township Public Library	www.richfieldtownship.org/Library.php	Libraries
Roscommon Area District Library	www.roscommonlibrary.org	Libraries
Lyon Branch Library	www.lyontownship.org/Library	Libraries
Houghton Lake Public Library	www.hlpl.org	Libraries
Higgins Lake-Roscommon County Chamber of Commerce	http://www.hlrcc.com/	Tourism
Saint Helen Chamber of Commerce	www.sainthelenchamber.net	Tourism
Houghton Lake Chamber of Commerce	http://houghtonlakechamber.net/	Tourism
Houghton Lake Area Tourism & Convention Bureau	www.visithoughtonlake.com	Tourism

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

Company Name	Website	Provider Type
Bowen Technology Services, LLC	www.bowenweb.com	Web Developer
Roscommon County Weekly	http://www.roscoweekly.com/	Web Developer
Travel Information Services	www.travelbrochure.com	Web Developer
Interactive Development LLC	www.interactivedevelopment.net	Web Developer

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

Organization Name	Resource Type
Richfield Township Public Library	Public Computer Facility
Roscommon Area District Library	Public Computer Facility
Lyon Branch Library	Public Computer Facility
Houghton Lake Public Library	Public Computer Facility
Lagoona Beach Resort	Public Computer Facility
McDonald's	Wireless Hotspot
Quality Inn Houghton Lake	Wireless Hotspot
Holiday Inn Express Houghton Lake	Wireless Hotspot
Gerrish Township Hall	Wireless Hotspot
McDonald's	Wireless Hotspot
AuSable River Center	Wireless Hotspot
Wallace Park	Wireless Hotspot
Glens Market	Wireless Hotspot

Roscommon Area Public School Board office	Wireless Hotspot
Roscommon Headstart Center	Wireless Hotspot
Fred's of Roscommon	Wireless Hotspot
Matt's Lake Street Grill	Wireless Hotspot

Community Technology Scorecard
Community Champions: Rosalie Myers
Community Advisor: Tom Stephenson

FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	95% to 97.9% of homes have access to 3 Mbps	8	10
	Broadband Speeds	75% of households with access to at least 50 Mbps	5	5
	Broadband Competition	95.0% to 100% of households with access to more than 1 Broadband Provider	5	5
	Middle Mile Access	Availability of last mile infrastructure at speeds of at least 50 Mbps	4	10
	Mobile Broadband Availability	99.0% to 100.0% of households with access to mobile broadband	10	10
	Total Access Score		32	40
ADOPTION	Digital Literacy	Program grads are greater than 10 per 1000 residents over the past year	10	10
	Public Computer Centers	500 computer hours per 1000 low income residents per week	10	10
	Broadband Awareness	Campaigns reach 100% of the community	10	10
	Vulnerable Population Focus	At least 5 groups	10	10
	Total Adoption Score		40	40
USE	Economic Opportunity	3 advanced, 5 basic uses	10	10
	Education	4 advanced, 8 basic uses	10	10
	Government	2 advanced, 1 basic uses	5	10
	Healthcare	5 advanced, 3 basic uses	10	10
	Total Use Score		35	40
	Community Assessment Score		**107**	**120**

A ACCESS **Score Breakdown**

Broadband Availability (<u>8 out of 10 Points Possible</u>) – 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 April 2013 data collected by Connect Michigan, 97.36% of Roscommon County residents had access to broadband speeds of 3 Mbps or greater.**

Broadband Speeds (<u>5 out of 5 Points Possible</u>) – 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 April 2013 data collected by Connect Michigan, 95.83% of Roscommon County residents had access to broadband speeds of 100 Mbps.**

Broadband Competition (<u>5 out of 5 Points Possible</u>) – 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 April 2013 data collected by Connect Michigan, 96.96% of Roscommon County residents had access to two or more broadband providers.**

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

- **Roscommon County has availability of last mile infrastructure at speeds of at least 50 Mbps.**

Mobile Broadband Availability (10 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 April 2013 data collected by Connect Michigan, 99.47% of Roscommon County residents had access to mobile broadband service.**

A   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
Roscommon Area District Library	Individual computer assistance/or internet	671
Roscommon Area District Library	"Techie Hour" every Friday- Technology training for seniors	312
Roscommon Area District Library	Mango Online language sessions	258
Roscommon Area District Library	Computer Class for beginners	59
Roscommon Area District Library	eReader Class	38
Roscommon Area District Library	Facebook for Business Class	22
Roscommon Area District Library	Free Google Apps, Mail Class	49
Roscommon Area District Library	Free Computer Software, Basics, Intro to Internet Class	48
Roscommon Area District Library	Excel Class	16
Roscommon Area District Library	Word Class	16
Houghton Lake District Library	Basic Internet training	24
Houghton Lake District Library	1-ON-1 training eReader, iPad, iPod, netbook, and laptop	1,440

Houghton Lake District Library	Basic Computer training class	16
Total Graduates		**2,969**

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 Roscommon County is below.

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
Richfield Township Public Library	41	5	205
Roscommon Area District Library	41	18	738
Lyon Branch Library	27	7	189
Houghton Lake Public Library	50	42	2,100

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 Roscommon County is below.

Organization Name	Campaign Description	Community Reach
Roscommon Voice	Monthly articles on broadband in order to create awareness	50%
Roscommon Area Public Schools	Keeps the community updated through website and Listserv	30%
Houghton Lake Community schools	Keeps the community updated through website	30%
Houghton Lake Public Library	Promote digital literacy classes through several forms of media - television, radio, Facebook, newspapers, newsletters, and website.	100%
Roscommon District Public Library	Promote digital literacy classes through several forms of media - television, radio, Facebook, newspapers, newsletters, and website.	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 Roscommon County is listed below.

Organization Name	Program Description	Vulnerable Group
MI Works	Online job search assistance	Unemployed adults; seniors
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- preparing and developing skills for youth entering into the job force	Youth and at risk youths
Roscommon Voice	Monthly articles on broadband in order to create awareness	Low-income adults; seniors
Roscommon Area District Library	"Techie Hour" every Friday - Technology Training for seniors	Seniors
Houghton Lake Adult ED	Digital Literacy training classes	Low-income adults; seniors

USE Score Breakdown

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

Application Provider	Description	Basic / Advanced
Tourism web-sites	75% of local attractions online	Basic
Public wireless hotspot	1 free publicly accessible wireless hotspot available per	Basic

	5,000 residents	
Free online banking	Availability of free online banking for consumers and businesses	Basic
MI Works	Presence of program to provide virtual employment assistance programs and individualized job training	Advanced
MI Works	Program to help small & medium businesses with technology	Advanced
MI Works	Computer lab with 14 computers for job search and business training	Basic
Roscommon MSU Extension	Availability of agriculture and farming information online	Basic
Michigan Small Business and Technology Center	Michigan, Get Your Business Online – Program that provides businesses with free tools and resources to establish a website, find new customers, and grow their businesses	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
Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	100% of classrooms in the two public school districts located in Roscommon County (Roscommon Area Public Schools and Houghton Lake Community Schools) are connected to Internet via broadband	Basic
Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	100% of school libraries in the two public school districts located in Roscommon County are connected to Internet via broadband	Basic
Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	100% of school libraries in the two public school districts in Roscommon County have automated library systems	Basic
Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	100% of K-12 classes in the two public school districts located in Roscommon County provide parents secure online access to curricula, student progress, grades, etc. via Skyward student management system	Advanced
Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	100% of the two public school districts located in Roscommon County interact online with parents through Skyward, a student management system; through e-mail, both mass and select individuals	Advanced

Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	100% of the two public school districts located in Roscommon County offer a variety of online courses for students including: Accelerated Reader, Star Reader, Reading Counts, Michigan Virtual High School and College, E20/20, and Kahn Academy	Advanced
Crawford, Oscoda, Ogemaw and Roscommon (C.O.O.R.) Intermediate School District	The two public school districts located in Roscommon County (Roscommon Area Public Schools and Houghton Lake Community Schools)	Basic
Roscommon Public School District	Issued 700 iPads for in-school use by the students	Advanced
Kirtland Community College	100% of classrooms connected to Internet via broadband	Basic
Kirtland Community College	Availability of Online Tutoring for all students	Basic
Kirtland Community College	100% of libraries connected to Internet via broadband	Basic
Kirtland Community College	Presence of library automation system	Basic

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

Application Provider	Description	Basic/ Advanced
Roscommon County Government	Availability of ubiquitous, interoperable wireless public safety network	Advanced
Roscommon County Government	Majority of local governments with websites	Basic
Roscommon County Government	Presence of mobile government applications	Advanced

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

Application Name	Description	Basic/ Advanced
Central Michigan District Health Department	Availability of restaurant health inspection scores online	Basic
Central Michigan District	Online screening for mental health services	Advanced

Health Department		
Mercy Hospital Grayling/Munson Healthcare	Online listing of healthcare professionals within community	Basic
Mercy Hospital Grayling/Munson Healthcare	Availability of telemedicine	Advanced
Mercy Hospital Grayling/Munson Healthcare	Online Patient Portal that provides ePrescriptions service, allows a patient to make appointments online, and access records.	Advanced
Mercy Hospital Grayling/Munson Healthcare	100% of doctors using e-Health-using PowerChart Electronic Medical Record system	Advanced
Mercy Hospital Grayling/Munson Healthcare	100% of doctors with adequate bandwidth (based on NBP standard)	Advanced
Mercy Hospital Grayling/Munson Healthcare	e-Prescription program available	Basic

ACTION PLAN

Priority Projects

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

1. A large number of businesses in Roscommon County do not have websites or use other social media functions to promote their business.
2. In Roscommon County the access to public computer and digital literacy training is limited in areas were pockets of vulnerable populations are located.
3. 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.
4. The Houghton Lake Public Library and the Roscommon Area District Library have classes for seniors with topics ranging from how to use a mouse, computer basics, exploring the Internet, and social media (Facebook). The Roscommon Area District Library has "Techie Hour" on Fridays, which the seniors love.
5. The level of online services offered by the governments in Roscommon County needs to increase.

Below are listed four priority projects, each describing a project plan with suggested steps for action.

ACCESS: BROADBAND AVAILABILITY

Identify, Map, and Validate Broadband Demand

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

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

3. Increase access to broadband in the unserved areas such as parts of Nester Township.
4. Increase broadband access to all businesses in Roscommon County.

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

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

ADOPTION: DIGITAL LITERACY

Digital Literacy and Low-Cost Broadband Program

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

ECO is based on five core innovative principles:
1. Bridging the digital divide by enabling underprivileged individuals with access to affordable computers offers true broadband performance and experience.
2. Introducing individuals to the Internet and abundant global resources that allow them to compete in the global economy.
3. Addressing a major barrier to computer ownership – computer affordability. Cost is cited as the main barrier to computer ownership by 43% of adults with incomes less than $25K annually and 44% of households with total incomes less than $25K cited.
4. Addressing a major barrier to broadband adoption – broadband affordability.[1] 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 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 Roscommon County in addition to increasing the access to broadband for senior citizens.
4. Establish and maintain computer centers in pockets of vulnerable populations.
5. Increase the access to public computers in the low-income housing areas such as the St. Helen community.

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

Implementation Team:
To be determined.

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[1] This is subject to availability of a participating provider in local community.

Develop Program Supporting Schools' New Technology Initiative

Project Description:
A large number of Michigan's public school districts are requesting and receiving technology bond issues in order to implement e-learning programs such as the iPad 1:1 Initiative, and because of the value of these programs, communities need to develop a program to support these new technology initiatives. Research conducted by Connect Michigan reveals that broadband adoption rates among low-income groups with children range from 37% to 45% (or 56% in rural communities), thereby creating a digital divide and logistical problems for those school districts implementing e-learning programs.

Placing computing devices in students' hands is a critical component to the anytime, anywhere approach to learning that is foundational to 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 district, local business leaders, the citizens of the community, and local broadband providers to ensure that adequate resources are available to all the students to close the digital divide and ensure the success of these e-learning programs.

Implementation Team:
To be determined.

USE: ECONOMIC OPPORTUNITY

Host Website and Social Media Classes for the Local Businesses

Project Description:
For small businesses, an online presence and the use of social media are vital to stay competitive in the twenty-first century. A website and social media use is not just for companies that have the experience, staff, or budget; any small business can tap into these resources. Training should be provided to small businesses regarding the use of websites and social media within each small business. Website topics should range from starting a basic website to more advanced topics such as e-commerce. Social media topics should include a variety of social media outlets including Facebook, Twitter, YouTube, Pinterest, and LinkedIn. For many business owners, the belief that broadband would not help their business, or the lack of knowledge of how broadband positively effects business development, are the main reasons that they do not adopt broadband service. Many believe that since they have always operated without broadband, they can continue to do so. Communicating how businesses can achieve significant results via the utilization of broadband and broadband-enabled business tools is important to overcoming the barriers of relevance and lack of awareness. The key to this communication is providing local examples of successful broadband utilization and facilitating collaboration and cooperation among businesses and technology and service providers.

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

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

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

> f. Educate local businesses on Internet tools that are available at minimal or no cost to them.

Implementation Team:
To be determined.

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 some 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. 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

3. Identify, Map, and Validate Broadband Demand

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

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

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

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

Broadband Speeds

No recommended actions.

Broadband Competition

No recommended actions.

Middle Mile Access

4. 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.

5. 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.

Mobile Broadband Availability

6. Complete a Vertical Assets Inventory

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

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

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

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

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

ADOPTION: RECOMMENDED ACTIONS

Digital Literacy

No recommended actions.

Public Computer Access

No recommended actions.

Broadband Awareness

7. Facilitate a Technology Summit

Develop and host a technology summit for residents and businesses to increase awareness of broadband value, service options, and the potential impact on quality of life. The technology summit should facilitate community partnerships between leaders in local government and the private sector, including non-profits and private businesses in the education, healthcare, and agriculture sectors with the goal of ensuring that residents have at least one place in the community to use powerful new broadband technologies, and that this asset will be sustained over time. Further, the technology summit should highlight success stories as evidence of the impact of technology.

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

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

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

Vulnerable Population Focus

No recommended actions.

USE: RECOMMENDED ACTIONS

Economic Opportunity

8. Establish a "Digital Factory"

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

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

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

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

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

Action Items:
- The digital factory concept requires a site suitable for establishing office infrastructure, educational partners to develop the workforce, and business relationships with enterprises willing to hire workers through the digital factory.
- Identify the physical, financial, and technological resources needed to establish a digital factory.
- Space to house workspace and training and support offices will be needed, as well as the equipment, such as computers and monitors for video conferencing and training.
- Develop partnerships with companies who would provide contractual employment to program graduates.
- This employment focused program can be coupled with a digital literacy program, such as Connected Nation's Every Community Online program, in order to provide basic computer and Internet skills. Connected Nation provides a discounted, turnkey training lab solution, including refurbished or new computers, presentation equipment, training curriculum, and broadband service.

Education

9. Improve Education through Digital Learning

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

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

Goal:
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.

<u>Government</u>

10. Improve Public Safety Communications

Broadband offers a unique opportunity to achieve a comprehensive vision for enhancing the safety and security of your community's residents. Broadband can help public safety personnel prevent emergencies and respond swiftly when they occur. Broadband can also provide your community with new ways of calling for help and receiving emergency information.

For example, first responders from different jurisdictions and agencies often cannot communicate during emergencies due to disparate communication systems and the lack of integration between these systems. However, wireless broadband supports the interoperability of communications systems that would allow first responders anywhere in the nation to communicate with each other, send and receive critical voice and data to save lives, reduce injuries, and prevent acts of crime and terror.

Furthermore, with broadband, 911 call centers (also known as public safety answering points or PSAPs) could receive text, pictures, and videos from the public and relay them to first responders. Similarly, the government could use broadband networks to disseminate vital information to the public during emergencies in multiple formats and languages.

To overcome the challenges posed by disparate communication systems and dated technology, your community's public safety agencies should collaborate with state and federal agencies in order to improve communication across organizational and jurisdictional boundaries. This is one of the priorities of the First Responder Network Authority (FirstNet). Created by the Middle Tax Relief and Job Creation Act of 2012, FirstNet was established as an independent authority within the National Telecommunications and Information Administration (NTIA) in order to establish a single nationwide, interoperable public safety broadband network.

To find out more information on FirstNet and the Nationwide Public Safety Network, visit http://www.ntia.doc.gov/category/firstnet.

To find out more information regarding your state's efforts and point of contact for FirstNet planning, check with your Governor's office and/or statewide interoperability coordinator. Other relevant initiatives include:

- **Assistance to Firefighters Grants (AFG):** The primary goal of the AFG Program is to meet the firefighting and emergency response needs of fire departments and non-affiliated emergency medical service organizations. AFG funds have helped firefighters and other first responders to obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards.
- **Community Connect Grant Program:** The Community Connect Grant Program provides financial assistance to furnish broadband service in unserved, often isolated, rural communities. The grants are used to establish broadband service for critical facilities such as fire or police stations, while also providing service to residents and businesses.

Goal:
Leverage Broadband Technologies to Enhance Emergency Communications to and from the Public.

11. Perform a Municipal Information Technology 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.

12. Improve the Online Presence of Government

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

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

Benefits:
- Makes government more efficient, resulting in greater public convenience and cost effectiveness.
- Improves the quality and 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.

13. Pursue Next Generation 911 Upgrades

The overall system architecture of Public Safety Answering Points (PSAPs) has essentially not changed since the first 911 call was made in 1968. These 911 systems are voice-only networks based on original wireline, analog, circuit-switched infrastructure that prevents easy transmission of data and critical sharing of information that can significantly enhance the decision-making ability, response, and quality of service provided to emergency callers. To meet growing public expectations of 911-system functionality (capable of voice, data, and video transmission from different types of communication devices), that framework should be

replaced. This would require replacing analog phone systems with an Internet Protocol (IP)-based system. This system would provide an enabling platform for current technology, as well as future upgrades.

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

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

Benefits:
Transitioning to a "Next Generation" IP-based network will enable the public to make voice, text, or video emergency calls from any communications device. With Next Generation 911, responders and PSAPs will gain greater situational awareness, which will enable better-informed decisions, resulting in better outcomes and, ultimately, a safer community.

By capitalizing on advances in technologies, you are enabling:
- Quicker and more accurate information to responders
- Better and more useful forms of information
- More flexible, secure and robust PSAP operations
- Lower capital and operating costs

Action Items:
If you're involved in PSAP decision making and are faced with replacing aging systems or purchasing new technology for the very first time, you need to consider what your most immediate requirements are and where you need to be 10 years from now. Your community can take a measured and practical approach that spreads the operational impact and costs of a Next Generation 911 transition over time. Your local agency should choose a starting point that makes the most sense and provides immediate benefits for their PSAP, responders, and communities they serve. For example, according to Intrado, Inc., a provider of 911 and emergency communications infrastructure to over 3,000 public safety agencies, local public-safety agencies can implement any of the following next-generation 911 components today, and provide immediate benefits with little to no disruption of current operations:

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

14. Improve Online Business Services Offered by the Government

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

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

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

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

- o Minutes of official meetings and hearings.
- o News and events.

Healthcare

15. Promote Telemedicine in Remote Areas

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

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

Goal:
Deliver improved healthcare services to rural residents.

Appendix 1: Statewide Perspective of Broadband

Statewide Infrastructure

As part of the Michigan State Broadband Initiative (SBI), and in partnership and at the direction of the 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 spring of 2013 depict a geographic representation of provider-based broadband data represented by cable, DSL, fiber-to-the-home, fixed wireless, and mobile wireless services. These maps also incorporate data such as political boundaries and major transportation networks in the state. Statewide maps can be found at http://www.connectmi.org/mapping/state. And the county maps can be found at http://www.connectmi.org/community_profile/find_your_county/michigan/roscommon.

Table 1: Estimate of Broadband Service Availability in the State of Michigan By Speed Tier Among Fixed Platforms			
SBI Download Speed Tiers	Unserved Households ('000)	Served Households ('000)	Percent Households by Speed Tier
At Least 768 Kbps/200 Kbps	37	3,836	99.05
At Least 1.5 Mbps/200 Kbps	46	3,826	98.8
At Least 3 Mbps/768 Kbps	103	3,769	97.33
At Least 6 Mbps/1.5 Mbps	**251**	**3,621**	**93.52**
At Least 10 Mbps/1.5 Mbps	279	3,594	92.8
At Least 25 Mbps/1.5 Mbps	515	3,357	86.7
At Least 50 Mbps/1.5 mbps	646	3,227	83.33
At Least 100 Mbps/1.5 Mbps	**647**	**3,226**	**83.3**
At Least 1 Gbps/1.5 Mbps	3,867	5	0.14

Source: Connect Michigan, April 2013

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile and satellite service) across the state of Michigan; it presents the number and percentage of unserved and served households by speed tiers. The total number of households in Michigan, based on the 2010 Census, is 3,872,508, for a total population of 9,883,640 people. Table 1 indicates that 99.05% 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 36,603 households in the spring of 2013. Further, approximately 97.33% 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 93.52%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.92% of Michigan households have broadband available from at least one provider at speeds of 768 Kbps download/200 Kbps upload or higher. This leaves 3,099 households in the state completely unserved by any form of terrestrial broadband (including mobile, but excluding satellite services).

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

In addition, the broadband availability data collected, processed, and aggregated by Connect Michigan has been sent on a semi-annual basis to the NTIA to be used in the National Broadband Map, and comprises the source of Michigan's broadband availability estimates reported by the NTIA and the FCC in the National 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^{TM} 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/roscommon.

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

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 Roscommon County Technology Planning Team 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
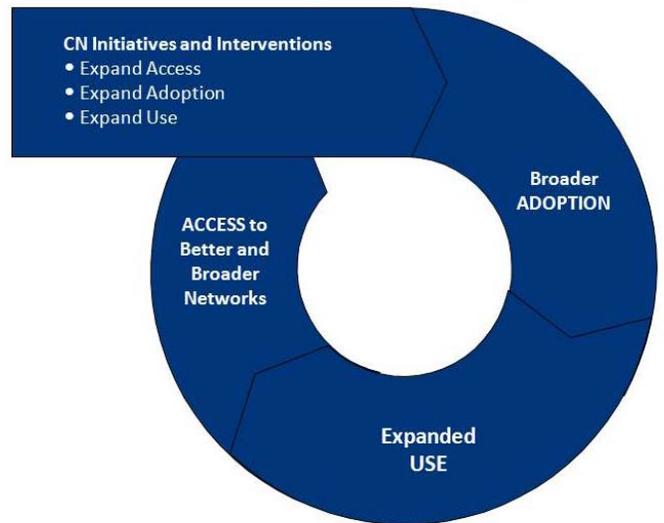11. Education
12. Government
13. Healthcare

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

Broader ADOPTION

ACCESS to Better and Broader Networks

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.