Newaygo County

Technology Action Plan

Prepared by

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And Connect Michigan

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ACCESS ADOPTION USE

TABLE OF CONTENTS

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, which 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 (NBP), 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, the United States Census reports that 27% of Americans do not have a high-speed connection at home.[2] Connected Nation's studies also indicate that 19.1 million children do not have broadband at home, and 6.1 million of those children live in low-income households.[3]

In 2014, Connected Nation also surveyed 4,206 businesses in 7 states. Based on these data, Connected Nation estimates that at least 1.5 million businesses (20%) in the United States do not use broadband technology today.[4]

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

[1] *Connecting America: The National Broadband Plan,* Federal Communications Commission, April 2010, http://www.broadband.gov/download-plan/.
[2] United States Census Bureau's American Community Survey Report, "Computer and Internet Use in the United States: 2013." http://www.census.gov/content/dam/Census/library/publications/2014/acs/acs-28.pdf.
[3] National estimates calculated using Connected Nation's 2014 Residential Technology Assessments.
[4] Estimates based on Connected Nation's *2014 Business Technology Assessment* (http://www.connectednation.org/survey-results/business) and 2013 County Business Pattern data from the United States Census Bureau (http://www.census.gov/econ/cbp/).

local technology assets, complete an assessment of local broadband access, adoption, and use, and develop an action plan for pursuing solutions.[5]

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

1. Provides entrepreneurial support.
2. Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
3. Promotes business growth and workforce development.
4. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets.

Newaygo County Background

West Michigan Shoreline Regional Development Commission and West Michigan Regional Planning Commission - The success of business and industry is essential to west Michigan's prosperity. Not only does west Michigan provide a competitive environment for businesses to financially succeed, but the quality of life is so high that business leaders want to live in and locate their businesses in the region. Additionally, the quality of workers and the entrepreneurial spirit of west Michigan make the region a natural fit for successful businesses. West Michigan's diverse economy secures the region's future—manufacturing a range of products from automotive parts to food products helps west Michigan avoid the peaks and valleys often associated with manufacturing. While west Michigan has lower unemployment and poverty levels (when compared to Michigan as a whole) there are areas within the region and segments of the population that do not benefit from these trends. Currently, access to affordable broadband is severely lacking in many parts of the region and, in many areas, is non-existent beyond dial-up. Infrastructure development has been an ongoing priority in the region. High-speed Internet access has now become an essential piece of infrastructure necessary to attract or retain individuals desiring to live in the region and/or create a business or industry in the region. The use of broadband can result in increased efficiency, improved market access, reduced costs, and increased speed of both transactions and interactions. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets. It also provides entrepreneurial support, eliminates the knowledge gap about

[5] Connected Nation, parent company of Connect Michigan, is a national non-profit 501(c)(3) organization that works in multiple states to engage community stakeholders, state leaders, and technology providers to develop and implement technology expansion programs with core competencies centered around the mission to improve digital inclusion for people and places previously underserved or overlooked.

how best to use broadband tools which increases productivity, and promotes business growth and workforce development.

West Michigan Shoreline Regional Development Commission (WMSRDC) and West Michigan Regional Planning Commission (WMRPC) are working to improve the access of broadband throughout all counties in the west Michigan region through the West Michigan Prosperity Alliance (WMPA) Regional Prosperity Initiative (RPI). The West Michigan Prosperity Alliance decided that the focus of their efforts during the first year would be to identify projects of regional significance. One of the priority projects chosen by the WMPA was to help Connect Michigan communities identify their technology needs and opportunities. Through this program, communities work to expand the availability, adoption, and use of technology toward creating a more productive and technology-savvy population, a better business environment, more effective community and economic development, improved healthcare, enhanced education, and more efficient government.

Michigan Works! West Central is able to play a role in local economic gardening initiatives across its five-county service area by providing assistance to Connect Michigan's broadband expansion efforts to bring much-needed broadband access to the rural areas of the counties we serve. Not only does this help our job seekers who want to look for work online, but it also allows them to perform online learning activities and assists businesses with online marketing strategies and promotions. According to the Kauffman Foundation, economic gardening is an economic development model that embraces the fundamental idea that entrepreneurs drive economies. The model seeks to create jobs by supporting existing companies in a community. Michigan Works! West Central has played an important role in assisting local businesses with online engagement, particularly in the realm of social media. Starting a social media presence, however, or even knowing where to begin can be a daunting task for many small business owners. In collaboration with local chambers and other business development groups, Michigan Works! West Central is helping small businesses venture into social media waters, including Facebook, Twitter, LinkedIn, and others. Michigan Works! West Central has done so by hosting informal classes and workshops for businesses in Lake, Mecosta, Newaygo, and Osceola Counties. These areas in West Michigan are largely rural, and reaching out through social media helps businesses cast a wider net and gain exposure to new markets and customers. The classes and workshops help to familiarize business owners with sites like Facebook, Twitter, and LinkedIn, and show them how to set up pages and use them most effectively as a marketing tool. "You're getting left behind if you're not involved in some form of the social media world," Michelle Rasmussen, business services director for Michigan Works! West Central tells business owners. "It's one spoke in the wheel of all of the different ways to market a business or service, but I definitely think it's a huge component to any business marketing strategy."

Methodology

By actively participating in the Connected Community Engagement Program, the Newaygo County and the regional partners are boosting the community's capabilities in education, healthcare, and public safety, and stimulating economic growth and spurring job creation. Newaygo County and the regional partners have 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.

What Is Connected Certification?

Connected certification recognizes that a community has measurably demonstrated proficiency for effective access, adoption, and use of broadband and broadband supported technologies. This national platform recognizes communities that are excelling in their pursuit of accelerated access, adoption, and use of broadband. While an exciting accomplishment for any community, it is critical to stress that Connected certification is not the end of the Connected program. In fact, Connected certification, while recognizing work completed to date, marks the launch of the Technology Action Plan and the beginning of a community's journey to continually improve its broadband landscape. Maintaining community collaboration and progress during plan implementation is a difficult task, but one that will result in an improved standing in the digital economy. Additionally, Connected certified communities, and all communities engaged in the Connected program, are part of a nationwide network of stakeholders all working toward the same goal: improved broadband access, adoption, and use. While every community is different, many share common issues and Connected works to identify the best practices for solving these issues and share them with this network. Together, we can work to bring affordable, reliable, and high-capacity infrastructure to underserved areas; promote adoption via skills training and education; and facilitate the advanced use of technology among all sectors to create more sustainable, resilient, and prosperous communities.

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 at least 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 endeavor 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, 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. These scores reflect the community's progress toward meeting these universal fixed broadband service national benchmarks, ubiquitous mobile service, and growing access to higher speed next-generation services. Lower scores do not necessarily signify a complete lack of access to broadband service but instead reflect that the broadband infrastructure in the community has not met these national goals and benchmarks.

Community Technology Scorecard Brief

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

- The community scored 32 out of a possible 40 points in broadband access primarily because of some gaps in Broadband Availability. While 99% of households have access to 3 Mbps download speeds, only 51% of households have access to 25 Mbps download speeds.
- The community scored 32 out of a possible 40 points in broadband adoption. This score indicates an opportunity for Newaygo County to increase efforts to overcome the local barriers to home broadband subscription.
- The community scored 40 out of a possible 40 points in broadband use. This score indicates that Newaygo County has effectively employed broadband to deliver productive online services and applications to help improve the overall quality of life for local residents and businesses. Newaygo County achieved a score of 104 points out of 120 for overall broadband and technology readiness, which indicates that the community is exhibiting strong support of technology access, adoption, and use and has surpassed the score of 100 required for Connected certification.
- Newaygo County exceeded the 32 points in each focus area that are required for certification and has qualified for full certification.

Community Technology Scorecard

Community Technology Scorecard Community Champions: Todd Blake Community Advisor: Tom Stephenson				
FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	99.24% of homes have access to 3 Mbps	10	10
	Broadband Speeds	82.19% of households with access to at least 6 Mbps	2	5
	Broadband Competition	90.05% of households with access to more than 1 broadband provider	4	5
	Middle Mile Access	Availability of middle mile fiber infrastructure from only 1 provider	6	10
	Mobile Broadband Availability	100% of households have access to mobile broadband	10	10
	ACCESS SCORE		32	40
ADOPTION	Digital Literacy	Program grads are greater than 4 per 1,000 residents over the past year	6	10
	Public Computer Centers	350 computer hours per 1,000 low-income residents per week	6	10
	Broadband Awareness	Campaigns reach 100% of the community	10	10
	Vulnerable Population Focus	At least 5 groups	10	10
	ADOPTION SCORE		32	40
USE	Economic Opportunity	7 advanced, 5 basic uses	10	10
	Education	9 advanced, 3 basic uses	10	10
	Government	8 advanced, 1 basic uses	10	10
	Healthcare	4 advanced, 3 basic uses	10	10
	USE SCORE		40	40
	COMMUNITY ASSESSMENT SCORE		104	120

Itemized Key Findings

Newaygo County identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment:

ACCESS

- 20 last mile broadband providers currently provide service in Newaygo County:
  - 99.24% of households have access to 3 Mbps
  - 82.19% of households have access to at least 6 Mbps
  - 90.05% of households have access to more than 1 broadband provider
- Availability of middle mile fiber infrastructure from only 1 provider
- 100 of households with access to mobile wireless

ADOPTION

- 6 Digital Literacy Programs exists in the community resulting in 268 Program grads over the past year
- 8 Public Computer Centers (PCC) with a total of 117 computers available to the public
- 3 Broadband Awareness Campaigns are reaching 100% of Newaygo County
- 3 organizations are working with vulnerable populations

USE

- At least 12 uses of broadband were identified in the area of economic opportunity including 7 advanced uses and 5 basic uses
- At least 12 uses of broadband were identified in the area of education including 9 advanced uses and 3 basic uses
- At least 9 uses of broadband were identified in the area of government including 8 advanced uses and 1 basic use
- At least 7 uses of broadband were identified in the area of healthcare including 4 advanced uses and 3 basic uses

In addition to the items identified above, the Newaygo County identified the following technology resources in the community:

Technology Providers

- 25 broadband providers were identified in Newaygo County
- 4 hardware providers were identified in Newaygo County
- 0 network developers were identified in Newaygo County
- 1 web developer was identified in Newaygo County

Technology Facilities

- 8 public computer centers
- 12 wireless hotspots
- 0 videoconference facilities

Community Websites

- 5 Business-related websites (excluding private businesses)
- 8 Education-related websites
- 14 Government-related websites
- 4 Healthcare-related websites
- 8 Library-related websites
- 2 Tourism-related websites
- 0 Agriculture-related websites
- 7 Community-based-related websites

Newaygo County Priority Projects

The Connected Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. There are 5 projects that the community has identified as priority projects.

Priority Projects Identified by the Newaygo County Team
Facilitate Internet Safety Classes
Identify, Map, and Validate Broadband Demand
Perform an Analysis of Local Policies and Ordinances
Complete a Vertical Assets Inventory
Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses

Newaygo County Additional Projects

The table below shows the complete list of the 12 projects the Newaygo County proposes to undertake in order to accelerate broadband access, adoption, and use in Newaygo County. Detailed descriptions of each solution proposed by Connect Michigan can be found in the *Action Plan* section of this report.

Additional Projects Identified by the Newaygo County Team	
ACCESS	
Broadband Availability	Develop Public-Private Partnerships to Deploy Broadband Service
Middle Mile Access	Study and Possibly Reassess Major Telecom Purchase Contracts
ADOPTION	
Digital Literacy	Distribute Digital Literacy Content
	Develop a Technology Mentorship Program
Public Computer Centers	Provide Incentives to Encourage Computer Purchases Among Students
	Establish a Community Technology Academy
Broadband Awareness	Facilitate a Technology Summit
USE	
Economic Opportunity	Create Local Jobs Via Teleworking Opportunities
Education	Improve Education Through Digital Learning
Government	Improve Online Business Services Offered by the Government
	Pursue Next General 911 Upgrades
Healthcare	Promote Telemedicine in Remote Areas

DETAILED FINDINGS

Current Community Technology Developments in Newaygo County

Growth Management Plan. Intergovernmental teamwork is necessary to assure the future of shared resources, from shopping districts to parks and from farmlands to infrastructure. Thoughtful multi-jurisdictional planning and land use decision making are critical to the vitality of a community. Recognizing the need to work proactively, the City of Newaygo, Brooks Township, and Garfield Township have joined together to tackle land use issues upfront rather than reacting to them from one step behind. In other words, these three jurisdictions desire to manage growth in a way that benefits the entire community from the perspective of "we're in it together." With this in mind, in March 2008, the three jurisdictions launched the Newaygo Community Growth Management Initiative (NCGMI). The outcome of this work resulted in the Growth Management Plan as an initiative to spur innovation and commercialization within community.

The Newaygo Community Growth Management Plan represents a new approach in multi-jurisdictional planning. To date, in the state of Michigan there has not been an intergovernmental growth management strategy combined with a mechanism for funding area-wide improvements. The plan focuses on what is termed "triple bottom line goals," which includes social, economic, and environmental factors. Through intergovernmental cooperation, this plan works to give back to the community, save money, and prevent waste.

The Stream is a Business Incubator and perfect partner for an entrepreneur starting or growing a business. www.newaygostream.com

The Stream offers a credible, distraction-free environment at an affordable price in Newaygo's picturesque downtown. At The Stream, the entrepreneur will be better connected, finding synergies with fellow members—perhaps potential clients or companies that they can partner with on pending projects. And the entrepreneur will have the opportunity to take part in networking events through their discounted chamber membership, a perk included with all membership packages.

The entrepreneur will also have the support usually found at an established company. An on-site copy room with black/white and color copiers is at their disposal, and administrative support is only a call away. Meeting rooms with LCD televisions, computer connections, and conference phones are available for rent by the hour, allowing the entrepreneur to shine in client meetings.
The Stream provides the space and technology that residents and visitors of Newaygo County need to work remotely and accomplish just as much—or maybe even more—than they would

in their regular office. Whether a person is a weekend vacationer in Newaygo or a year-round resident who'd like to enjoy the time and financial benefits of teleworking at The Stream, they are able to focus on business while letting the staff of The Stream deal with the rest. The Stream offers:

- Individual office spaces with fiber-optic Internet
- Phone and voicemail service
- Use of copy and fax machines
- Use of conference and meeting rooms
- Administrative support services
- Videoconference capability
- Membership in the Newaygo Chamber of Commerce
- Registration at various networking events

Newaygo County Advanced Technology Services (NCATS) is a publicly owned, self-sustained network paid through its subscribed members. It is locally owned and operated by Newaygo County for Newaygo County to promote education and employment in the Newaygo County community. A community-focused organization that is in partnership with private property owners, local businesses, and local government, NCATS delivers broadband services with a focus on education and job development in Newaygo County.

Newaygo County Assessment Findings

Today, residents in Newaygo County (or sections of the community) are served by 25 providers. At the time of broadband assessment, broadband was 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 Newaygo County.

Broadband Providers	Website	Technology Type
AT&T Mobility LLC	http://www.wireless.att.com	Broadband Provider
ATIS, Inc.	http://www.tucker-usa.com	Broadband Provider
Carr Telephone Company	http://www.carrinter.net	Broadband Provider
Verizon Wireless	http://www.verizonwireless.com	Broadband Provider
Charter Communications Inc.	http://www.charter.com	Broadband Provider
Comcast	http://www.comcast.com	Broadband Provider
Casair, Inc.	http://www.casair.net	Broadband Provider
Frontier North, Inc.	http://www.frontier.com	Broadband Provider
AT&T Michigan	http://www.att.com	Broadband Provider
Micom	http://www.micomcable.com	Broadband Provider
Michwave Technologies, Inc	http://www.michwave.com	Broadband Provider
NCATS	http://www.ncats.net	Broadband Provider
Sprint	http://www.sprint.com	Broadband Provider
Iserv	http://www.iserv.net	Broadband Provider
West Michigan Broadband	http://www.westmichiganbroadband.com	Broadband Provider
Xyotek, LLC	http://www.xyotek.com	Broadband Provider
Hughes Network Systems, LLC	http://www.hughesnet.com/	Broadband Provider
Skycasters	http://www.skycasters.com/	Broadband Provider
StarBand Communications	http://www.starband.com/	Broadband Provider
ViaSat, Inc.	http://www.exede.com/	Broadband Provider
Great Lakes Comnet	www.glcom.net	Other- Fiber
LYNX Network Group	www.lynxnetworkgroup.com	Other- Fiber
ACD.Net	http://www.acd.net/	Other- Fiber
MERIT Network	http://www.merit.edu/	Other- Fiber
Peninsula Fiber Network	www.pfnllc.net	Other- Fiber

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

Organization Name	Website	Resource Type
River Stop Café	http://www.riverstopcafe.com/	Wireless Hotspot
McDonalds	www.mcmichigan.com/12780	Wireless Hotspot
Maike's Bakery	n/a	Wireless Hotspot
McDonald's	http://www.mcdonalds.com	Wireless Hotspot
Hesperia Public Library	www.hesperialibrary.org	Public Computer Facility
Fremont Area District Library	www.fremontlibrary.net	Public Computer Facility
White Cloud District Library	www.whitecloudlibrary.net	Public Computer Facility
Newaygo Area District Library	www.newaygo.llcoop.org	Public Computer Facility
Croton Township Library	www.crotonlibrary.org	Public Computer Facility
Grant Area District Library	www.grantlibrary.net	Public Computer Facility
The Stream	www.newaygostream.com	Public Computer Facility
Nelson Township Library	www.kdl.org/branches/14	Public Computer Facility
Koffee Kuppe	http://koffeekuppe.com/	Wireless Hotspot
Never Enough Auto Accessories	www.neverenoughauto.com	Wireless Hotspot
The Depot Restaurant	http://www.thedepotgrant.com	Wireless Hotspot
Newaygo Brewing Company	http://www.newaygobrewing.com/	Wireless Hotspot
River Stop Saloon	https://www.facebook.com/pages/River-Stop-Saloon/144082948961195	Wireless Hotspot
Red Anchor Inn	https://www.facebook.com/pages/Red-Anchor-Inn/394234240694662?rf=140941435964851	Wireless Hotspot
The Blind Squirrel Tavern	http://www.theblindsquirreltavern.com/#!	Wireless Hotspot
Side Street Café	https://www.facebook.com/pages/Side-Street-CafeOne-East-Main-Restaurant/213642515350514	Wireless Hotspot

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

Organization Name	Website	Category
West Michigan Shoreline Regional Development Commission	www.wmsrdc.org	Business
River County Chamber of Commerce of Newaygo County	www.rivercountychamber.com	Business
Fremont Area Chamber of Commerce	www.fremontcommerce.com	Business
Michigan Works! West Central	www.michworkswc.org	Business
Newaygo County Economic Development Office	www.ncedo.org	Business
The Stream	www.newaygostream.com	Community Based
Newaygo County Collaborative Consortium (NC3)	www.newaygocountycc.org	Community Based
The Dogwood Center for the Performing Arts	www.dogwoodcenter.com	Community Based
The Fremont Area Community Foundation	www.facommunityfoundation.org	Community Based
The Gerber Foundation	www.gerberfoundation.org	Community Based
Lion Heart Productions	www.lionheartproductions.org	Community Based
Newaygo Community Recreation Authority	www.newaygocity.org/index.php/en/government/boards-commisions/newaygo-community-recreation-authority	Community Based
Newaygo County Advanced Technology Services	www.ncats.net	Education
Newaygo County Regional Educational Service Agency	www.ncresa.org	Education
Fremont Public Schools	www.fremont.net/	Education
Big Jackson Public Schools	www.bigjackson.ncats.net/	Education
Hesperia Community Schools	www.hesp.net/	Education
White Cloud Public Schools	www.whitecloud.net/education/district/district.php?sectiondetailid=1&	Education
Newaygo Public School District	www.newaygo.net/	Education
Grant Public School District	www.grantps.net	Education
Dayton Township	www.daytontownship.com	Government

Ensley Township	www.ensleytownship.org	Government
Garfield Township	www.garfieldtownship.org	Government
Grant Township	www.granttownship.net	Government
Merrill Township	www.merrilltownship.com	Government
Newaygo County	www.countyofnewaygo.com	Government
City of Grant	www.cityofgrantmi.com	Government
City of White Cloud	www.cityofwhitecloud.org	Government
Spectrum Health Gerber Memorial	www.spectrumhealth.org	Healthcare
District Health Department #10	www.dhd10.org	Healthcare
Newaygo County Mental Health	www.newaygocmh.org	Healthcare
Family Health Care	www.familyhealthcare.org/	Healthcare
Hesperia Public Library	www.hesperialibrary.org	Libraries
Freemont Area District Library	www.fremontlibrary.net	Libraries
White Cloud District Library	www.whitecloudlibrary.net	Libraries
Newaygo Area District Library	www.newaygo.llcoop.org	Libraries
Croton Township Library	www.crotonlibrary.org	Libraries
Grant Area District Library	www.grantlibrary.net	Libraries
Nelson Township Library	www.kdl.org/branches/14	Libraries
Newaygo County Convention and Visitors Bureau	www.newaygocountytourism.com/	Tourism
Hesperia Area Chamber of Commerce	www.hesperiachamberofcommerce.org	Tourism

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

Company Name	Website	Provider Category
NewPage Publishing	http://www.newpage.net	Web Developer
Riverside Computer & Internet	http://www.riverview.net	Hardware Provider
Interfix LLC	http://www.interfix.biz/	Software Provider
Riverside Computer & Internet	http://www.riverview.net	Hardware Provider
ELT - Technology Professionals	http://www.eltcorp.com/	Hardware Provider
@Home Computer Services	http://www.athomecs.com/about-home-computer-services.html	Hardware Provider

Connected Assessment Analysis

Access Score Explanation

Broadband Availability (10 out of 10 Possible Points). Broadband Availability is measured by analyzing provider availability of 3 Mbps broadband service gathered by Connected Nation's broadband mapping program. In communities that may have broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- According to the October 2014 data collected by Connect Michigan, 99.24% of Newaygo County residents had access to broadband speeds of 3 Mbps or greater.

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

- According to the October 2014 data collected by Connect Michigan, 82.19% of Newaygo County residents had access to broadband speeds of 6 Mbps.

Broadband Competition (4 out of 5 Possible Points). Broadband Competition is measured by analyzing the number of broadband providers available in the community and the percentage of that community's residents with more than one broadband provider available. Connected Nation performed this analysis by reviewing the data collected through its broadband mapping program. In communities that may have broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- According to the October 2014 data collected by Connect Michigan, 90.05% of Newaygo County residents had access to more than one broadband provider.

Middle Mile Access (6 out of 10 Possible Points). Middle Mile Access is measured based on a community's availability to fiber. Three aspects of availability exist: proximity to fiber middle mile points of presence (POPs), number of POPs available, and available bandwidth. The community, in collaboration with Connected Nation, collected and analyzed middle mile access data.

- Newaygo County is served by only 1 middle mile fiber providers.

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

- According to the October 2015 data collected by Connect Michigan, 100% of Newaygo County residents had access to mobile broadband service.

Adoption Score Explanation

Digital Literacy (6 out of 10 Possible Points). Digital Literacy is measured by first identifying all digital literacy programs in the community. Once the programs are identified, 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
Hesperia Public Library	Microsoft Word Training	6
Fremont Area Chamber of Commerce (Newaygo County)	Social Media 101	10
White Cloud Public Library	Basic Computing, Facebook, and E-mail	6
River Country Area Chamber of Commerce	Social Media for Businesses	26
River Country Area Chamber of Commerce	Facebook for Businesses	20
River Country Area Chamber of Commerce	Twitter for Businesses	20
River Country Area Chamber of Commerce	LinkedIn for Businesses	20
River Country Area Chamber of Commerce	Pinterest and other mobile applications for businesses	20
Nelson Township Library	One-on-One digital device and digital literacy training	60
Freemont Area Public Library	Basic Internet, Using Searching Engines, and Basic Word	50
Freemont Area Public Library	Basic EXCEL and Basic PowerPoint	30

Public Computer Centers (6 out of 10 Possible Points). Public Computer Centers is measured based on the number of hours computers are available each week per 1,000 low-income residents. Available computer hours are calculated by taking the overall number of computers multiplied by the number of hours open to a community during the course of the week. A listing of public computer centers available in Newaygo County is below.

Organization Name	Number of Open Hours Per Week	Number of Computers	Available Computer Hours Per Week
Hesperia Public Library	40	14	560
Freemont Area District Library	44	15	660
White Cloud District Library	48	8	384
Newaygo Area District Library	43	11	473
Croton Township Library	26	4	104
Grant Area District Library	44	15	660
The Stream	1	40	40
Nelson Township Library	36	10	360

Broadband Awareness (10 out of 10 Possible Points). Broadband Awareness 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 Newaygo County is below.

Organization Name	Campaign Description	Community Reach
Hesperia Public Library	Promotion of actives and course offering through website, Facebook, newsletter and blog	50%
Newaygo County Regional Educational Service Agency	Program to promote digital education via newsletter and social media.	100%
Freemont Area District Library	Promotion of actives and course offering through website, Facebook, newsletter and blog	50%

Vulnerable Population Focus (10 out of 10 Possible Points). 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. Programs that focus on vulnerable populations in Newaygo County are listed below.

Organization Name	Program Description	Vulnerable Group
MI Works	Online job search assistance	Unemployed adults and seniors
MI Works Youth Services	Youth job skills training	Youth and at-risk youth
MI Works Adult Learning	Adult Learning Labs GED,GED or High School diploma, prepare for college, or improve reading, writing, math, and keyboarding skills.	Low income adults

Use Score Explanation

Economic Opportunity (10 out of 10 Possible Points). A community receives one point per basic use of broadband and two points per advanced, or interactive, 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
MI Works	Computer lab with 31 computers for business training	Basic
MI Works	Presence of program to provide virtual employment assistance programs and individualized job training	Advanced
MI Works	Program to help small and medium businesses with technology	Advanced
Michigan Small Business and Technology Center	The Market Research program provides industry, competitive, demographic, financial, and website analysis information that is useful in planning and making business decisions that will drive economic growth.	Advanced
Freemont Chamber of Commerce	Availability of free online banking for consumers and businesses	Basic
Newaygo County MSU Extension	Availability of agriculture and farming information online	Basic
The Stream	Business incubator and a teleworking center	Advanced
Freemont Chamber of Commerce, River Country Chamber of Commerce	75% of local attractions online	Basic
Freemont Chamber of Commerce, River Country Chamber of Commerce	Presence of an online tourism portal for the promotion of local tourism attractions and events	Basic
Freemont Chamber of Commerce, River Country Chamber of Commerce	Program to help small and medium businesses with technology	Advanced
The Stream	Initiative to promote and expand teleworking	Advanced
Newaygo County	Growth Management Plan, an initiative to spur innovation and commercialization within community	Advanced

Education (10 out of 10 Possible Points) 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
Newaygo County Regional Educational Service Agency	100% Connectivity of public school classrooms	Basic
Newaygo County Regional Educational Service Agency	100% Connectivity of public school libraries	Basic
Newaygo County Regional Educational Service Agency	100% Public school library automation systems, all the schools use Lakeland Cooperative in all the libraries	Advanced
Newaygo County Regional Educational Service Agency	100% Online access to school curricula, homework, and grades	Advanced
Newaygo County Regional Educational Service Agency	Online interaction via text messaging and e-mail between school and parent	Advanced
Newaygo County Regional Educational Service Agency	Availability of online courses for K-12 students using Michigan virtual university and locally run Moodle.	Advanced
Newaygo County Regional Educational Service Agency	Initiatives focused on elevating STEM (Science, Technology, Engineering, & Mathematics) literacy	Advanced
Newaygo County Regional Educational Service Agency	Student and teacher training programs focused on improving STEM education	Advanced
Newaygo County Regional Educational Service Agency	Presence of campus Wi-Fi with 100% coverage	Advanced
Newaygo County Regional Educational Service Agency	Presence of advance digital technology - Smart boards, distance learning, tablets, 1-to-1, etc.	Advanced
Newaygo County Regional Educational Service Agency	Presence of a one-on-one initiative Fremont Public, Newaygo Public, and Grant Public are deploying 1-to-1	Advanced
Montcalm Community College	100% of classrooms connected to Internet via broadband	Basic

Government (10 out of 10 Possible Points). 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
Newaygo County	Majority of local governments with websites	Basic
Newaygo County	50% of essential government services online	Advanced
City of Newaygo	Initiative to promote and expand teleworking within the government sector	Advanced
City of Newaygo	50% of essential government services online	Advanced
Newaygo County	Availability of ubiquitous, interoperable wireless public safety network	Advanced
City of Freemont	50% of essential government services online	Advanced
City of Freemont	Public safety answering points with broadband	Advanced
City of Freemont	Use of Facebook to communicate with residents	Advanced
City of Newaygo	Use of Facebook to communicate with residents	Advanced

Healthcare (10 out of 10 Possible Points). 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
Spectrum Health - Gerber Memorial Hospital	Online listing of healthcare professionals within community	Basic
Spectrum Health - Gerber Memorial Hospital	MyHealth- online patient portal used to view lab results, pay bills, make appointments, and renew prescriptions	Advanced
Spectrum Health - Gerber Memorial Hospital	Availability of telemedicine (send or receive)	Advanced
Spectrum Health - Gerber Memorial Hospital	75% of doctors using e-health	Advanced
Spectrum Health - Gerber Memorial Hospital	100% of doctors with adequate bandwidth (based on NBP standard)	Advanced
Spectrum Health - Gerber Memorial Hospital	Availability of e-prescriptions	Basic
District Health Department #10	Availability of restaurant health inspection scores online	Basic

ACTION PLAN

Complete List of Newaygo County Projects

The following is a comprehensive list of the priority projects and additional projects the Newaygo County proposes to accelerate broadband access, adoption, and use in Newaygo County. Detailed descriptions of each solution are provided.

ACCESS

Broadband Availability

Perform an Analysis of Local Policies and Ordinances

Goal
Ensure that local policies are conducive to broadband build-out.

Project Description
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 is one of the most expensive cost functions in a service provider's plans to expand or upgrade service, especially in rural markets where the ratio 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.

Benefits

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

Action Items

1. Review local policies, ordinances, and other barriers to broadband deployment and consult with community leaders, providers, utilities, and other members of the community to ensure that they are supporting policies (local ordinances, pole attachments, rights-of-way) that are conducive to broadband build-out.
2. Develop an awareness campaign targeted toward community leaders to inform them of the benefits of broadband to the entire community derived from access to global resources.

Develop Public-Private Partnerships to Deploy Broadband Service

Goal

Fund broadband network deployment

Project Description

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.

Benefits

1. The public sector transfers much of the risk for private investment. For example, the public sector has many funding tools available, including incentivizing continued investment through tax credits, encouraging greater availability of private capital through government guaranteed loans, or government being a direct source of capital through loans or grants.
2. The partnership can aggregate demand and reduce barriers to deployment. By working together, public and private parties can educate and build awareness needed for the public to better integrate the use of broadband into their lives, thereby improving the business case for broadband deployment.

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

Action Items

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

Implementation

Newaygo County Advanced Technology Services (NCATS) is a publicly owned, self-sustained network paid through its subscribed members. It is locally owned and operated by Newaygo County for Newaygo County to promote education and employment in the Newaygo County community. A community focused organization that is in partnership with private property owners, local businesses, and local government, NCATS delivers broadband services with a focus on education and job development in Newaygo County.

Middle Mile Access

Study and Possibly Reassess Major Telecom Purchase Contracts

Goal

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

Project Description

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.

Benefits

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

Action Items
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

Identify, Map, and Validate Broadband Demand

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

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.

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

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

   Example: HARBOR Inc. is a citizen-based, non-profit Michigan Corporation founded in 2001 and located in the City of Harbor Springs. The organization's broadband committee developed and mailed a broadband demand survey in July 2012 to approximately 6,300 addresses, comprising all of the local property owners/residents in the community. A copy of the survey can be reviewed here: http://is0.gaslightmedia.com/wwwharborincorg/_ORIGINAL_/fs72-1369322556-20386.pdf

Implementation
The team is currently developing a broadband survey that will be launched in late summer or early fall of 2015. The GIS team at the West Michigan Shoreline Regional Development Commission will assist the team in mapping the data results.

Complete a Vertical Assets Inventory

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.

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

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

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

Action Items
1. Identify or develop a vertical assets inventory toolkit to provide guidelines to identify structures or land that could serve as a site for installation of wireless communications equipment.
2. Data to collect would include vertical asset type, owner type, minimum base elevation, minimum height above ground, and location.

3. Identify and map elevated structures utilizing your community's GIS resources. The resulting database should be open-ended; localities should be encouraged to continuously map assets as they are made available.

ADOPTION

Digital Literacy

Distribute Digital Literacy Content

Goal
Facilitate partnerships in order to provide digital literacy training.

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

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

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

Action Items
1. Develop partnerships with local organizations and equip them with digital literacy content
2. Train staff to deliver the curriculum to potential adopters
3. Promote local organizations as a source of broadband access and training

4. Engage non-adopters with a comprehensive public outreach campaign, helping them understand the benefits of broadband service and inviting them to experience the value at their libraries
5. Provide curriculum to teach computer and Internet use, as well as the skills required to utilize the Internet effectively for essential services, education, employment, civic engagement, and cultural participation
6. Offer compelling promotion to participants, giving them the opportunity to adopt the technology for everyday use in their homes

Facilitate Internet Safety Classes

Goal
Ensure that community members are aware of how to navigate the Internet safely.

Project Description
Create a program designed to help community members who are using the Internet to identify and avoid situations that could threaten their safety, threaten business or government networks, compromise confidential information, compromise the safety of children, compromise their identities and financial information, or destroy their reputations.

Benefits
1. This project helps ensure that community members have a solid understanding of cyber threats.
2. There are many risks, some more serious than others. Among these dangers are viruses erasing entire systems, a hacker breaking into a system and altering files, someone using someone else's computer to attack others, someone stealing credit card information, sexual predators making advances at children, and criminals making unauthorized purchases. Unfortunately, there's no 100% guarantee that even with the best precautions some of these things won't happen, but there are steps that can be taken to minimize the chances.

Action Items
1. Partner with a local library or community center to offer security awareness training initiatives that include classroom style training sessions and security awareness websites and information booklets.
2. Awareness training can also be used to alleviate anxiety for community members who are not using the Internet because of fear of cyber threats.

Develop a Technology Mentorship Program

Goal
Utilize student technology knowledge to implement community programs.

Project Description
Initiate a program designed to recruit local high school or college students who excel in school and exhibit advanced leadership and technology skills to assist in technology training, technical support, and outreach efforts in their communities. Recognizing students as a powerful resource for local outreach efforts, the program will tap into the technology knowledge base that exists among students and will challenge students to extend their teaching and learning experiences beyond the classroom.

Benefits
1. The program helps students develop self-confidence and technical competencies as they work with their families, leaders, peers, neighbors, seniors, and other members of their communities. In addition to empowering these students with real world experience, it helps enhance their skills as they mature into productive and highly competent citizens.
2. It helps to build character by awarding students opportunities to give back to their communities and embrace responsibilities associated with community service.
3. The program will engage students who are creative, knowledgeable, and interested in technology as a great resource for planning, implementation, support, and using technology at a local level. With guidance and support, they will help to provide a missing, and important, link between the members of the community who have experience with broadband technology and those who are currently not using it.
4. The program will expose students to potential career paths and provide a basis to determine if they want to further their educations in a technology field. It could also potentially provide a beginning client base from the relationships he or she has built within the community as a student.

Action Items
1. Identify the program format and offerings. Similar technology mentorship program are organized as student-run help desks or student-led classes.
2. The program can be hosted at a local school or community anchor institution such as a library or community center, and could be run during the school day as part of the regular curriculum, during study hall or as an afterschool activity.
3. The curriculum could be borrowed from an existing technology mentorship program, or could be student-driven. Similar programs offer digital literacy training to seniors, provide computer refurbishing, build websites, and other forms of tech support to local residents.

Public Computer Centers

Provide Incentives to Encourage Computer Purchases Among Students

Goal
Provide equal access to computers and enable digital learning.

Project Description
Develop a program that will enable students to obtain computers. Programs could include refurbished computers or new laptops or tablets. Consider a group-purchasing program, which would allow:

- Special discount pricing
- Warranty availability
- Wired and wireless usage throughout school and home
- On-campus access to tech support
- Loaner computer access while devices are being repaired

Benefits

1. Provides equal computer access, regardless of ability to purchase.
2. Supports school-wide online education initiatives.
3. Enables the adoption of e-books.

Action Items

1. Research grants and private funding opportunities.
2. Assess whether developing a leasing or purchasing program is more appropriate for your school.

Establish a "Community Technology Academy"

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

Project Description
Develop partnerships between libraries, community centers, churches (places with computer labs for public use) and schools, community colleges, and universities (places with subject matter experts) to develop a "Community Technology Academy." Providers, local businesses, and community volunteers may be included to provide financial and/or in-kind support for the program. Academy curriculum should include basic training in areas such as "Introduction to Computers," "Internet Basics," social networking, using communication technologies, and the use of applications such as Microsoft Office, OpenOffice or Google Docs.

Benefits

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

Action Items

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

Broadband Awareness

Facilitate a Technology Summit

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.

Project Description

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.

Benefits

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

Action Items

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

USE

Economic Opportunity

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

Goal

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

Project Description

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

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

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

Benefits

1. Provides entrepreneurial support.
2. Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
3. Promotes business growth and workforce development.
4. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets. According to Connected Nation's 2014 Business Technology Assessment, online sales represented $2.3 trillion in sales revenues for U.S. businesses in 2013.

Action Items

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

Implementation

The River Country Chamber of Commerce of Newaygo County and the Fremont Area Chamber of Commerce both have successfully launched several social media workshops for the local businesses and organizations utilizing regional and local resources such as Michigan Works! West Central and The Stream.

Create Local Jobs Via Teleworking Opportunities

Goal

Connect IT training and education with remote employment opportunities.

Project Description

Connected Nation's Digital Works program 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. The Digital Works program creates

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

At the end of training, workers are placed in available positions that match their skills and interests. All jobs pay above minimum wage and the training provides opportunities for placement at levels for upward mobility. This is work that can be done from home or at the Digital Works center, which is provided through a partnership with the community.

Benefits

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

Action Items

1. The Digital Works program requires a site suitable for establishing office infrastructure, educational partners to develop the workforce, and business relationships with enterprises willing to hire workers through the digital factory.
2. Identify the physical, financial, and technological resources needed to establish a digital factory.
3. Space to house workspace and training and support offices will be needed, as well as the equipment, such as computers and monitors for videoconferencing and training.
4. Develop partnerships with companies who would provide contractual employment to program graduates.
5. Visit http://www.digitalworksjobs.com/ to learn more.

Education

Improve Education Through Digital Learning

Goal

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

Project Description

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.

Benefits

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

Action Items

1. Launch a program to promote digital education via newsletter and social media to all the residents within the school districts. Many of the successful school districts launched this digital education program two years prior to their request of a technology bond issue that would support a digital learning program.
2. Coordinate this effort with the local libraries which will need to adjust their services to support this program.

Government

Improve Online Business Services Offered by the Government

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

Project Description
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 such transactions.

Benefits

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

Action Items

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

Pursue Next Generation 911 Upgrades

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.

Project Description

The overall system architecture of 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 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.

Benefits

1. 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:
    a. Quicker and more accurate information to responders;
    b. Better and more useful forms of information;
    c. More flexible, secure and robust PSAP operations; and
    d. 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, consider what your most immediate requirements are and where your community needs to be 10 years from now. Your community can take a measured and practical approach that spreads the operational impact and costs of a

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

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

Healthcare

Promote Telemedicine in Remote Areas

Goal
Deliver improved healthcare services to rural residents.

Project Description
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, understanding the main features of telemedicine, being aware of the technologies required for telemedicine, and understanding how to develop, deliver, use, and evaluate telemedicine services.

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

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 April and October annually.

The most current statewide and county- specific broadband inventory maps released in the fall of 2014 depict a geographic representation of provider-based broadband data represented by cable, DSL, fiber, fixed wireless and mobile wireless. These maps also incorporate data such as political boundaries and major transportation networks in the state. A statewide map is found at www.connectmi.org/mapping/state. The county maps are found at http://www.connectmi.org/community_profile/find_your_county/michigan/alcona.

Table 1: Estimate of Broadband Service Availability in the State of Michigan By Speed Tier Among Fixed Platforms

SBI Download/Upload Speed Tiers	Unserved Households ('000)	Served Households ('000)	Percent of Served Households by Speed Tier
At Least 768 Kbps/200 Kbps	31	3,841	99.19
At Least 1.5 Mbps/200 Kbps	38	3,834	99.01
At Least 3 Mbps/768 Kbps	63	3,810	98.38
At Least 6 Mbps/1.5 Mbps	194	3,678	94.98
At Least 10 Mbps/1.5 Mbps	282	3,591	92.73
At Least 25 Mbps/1.5 Mbps	438	3,435	88.70
At Least 50 Mbps/1.5 Mbps	513	3,360	86.76
At Least 100 Mbps/1.5 Mbps	654	3,219	83.12
At Least 1 Gbps/1.5 Mbps	3,860	12	0.32

Source: Connect Michigan, November 2014.

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile and satellite service) across the state of Michigan; it presents the number and percentage of unserved and served households by speed tiers. The

total number of households in Michigan in 2010 was 3,872,508, for a total population of 9.88 million people. Table 1 indicates that 99.19% of households are able to connect to broadband at download speeds of at least 768 Kbps download and 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 31,244 households in the fall of 2014. Further, approximately 3,809,777 households across Michigan have broadband available of at least 3 Mbps download speeds and 768 Kbps upload speeds. The percentage of Michigan households having fixed broadband access available of at least 6 Mbps download and 1.5 Mbps upload speeds is estimated at 94.98%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.99% of Michigan households have broadband available from at least one provider at download speeds of 768 Kbps or higher and upload speeds of 200 Kbps or higher. This leaves 577 households in the state completely unserved by any form of terrestrial broadband (including mobile, but excluding satellite services).

As differences in broadband availability estimates between the fall of 2010 and the fall of 2014 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 that should be taken into consideration when analyzing the data. This measurement error will decrease as local, state, and federal stakeholders identify areas where the displayed coverage is underestimated or overestimated. Connect Michigan welcomes such feedback to be analyzed in collaboration with broadband providers to correct errors identified in the maps.

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

Interactive Map

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

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

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 and trends across the state. The purpose of this research is to better understand the drivers and barriers to technology and broadband adoption and estimate the broadband adoption gap across the state of Michigan. Key questions the data address are: who, where, and how are households in Michigan using broadband technology? How is this technology impacting Michigan households and residents? Who is not adopting broadband service and why? What are the barriers that prevent citizens from embracing this empowering technology?

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

- 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.
- The cost of broadband is becoming a smaller barrier among Michigan residents who do not subscribe to broadband; fewer Michiganders who do not subscribe to broadband cite cost as the main reason for not subscribing, while a larger share say they don't see home broadband service as relevant or useful.
- 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.

Additionally, an assessment on technology in businesses released in May 2012 in a report titled *Technology Adoption Among Michigan Businesses* revealed the following key findings:

- Across Michigan, 69% of businesses subscribe to broadband service, representing approximately 70,000 Michigan businesses that still do not use or benefit from broadband.
- Michigan business establishments that use broadband report median annual revenues that are approximately $300,000 higher than businesses that do not use broadband.
- Online sales in Michigan account for approximately $9.2 billion in annual sales revenue, including nearly $1.8 billion for small businesses with fewer than five employees and more than $1.9 billion for rural Michigan businesses.

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

APPENDIX 2: PARTNER AND SPONSORS

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

The Michigan Public Service Commission (MPSC) is the lead Michigan agency for the State Broadband Initiative that is responsible for working with Connect Michigan, overseeing the Michigan initiative, and providing direction of the project. The MPSC facilitates interactions with other state government entities, broadband providers, and other Michigan stakeholders. They view promoting broadband view Connect Michigan activities as complementary to their 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 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 has been 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 empower locally informed and collaborative technology planning that addresses each community's need for improved access, adoption, and use of technology:

- ACCESS: Does your community have access to affordable and reliable broadband service?
- ADOPTION: Is your community addressing the barriers to broadband adoption?
- USE: Are residents using technology to improve their quality of life?

Connected Nation leverages state-based public-private partnerships to engage residents at the local level. Regionally based staff provides "train-the-trainer" activities to local leaders, such as librarians, school administrators, economic development professionals, and public officials and help them organize multi-sector technology planning teams, inventory local technology resources and initiatives, assess local technology access, adoption, and use, and develop local strategies that target specific technology gaps in the community.

Connected's community technology-planning framework is cyclical. As with other forms of community planning – and especially so with technology planning – change is the only constant. At the community level, changing technology requirements, shifting demographics, economic drivers, and workforce requirements may expose or create new digital divides. Connected's community technology planning framework supports a sustained effort.

Connected Planning Process
Connected's community technology planning framework provides a clear path for the sustainable acceleration of broadband access, adoption, and use.

Step 1: Engage. Successful strategies to bridge the local digital divide and increase broadband access, adoption, and use are predicated on broad and sustained stakeholder participation. A successful local technology planning team should include people from multiple sectors, including:

- State and Local Government
- Public Safety
- Education (K-12, Higher Ed)
- Library
- Business & Industry, Agriculture, Recreation and Tourism
- Healthcare
- Community Organizations
- Technology Providers

Step 2: Assess. The Connected planning process guides the local technology planning team through an assessment of community technology resources, strengths, assets, needs, and gaps in order to identify and develop strategies to address specific technology gaps and opportunities in the community. Bolstered by benchmarking data that had been gathered through: Connect Michigan's mapping and market research, the local technology planning team works with community members to benchmark local broadband access, adoption, and use via the Connected Assessment, which measures:

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

Step 3: Plan. Once community resources and needs are identified, the community planning team begins to identify local priorities and policies, programs, and technical solutions that will accelerate broadband access, adoption, and use. Connected Nation provides recommended actions based on best practices from communities across the United States.

Step 4: Act. The technology planning team works together to ensure that selected policies, programs, and technical solutions are adopted, implemented, improved, and maintained. The Connected program provides a platform for collaboration and the sharing of best practices between communities. Connected Nation also provides communications support to raise awareness of your community's efforts. For communities that measurably demonstrate proficiency in broadband access, adoption, and use in the Connected Assessment, Connected Nation offers Connected certification, a nationally recognized certification that provides an avenue for pursuing 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.

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.