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Genesee County

Technology Action Plan

Prepared by

Genesee County and
Connect Michigan

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ACCESS ADOPTION USE

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INTRODUCTION

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

Background

Today, technology plays a pivotal role in how businesses operate, the type of service consumers expect, how institutions provide services, and where consumers choose to live, work, and play. The success of a community has also become dependent on how broadly and deeply the community adopts technology resources, 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.

[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.

Methodology

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

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

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's broadband ecosystem including last and middle mile issues, cost concerns, and competition between local broadband providers. 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 improve 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 the 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 Genesee County community scored 40 out of a possible 40 points in broadband access primarily because of the robust and pervasive broadband infrastructure that currently supports its residents, businesses, and other organizations.
- Genesee County scored 32 out of a possible 40 points in broadband adoption. This score indicates there is an opportunity for Genesee County to further increase its support of broadband adoption through increased availability of digital literacy training and public computing centers.
- The community scored 40 out of a possible 40 points in broadband use. This score indicates that Genesee County has effectively embraced broadband technology and is using online services, applications and websites to support its key sectors of economic development, education, government and healthcare.
- Genesee County achieved a score of 112 points out of 120 for overall broadband and technology readiness, which indicates the community has done an excellent job of recognizing the value of broadband technology and employing strategies to leverage its value to local residents, businesses, and other organizations.
- Genesee 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 Champion: Paula Nas Community Advisor: Dan Manning				
FOCUS AREA	**ASSESSMENT CRITERIA**	**DESCRIPTION**	**SCORE**	**MAXIMUM POSSIBLE SCORE**
ACCESS	Broadband Availability	99.9% of homes have access to 3 Mbps	10	10
	Broadband Speeds	98.19 % of households with access to at least 100 Mbps	5	5
	Broadband Competition	99.85% of households with access to at least2 broadband providers	5	5
	Middle Mile Access	Availability of middle mile fiber infrastructure from more than 1 provider	10	10
	Mobile Broadband Availability	100% of households have access to mobile broadband	10	10
	ACCESS SCORE		**40**	**40**
ADOPTION	Digital Literacy	Program grads are greater than 7 per 1,000 residents over the past year	8	10
	Public Computer Centers	250 computer hours per 1,000 low-income residents per week	4	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	6 advanced, 1 basic use	10	10
	Education	6 advanced, 5 basic uses	10	10
	Government	5 advanced, 0 basic uses	10	10
	Healthcare	7 advanced, 0 basic uses	10	10
	USE SCORE		**40**	**40**
	COMMUNITY ASSESSMENT SCORE		**112**	**120**

Itemized Key Findings

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

ACCESS

- 18 last mile broadband providers currently provide service in Genesee County:
  - 99.9% of households have access to 3 Mbps
  - 98.19% of households have access to at least 100 Mbps
  - 99.85% of households have access to at least 2 broadband providers
- Availability of middle mile fiber infrastructure from more than 1 providers
- 100% of households with access to mobile wireless

ADOPTION

- 43 Digital Literacy Programs exist in the community, resulting in 2907 Program grads over the past year
- 30 Public Computer Centers (PCC) with a total of 485 computers available to the public
- 6 Broadband Awareness Campaigns are reaching 100% of Genesee County
- 5 organizations are working with vulnerable populations

USE

- At least 7 uses of broadband were identified in the area of economic opportunity including 6 advanced uses and 1 basic use
- At least 11 uses of broadband were identified in the area of education including 6 advanced uses and 5 basic uses
- At least 4 uses of broadband were identified in the area of government including 4 advanced uses and 0 basic uses
- At least 7 uses of broadband were identified in the area of healthcare including 7 advanced uses and 0 basic uses

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

Technology Providers

- 18 broadband providers were identified in Genesee County

Technology Facilities

- 30 public computer center(s)

Community Websites

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

Genesee County Priority Projects

The Connected Community Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. There are seven projects that the community has identified as Priority Projects toward this goal. Detailed descriptions of each proposed project can be found in the *Action Plan* section of this report.

Priority Projects Identified by Genesee County
Access
Work with Local Municipalities (especially more rural townships) and Broadband Providers to Improve Broadband Access
Pursue Business and Community Development Opportunities by Marketing the Area's Significant Broadband Infrastructure
Adoption
Expand Community Literacy Programs to Include Digital Literacy Training
Assess Need for Additional Public Computer Centers
Form a Technology Consortium to Provide Shared Technology Services for Community Non-Profit Organizations
Use
Establish an Entrepreneurial and Technology Hub to Support the Community
Develop an Online Interactive Map of Community Resources

Genesee County Additional Projects

The table below shows a list of ten additional projects suggested by Connect Michigan and Connected Nation for Genesee County to undertake in order to accelerate broadband access, adoption, and use. Detailed descriptions of each proposed project can be found in the *Action Plan* section of this report.

Additional Projects Suggested by Connect Michigan for Consideration by the Genesee County Team	
ACCESS	
Broadband Availability	Perform an Analysis of Local Policies and Ordinances
	Complete a Vertical Assets Inventory
ADOPTION	
Digital Literacy	Distribute Digital Literacy Content
	Facilitate Internet Safety Classes
Broadband Awareness	Facilitate a Technology Summit
Use	
Economic Opportunity	Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses
	Create Local Jobs Via Teleworking Opportunities
Education	Improve Education Through Digital Learning
Government	Improve Online Business Services Offered by Local Governments
Healthcare	Promote Telemedicine in Remote Areas

DETAILED FINDINGS

Current Community Technology Developments in Genesee County

As a result of its Community Broadband Assessment, Genesee County is being recognized for having extensive broadband infrastructure to support its local residents, businesses, school districts, colleges and universities and other institutions. This infrastructure of fiber optic cable, networking equipment and the availability of multiple broadband providers provides a strong base for future development and growth of the area through the use of new and improving technologies.

A key indicator of this success has been the recent recognition of the City of Flint, Kettering University and US Ignite in being awarded a $6 million National Science Foundation "smart city" grant to deliver next-generation high-speed internet service throughout the city. The grant's three-year scope will knit together researchers, citizens, community organizations, technology companies, entrepreneurs, academics, and federal, state and local governments to begin to build what is being billed as the next generation of Internet in the United States.

US Ignite is a nonprofit, inspired by the White House Office of Science and Technology Policy and the National Science Foundation, and partners in industry, academia, and government to identify and share best practices and resources for technological innovation in cities. In partnership with Kettering University, US Ignite has been working with the City of Flint since 2012 to help identify and deploy new broadband-based applications and systems in such areas as healthcare, education, public safety, and advanced manufacturing.

Flint was one of 16 initial cities that were part of US Ignite, a public-private partnership designed to capitalize on the possibilities of ultra-fast broadband networks and "ignite" the development of next-generation Internet applications and services with societal benefits.

Beyond the work being done in Flint, the Genesee County Planning Commission has also recently completed a study of the current fiber optic infrastructure across the seven-county I-69 Corridor and its potential to drive and support future economic development. Regional and county-by-county profiles have been developed to communicate each area's readiness for fiber connectivity and help address new business and residents across the I-69 corridor from Shiawassee and Genesee to St. Clair County.

Genesee County Assessment Findings

Today, residents in Genesee County (or sections of the community) are served by 18 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 Genesee County.

Broadband Providers	Website	Technology Type
Air Advantage	http://www.airadvantage.net	Fixed Wireless
Agri-Valley Services	http://www.avci.net	Fixed Wireless
Bitwise Wireless	http://www.bitwiseinc.net	Fixed Wireless
Centurylink	http://www.centurylink.com	DSL
Charter	http://www.charter.com	Cable
Comcast	http://www.comcast.com	Cable
FreedomNet	http://www.freedomnet.com	Fixed Wireless
Frontier	http://www.frontier.com	DSL
Invisalink	http://www.invisalink.net	Fixed Wireless
Lennon Telephone	http://www.lentel.com	DSL
AT&T	http://www.att.com	DSL
Skyweb	http://www.skywebonline.net	Fixed Wireless
SpeedConnect	http://www.speedconnect.com	Fixed Wireless
Iserv	http://www.iserv.net	DSL
Tri-County Wireless	http://www.tcwireless.us	Fixed Wireless
TVC	http://www.lentel.com	Cable
TDS Telecom	http://www.tdstelecom.com	DSL
Windstream	http://www.windstream.com	DSL

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

Organization Name	Website	Resource Type
Flint Public Library	http://www.fpl.info/	Public Computer Facility
Baker Park Library	https://www.thegdl.org/baker-park-library	Public Computer Facility
Beecher Vera B. Rison Library	https://www.thegdl.org/beecher-rison-library	Public Computer Facility
Burton Memorial Library	https://www.thegdl.org/burton-memorial-library	Public Computer Facility
Clio Area Library	https://www.thegdl.org/clio-area-library	Public Computer Facility
Davison Area Library	https://www.thegdl.org/davison-area-library	Public Computer Facility
Fenton-Winegarden Library	https://www.thegdl.org/fenton-winegarden-library	Public Computer Facility

Flint Township McCarty Library	https://www.thegdl.org/flint-township-mccarty-library	Public Computer Facility
Flushing Area Library	https://www.thegdl.org/flushing-area-library	Public Computer Facility
Forest Township Library	https://www.thegdl.org/forest-township-library	Public Computer Facility
Gaines Station Library	https://www.thegdl.org/gaines-station-library	Public Computer Facility
Genesee District Library	https://www.thegdl.org	Public Computer Facility
Genesee Valley Center Library	https://www.thegdl.org/genesee-valley-center-library	Public Computer Facility
Genesee-Johnson Library	https://www.thegdl.org/genesee-township-johnson-library	Public Computer Facility
Goodrich Library	https://www.thegdl.org/goodrich-library	Public Computer Facility
Grand Blanc McFarlen Library	https://www.thegdl.org/grand-blanc-mcfarlen-library	Public Computer Facility
Linden Library	https://www.thegdl.org/linden-library	Public Computer Facility
Montrose Jennings Library	https://www.thegdl.org/montrose-jennings-library	Public Computer Facility
Mt. Morris Library	https://www.thegdl.org/mt-morris-library	Public Computer Facility
Swartz Creek Perkins Library	https://www.thegdl.org/swartz-creek-perkins-library	Public Computer Facility
Davison Area Senior Center	http://davison-sc.org	Public Computer Facility
Disability Network Computer Technology Center	http://www.disnetwork.org/	Public Computer Facility
Eastside Senior Center	http://eastsideseniorcenter.com	Public Computer Facility
Flushing Senior Center	http://www.flushingseniorcenter.com	Public Computer Facility
Krapohl Senior Center	http://www.heartscs.org	Public Computer Facility
Swartz Creek Area Senior Center	http://www.myscasc.org	Public Computer Facility
Michigan Works!	http://www.gsworks.org	Public Computer Facility
National Education and Economic Development Group LLC	http://www.needgroupllc.com	Public Computer Facility
Goodwill Industries	http://goodwillmidmichigan.org	Public Computer Facility
Salvation Army	http://centralusa.salvationarmy.org/genesee	Public Computer Facility

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

Organization Name	Website	Category
Flint & Genesee Chamber of Commerce	http://www.flintandgenesee.org	Business
Baker College	http://www.baker.edu/baker-college-of-flint	Education
Mott Community College	http://www.mcc.edu	Education
University of Michigan - Flint	https://www.umflint.edu	Education
Kettering University	http://www.kettering.edu	Education
Genesee Intermediate School District	http://www.geneseeisd.org	Education
Genesee County Government	http://www.gc4me.com	Government
Genesee County Planning Commission	http://gcmpc.org	Government
Flint & Genesee Literacy Network	http://flintandgeneseeliteracy.org	Government
Michigan Works!	http://www.gsworks.org	Government
Genesee County Health Department	http://www.gchd.us	Healthcare
Genesee Health System	http://www.genhs.org	Healthcare
Genesys Health System	http://www.genesys.org	Healthcare
McLaren Hospital	http://www.mclaren.org/flint	Healthcare
Hurley Medical Center	http://www.hurleymc.com	Healthcare
Mott Children's Hospital	http://www.mottchildren.org	Healthcare
Flint Public Library	http://www.fpl.info	Libraries
Genesee District Library	https://www.thegdl.org	Libraries
Genesee County Parks	http://geneseecountyparks.org	Tourism
Genesee County Events	http://www.geneseefun.com	Tourism
Genesee County Visitor and Convention Bureau	http://www.flintandgenesee.org/visit	Tourism

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, 99.9% of Genesee County residents had access to broadband speeds of 3 Mbps or greater.**

Broadband Speeds (5 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, 98.19% of Genesee County residents had access to broadband speeds of 100 Mbps.**

Broadband Competition (5 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, 99.85% of Genesee County residents had access to more than one broadband provider.**

Middle Mile Access (10 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.

- **Genesee County is served by 1 or more 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 2014 data collected by Connect Michigan, 100% of Genesee County residents had access to mobile broadband service.**

Adoption Score Explanation

Digital Literacy (8 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
Genesee District Library	Computers 101 course	222
Genesee District Library	Computers 102 course	51
Genesee District Library	Computers 103 course	42
Genesee District Library	E-Reader course	198
Flint & Genesee Chamber of Commerce	Lunch and Learn at MLive	40
Flint Public Library	Beginning Internet course	120
Flint Public Library	Internet Beyond Basics course	70
Flint Public Library	Find It Online course	20
Flint Public Library	Microsoft Word course	50
Flint Public Library	Gmail course	50
Flint Public Library	Social Networking	40
Loose Senior Center	iPad 1 course	48
Loose Senior Center	iPad 2 course	28
Loose Senior Center	Windows 8	16
Loose Senior Center	One-on-one computer help	20
National Kidney Foundation of Michigan	Internet Health Literacy course	50
Swartz Creek Area Senior Center	Internet Basics	6
Swartz Creek Area Senior Center	Android Basics	22
Swartz Creek Area Senior Center	Android Beyond the Basics	12

Swartz Creek Area Senior Center	Working with Digital Photos	14
Swartz Creek Area Senior Center	iPhone/iPad Basics	18
Swartz Creek Area Senior Center	iPhone/iPad Beyond the Basics	12
Swartz Creek Area Senior Center	Windows 8	12
Flint & Genesee Chamber of Commerce	Mornings at MLive	40
Five Fold Ministry Christian Center	SafePlace - technology tutoring for at-risk students	50
Davison Community Ed	Organize Digital Files/Photos	14
Davison Community Ed	Windows & Microsoft Apps	51
Davison Community Ed	Intro to Computers and Usage	25
Davison Community Ed	Kindle Reader	5
Disability Network Computer Technology Center	Technology Training course	25
Grand Blanc Senior Center	iPad/iPhone training (Basic and Advanced)	21
Grand Blanc Senior Center	Android apps and usage (Basic and Advanced)	46
Grand Blanc Senior Center	Intro to Computers/Windows	80
Grand Blanc Senior Center	Facebook, Skype, Kindle, and other apps	37
Grand Blanc Senior Center	One-on-One Technology Assistance	154
Flushing Area Senior Center	Technology classes (smartphones, computer basics, apps, etc.)	200
Grand Blanc Community Education	Computer and smartphone training, Facebook, Microsoft apps classes	360
Michigan Works!	Computer-related classes	360
Grand Blanc Community Education	Microsoft apps (Word, PowerPoint, Excel)	120
Grand Blanc Community Education	Working with Digital Photos	60
Grand Blanc Community Education	Understanding Your Android Smartphone or Tablet	30
Grand Blanc Community Education	Understanding Your iPhone or iPad	30
Michigan Works!	Technology Training class	38

Public Computer Centers (4 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 Genesee County is below.

Organization Name	Number of Open Hours Per Week	Number of Computers	Available Computer Hours Per Week
Flint Public Library	45	70	3150
Baker Park Library	39	9	351
Beecher Vera B. Rison Library	39	22	858
Burton Memorial Library	39	14	546
Clio Area Library	39	19	741
Davison Area Library	52	14	728
Fenton-Winegarden Library	46	16	736
Flint Township McCarty Library	39	8	312
Flushing Area Library	39	10	390
Forest Township Library	39	7	273
Gaines Station Library	8	2	16
Genesee District Library (main)	54	23	1242
Genesee Valley Center Library	56	26	1456
Genesee-Johnson Library	39	10	390
Goodrich Library	39	4	156
Grand Blanc McFarlen Library	58	23	1334
Linden Library	39	3	117
Montrose Jennings Library	39	21	819
Mt. Morris Library	39	10	390
Swartz Creek Perkins Library	39	9	351
Davison Area Senior Center	40	11	440
Disability Network Computer Technology Center	40	10	400
Eastside Senior Center	49	6	294
Flushing Senior Center	57	6	342
Krapohl Senior Center	36	5	180
Swartz Creek Area Senior Center	53	3	159
Michigan Works!	46	94	4324
National Education and Economic Development Group LLC	168	7	1176
Goodwill Industries	30	15	450
Salvation Army	45	8	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 Genesee County is below.

Organization Name	Campaign Description	Community Reach
Genesee District Library System	Events Program Guide	100%
Flint Public Library	Newsletter	50%
Flint & Genesee Chamber of Commerce	Inside Business - online magazine	40%
Genesee/Shiawassee Michigan Works!	Online job awareness	30%
Genesee Intermediate School District	Website and household communications	80%
Multiple Senior Centers	Newsletters and online training	20%

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 Genesee County are listed below.

Organization Name	Program Description	Vulnerable Group
Goodwill Industries	Job Placement Services	Unemployed, low-income
Goodwill Industries	Technology training	Unemployed, low-income, children, seniors
The Disability Network	Windows 7 and Office 2013 basics	Disabled
Genesee/Shiawassee Michigan Works!	Online job search and application	Unemployed, low-income
Multiple county Senior Centers	Technology education and internet awareness	Seniors
Flint & Genesee Chamber of Commerce	Youth Quest - after school enrichment program	Youth, young adults
Flint & Genesee Chamber of Commerce	Teen Quest - after school pre-employment training	Youth, young 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
Flint & Genesee Chamber of Commerce	Online information and services to spur innovation and commercialization within community	Advanced
Genesee County Planning Commission	Online information and services to encourage development that enhances the quality of life in Genesee County through government and community partnerships	Advanced
I-69 Thumb Region	Online information regarding economic development in the seven county region	Basic
Genesee/Shiawassee Michigan Works!	Workforce development information and services	Advanced
Genesee County Visitor and Convention Bureau	Online information and services to promote tourism in the county	Advanced
Genesee County Parks	Online information and services promoting the largest county park system in Michigan	Advanced
Genesee County Event Calendar	Information and ticket purchase for Genesee County area events	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
Parent Vue	Online student information system for parental access	Advanced
Classroom Connectivity	100% of classrooms in Genesee Public School Districts are connected to the internet via broadband	Basic
Genesee Network for Education Telecommunications (GenNET)	Distance learning enabled by connectivity across all schools in the district	Advanced
Genesee ISD website	Online information and services regarding K-12, Career Technical Education, Great Start Readiness, Head Start programs and more	Advanced
Youth Quest Afterschool Program	Online information and events for the Youth Quest afterschool enrichment program for K-12 students	Basic
Teen Quest Afterschool program	Online information and services regarding Teen Quest afterschool pre-employment and leadership training program	Basic
Online Card Catalog	Online card catalogs available for public libraries	Advanced
Kettering University	Online information and services	Advanced
University of Michigan - Flint	Online information and services	Advanced
Mott Community College	Online information and services	Basic
Flint & Genesee Literacy Network	Online information regarding literacy across the county	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
Municipality websites	Local websites with online information and services for each township, city and village	Advanced
Genesee County Government website	Online information and services to support county residents and businesses	Advanced
Genesee County Community Action Resource Department	Online access to information and resources to help break the cycle of poverty in the county	Advanced
Next Generation 911 system	Presence of next generation 911 system	Advanced
Public Safety Network	Availability of ubiquitous, interoperable wireless public safety network	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
McLaren Health Care	Online health information and services	Advanced
Hurley Medical Center	Online health information and services	Advanced
Genesee Health System	Online health information and services	Advanced
Genesee County Health Department	Online health information and services	Advanced
Genesys Health System	Online health information and services	Advanced
Remote Patient Monitoring	Availability of remote patient monitoring by multiple providers	Advanced
Telemedicine	Availability of telemedicine by multiple providers	Advanced

Action Plan

Complete List of Genesee County Projects

Below is a more detailed description of the Priority Projects that the Genesee County Broadband Initiative proposes to undertake, followed by additional projects suggested by Connect Michigan and Connected Nation to accelerate broadband access, adoption, and use across the county.

Work with Local Municipalities (especially more rural townships) and Broadband Providers to Improve Broadband Access (Priority Project)

Goal

Improve the availability of effective and affordable broadband service in those areas of Genesee County that are currently underserved.

Project Description

While Genesee County overall enjoys a robust broadband infrastructure, some areas of the county struggle to get reasonable broadband service at an affordable price. To ensure that these areas are not overlooked and have access to the same benefits others have across the county, the team will identify which areas are affected and work with local or new broadband providers to develop solutions to those needs. It is expected that the current work being done through Kettering University and US Ignite will also contribute to this effort.

Benefits

1. Pervasive and productive access to broadband and its benefits for all Genesee County residents and businesses.
2. Develop and/or improve working relationships with broadband providers who service the county.

Action Items

1. Review broadband coverage maps and statistics from Connect Michigan to identify potential problem areas.
2. Solicit township supervisors and other leaders to gauge the need for improved broadband service.
3. Identify potential broadband providers for partnerships with local municipalities.
4. Conduct detailed broadband surveys in interested municipalities to better identify needs and support the business case for broadband service expansion.

Implementation Team
Genesee County Broadband Team, Township Supervisors / Municipal Leaders, Broadband Service Providers, Kettering University, US Ignite, Connect Michigan

Pursue Business and Community Development Opportunities by Marketing the Area's Significant Broadband Infrastructure (Priority Project)

Goal
Increase business and community development success by effectively leveraging the strength of Genesee County's broadband infrastructure to attract and encourage new investment and business growth throughout the area.

Project Description
Develop a broad-based marketing strategy and campaign to highlight the robust broadband infrastructure and internet connectivity available in Genesee County to attract new businesses, new residents and new/expanded investment opportunities. Being recognized as a Certified Connected Community provides Genesee County with the distinction of being one of the most well-connected and technology-rich counties in Michigan, offering a strong base for entrepreneurs and businesses of all sizes to leverage and grow.

Benefits
1. Attract entrepreneurs, businesses and residents to the area to foster future growth.
2. Encourage new investment opportunities where a high degree of connectivity and technology-based resources are critical to success.
3. Develop a greater sense of civic pride and confidence in recognizing and promoting the technology health of the community.

Action Items
1. Conduct a public announcement to highlight Genesee County's recognition as a Certified Connected Community by Connect Michigan and Connected Nation.
2. Develop an overall marketing strategy to include and leverage Genesee County's broadband infrastructure and related resources.
3. Develop and leverage marketing materials, press releases and other communications to support the marketing strategy and outreach for new development opportunities.
4. Partner with business development, community development and educational organizations, along with local broadband providers, to identify and promote area technology resources and plans that support and enhance the marketing strategy.

Implementation Team
Flint & Genesee Chamber of Commerce, Genesee County Planning Commission, Genesee County Broadband Team, City of Flint, Local Broadband Providers, Connect Michigan

Expand Community Literacy Programs to Include Digital Literacy Training (Priority Project)

Goal
Adopt and provide more Digital Literacy tools and offerings to support the twenty-first century needs of community residents and businesses.

Project Description
Genesee County and the City of Flint currently have a strong focus and supporting programs on increasing literacy levels of community residents, led primarily by the Flint & Genesee Literacy Network. Through the work in conducting the Community Broadband Assessment for Genesee County, it became apparent that the need for greater "digital literacy" resources and training would be of great benefit to the community. This would include additional training classes and seminars on computer-based technology and applications, increasing the awareness of the value of Internet access and use, and incremental publicly available facilities and computers to enable ready access to the Internet. This project is aimed at addressing these issues and improving the overall digital literacy levels of local residents and businesses.

Benefits
1. Improved skills and digital literacy of the local workforce.
2. Increased competitiveness of local residents for jobs and business opportunities.
3. Greater productivity of residents and businesses through the use of Internet-based information, services, and opportunities.
4. Easier and more convenient access to the Internet through public computing centers.
5. Support a more technology-friendly environment to attract new residents and businesses to the county.

Action Items
1. Communicate Community Broadband Assessment results to the Flint & Genesee Literacy network members.
2. Identify and evaluate available digital literacy offerings (e.g., DRIVE from Connected Nation) to supplement existing programs.
3. Assess potential for expanding existing public computing centers and adding others to support community needs.
4. Form partnerships with other organizations (e.g., Connect Michigan, others) to improve digital literacy offerings.

Implementation Team
Flint and Genesee Literacy Network, Flint Public Library, Genesee County District Library, Municipal Libraries, Connect Michigan

Assess the Need for Additional Public Computer Centers (Priority Project)

Goal
Provide sufficient publicly-available internet-connected computers to support the needs of Genesee County residents who may not have other access to internet services.

Project Description
This project would assess the current and expected demand for free public access to the internet in public facilities such as libraries, community centers, senior centers and related organizations and determine if more technology resources are required. The Community Broadband Assessment scorecard indicates that current resources may be constrained, as measured by the number of available computer hours compared to the population of low-income residents who would have the greatest need for this service.

Benefits
1. Establish a benchmark for understanding community demand for publicly-available broadband services.
2. Provide the evidence and detail for expanding public computing centers, should the assessment support this need.
3. Help identify existing and potentially new locations for implementing expanded public computer centers.

Action Items
1. Review results of the Community Broadband Assessment regarding public computer centers in Genesee County.
2. Identify current public computer center contacts for interviews.
3. Solicit input on current and anticipated public computer center demand in each center.
4. Explore potential locations for additional public computer centers/facilities to address community need.
5. Develop a plan to expand current public computer center capacity as needed.

Implementation Team
Genesee County Broadband Team, Genesee District Library, Flint Public Library, selected Community Centers and Senior Centers, University of Michigan-Flint, selected Social Services, and Support Organizations.

Form a Technology Consortium to Provide Shared Technology Services for Community Non-Profit Organizations (Priority Project)

Goal
Establish and manage a common source of technology services to support non-profits across the county.

Project Description
The Informational Technology Consortium is a capacity building collaboration within the Genesee County nonprofit community to bring a shared service model and also provide assistance for more efficiency. The consortium will assist non-profits to become more professionalized in the field of IT by providing services to agencies that need support.

Benefits
1. Provides a one-stop source for technology services to help nonprofits operate, improve efficiency, and reduce overall costs of technology services.
2. Develop a synergy between nonprofits to improve collaboration.

Action Items
1. Communicate and gain buy-in for the shared IT concept for local non-profits.
2. Identify and solicit needs from community non-profits.
3. Define an operational and financial model for shared IT services.
4. Identify and secure required service providers and products to build inventory.
5. Develop and execute a launch/transition plan.

Implementation Team
Flint & Genesee Chamber of Commerce, Shared Services Center, Habitat for Humanity, United Way of Genesee County, Community Non-Profit Representatives, Technology Services Providers

Establish an Entrepreneurial and Technology Hub to Support the Community (Priority Project)

Goal
Provide access to business support and technology-based programs and services in "one-stop" location. Become a catalyst for creation, innovation, inspiration, collaboration, and interaction between students, faculty, and business community. Provide flexible space for a variety of programs and services to support entrepreneurship, workforce development, and skills training.

Project Description
This project is intended to establish a facility ("The Center") in downtown Flint to support entrepreneurship, workforce development, skills training, and general community engagement. A feasibility study was completed early in 2015 by Kuntzsch Solutions under contract to the University of Michigan-Flint, to determine broad goals, assess services currently available, and to analyze relevant demographic and economic data to develop the study's conclusions. The draft study results were presented to UM-Flint faculty and staff for comment in May 2015.

Benefits
1. One-stop shop for technology and business support programs and services. Become a clearinghouse for entrepreneurship-related activities in the region.
2. Significantly improve effectiveness and availability of workforce development resources and programs to bridge the skills gap between current worker's skills and available jobs.
3. Address current and future demand for professional, technology, and business training and continuing education programs.
4. Improve the opportunities for students/residents to make connections with businesses.
5. Provide a cohesive start-up culture that fosters entrepreneurship, economic development, creativity and innovation.
6. Provide much needed co-working/incubator/conference/technology-supported workspace.

Action Items
1. Formalize the concept and overall vision for the Center. Assess and develop partnerships and organizational structure to support the Center.
2. Secure a location and necessary funding for build-out.
3. Develop and launch a promotion and marketing campaign to ensure immediate and long-term success.

Implementation Team
University of Michigan-Flint, Flint & Genesee Chamber of Commerce, Participating Organizations and Service Providers

Develop an Online Interactive Map of Community Resources (Priority Project)

Goal
Provide a publicly available online "interactive map" that enables residents, visitors, and organizations to identify and locate key community resources and facilities across the county.

Project Description

This project would expand existing county and community maps to include more interactive features and layers to enable identification of resources such as food pantries, public computing centers, homeless shelters, workforce development centers, etc.

Benefits

1. Easier identification and use of community support resources and facilities.
2. Increase the awareness of available resources to local residents.
3. Would drive a more accurate inventory of currently available resources across the county.
4. Would enable better identification of the need for additional resources and locations.

Action Items

1. Identify key resources and facilities to be mapped.
2. Engage GIS team to understand their current maps and capabilities.
3. Identify funding source (if needed) to expand current maps.
4. Develop enhanced community resource maps.
5. Communicate and promote the availability and value of these maps across the community.

Implementation Team

Genesee County GIS Organization, University of Michigan-Flint, Genesee County Broadband Team, Flint & Genesee Chamber of Commerce, Participating Social Services, and Support Organizations.

Additional Projects Suggested by Connect Michigan and Connected Nation

(Grouped by Category - Access, Adoption and Use)

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.

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.
4. 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

1. 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.

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#.

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 play point/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 Local Governments

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.

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

Step 3: 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.