



CONNECTEDSM
Community Engagement Program

ST. CLAIR COUNTY

TECHNOLOGY ACTION PLAN

PREPARED BY **CONNECT MICHIGAN**
AND THE
ST. CLAIR COUNTY BROADBAND COMMITTEE



MAY 23, 2013



ACCESS



ADOPTION



USE



TABLE OF CONTENTS

INTRODUCTION	3
BACKGROUND	3
METHODOLOGY.....	4
CONNECTED ASSESSMENT	5
ANALYSIS OF CONNECTED ASSESSMENT.....	5
ITEMIZED KEY FINDINGS	6
PRIORITY PROJECTS	8
COMPLETE LIST OF RECOMMENDED ACTIONS.....	8
DETAILED FINDINGS	11
CURRENT COMMUNITY TECHNOLOGY DEVELOPMENTS IN ST. CLAIR COUNTY	11
ST. CLAIR COUNTY ASSESSMENT FINDINGS	12
CONNECTED ASSESSMENT	16
ACTION PLAN	23
PRIORITY PROJECTS	23
RECOMMENDED ACTIONS.....	28
APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND	49
STATEWIDE INFRASTRUCTURE.....	49
BUSINESS AND RESIDENTIAL TECHNOLOGY ASSESSMENTS	51
APPENDIX 2: PARTNER AND SPONSORS	53
APPENDIX 3: THE NATIONAL BROADBAND PLAN	55
APPENDIX 4: WHAT IS CONNECTED?	56
APPENDIX 5: GLOSSARY OF TERMS	58

INTRODUCTION

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

Background

Today, technology plays a pivotal role in how businesses operate, the type of service consumers expect, how institutions provide services, and where consumers choose to live, work, and play. The success of a community has also become dependent on how broadly and deeply the community adopts technology resources – this includes access to reliable high-speed networks, digital literacy of residents, and the use of online resources locally for business, government, and leisure. As noted in the National Broadband Plan, broadband Internet is “a foundation for economic growth, job creation, global competitiveness and a better way of life.”¹

Despite the growing dependence on technology, as of 2012, 30% of Americans did not have a high-speed connection at home.² Connected Nation's studies also show that 17 million families with children do not have broadband at home – and 7.6 million of these children live in low-income households. In 2012, Connected Nation also surveyed 7,004 businesses in 9 states. Based on this data, Connected Nation estimates that at least 1.8 million businesses - 24% - in the United States do not utilize broadband technology today.³

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

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

2 *Consumer Broadband Adoption Trends*, Connected Nation, Inc., March 2013, <http://www.connectednation.org/survey-results/residential>

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

4 Connected Nation, parent company for Connect Michigan, is a national non-profit 501(c)(3) organization that expands access to and use of broadband Internet and the related technologies that are enabled when individuals and communities have the opportunity and desire to connect. Connected Nation works in multiple states to engage community stakeholders, state leaders, and technology providers to develop and implement technology

Methodology

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

1. Empower a community team leader (local champion) and create a community team composed of a diverse group of local residents from various sectors of the economy including education, government, healthcare, the private sector, and libraries.
2. Identify the community's technology assets, including local infrastructure, providers, facilities, websites, and innovative uses employed by institutions.
3. Complete the Connected Assessment, a measurement of the community's access, adoption, and use of broadband based on the recommendations of the National Broadband Plan.
4. 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.

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

CONNECTED ASSESSMENT

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

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

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

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

Analysis of Connected Assessment

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

- St. Clair County achieved a score of 103 points out of 120 for overall broadband and technology readiness which indicates that the community is exhibiting high success in technology access, adoption, and use, and has surpassed the score of 100 required for Connected certification.
- St. Clair County exceeded the 32 points in each focus area that are required for certification and has qualified for full certification.

Community Technology Scorecard Community Champion: Lori Eschenburg Community Advisor: Dan Manning			
FOCUS AREA	ASSESSMENT CRITERIA	COMMUNITY SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	8	10
	Broadband Speeds	5	5
	Broadband Competition	4	5
	Middle Mile Access	6	10
	Mobile Broadband Availability	10	10
	TOTAL ACCESS SCORE	33	40
ADOPTION	Digital Literacy	10	10
	Public Computer Centers	6	10
	Broadband Awareness	8	10
	Vulnerable Population Focus	8	10
	TOTAL ADOPTION SCORE	32	40
USE	Economic Opportunity	10	10
	Education	10	10
	Government	10	10
	Healthcare	8	10
	TOTAL USE SCORE	38	40
COMMUNITY ASSESSMENT SCORE		103	120

While these assessment results indicate that St. Clair County has made great strides and investments in technology, it is well recognized that there are several areas in the county that still need access to reliable broadband. This technology plan will provide some insight and recommendations that will help the community continue to improve and expand that access, and to further enhance broadband adoption and use across the county.

Itemized Key Findings

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

ACCESS

- 20 last-mile broadband providers currently provide service in St. Clair County:
 - 97.64% of households have access to 3 Mbps.
 - More than 80% of St. Clair County homes have access to 100 Mbps service.
 - 93.6% of St. Clair County households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from 1 provider in St. Clair County.
- 99.54% of St. Clair County households have access to mobile broadband.

ADOPTION

- 22 Digital Literacy Programs exist in the community resulting in an estimated 2,250 graduates over the past year.
- 17 Public Computer Centers (PCC) with a total of 185 computers are open to the public.
- 2 Broadband Awareness Campaigns are reaching 100% of St. Clair County.
- 5 organizations are working with vulnerable populations to support their access, adoption, and use of broadband.

USE

- At least 8 uses of broadband were identified in the area of economic opportunity including 2 advanced uses and 6 basic uses.
- At least 7 uses of broadband were identified in the area of education including 4 advanced uses and 3 basic uses.
- At least 7 uses of broadband were identified in the area of government including 4 advanced uses and 3 basic uses.
- At least 6 uses of broadband were identified in the area of healthcare including 2 advanced uses and 4 basic uses.

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

Technology Providers

- 20 broadband providers were identified in St. Clair County
- 7 web developers

Technology Facilities

- 17 public computing centers

Community Websites

- 2 Business-related websites (excluding private businesses)
- 2 Tourism-related websites
- 9 Education-related websites
- 1 Library-related website



- 38 Government-related websites
- 2 Healthcare-related websites

Priority Projects

This exercise has culminated in the outlining of projects to allow the community to continue its recognized excellence in technology and broadband planning across the community. Below are 6 priority projects, each describing a project plan with suggested steps. This is followed by a complete list of all recommended actions.

Identify, Map, and Validate Broadband Demand

Perform a Broadband Build-out Analysis in Unserved Areas

Complete a Vertical Assets Inventory

Develop Public-Private Partnerships to Deploy Broadband Service

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

Pursue Next Generation 911 Upgrades

Complete List of Recommended Actions

Below is a complete list of recommended actions. Detailed descriptions of each solution proposed by Connect Michigan can be found in the *Recommended Actions* section later in this report.

ACCESS

Broadband Availability

1. Deploy Educational WiMAX
2. Perform an Analysis of Local Policies and Ordinances
3. Perform a Broadband Build-out Analysis in Unserved Areas
4. Identify, Map, and Validate Broadband Demand

Broadband Speeds – No recommended actions.

Broadband Competition – No recommended actions.

Middle Mile Access

5. Develop Public-Private Partnerships to Deploy Broadband Service
6. Study and Possibly Reassess Major Telecom Purchase Contracts
7. Develop & Issue an RFP for Build-out

Mobile Broadband Availability

8. Complete a Vertical Assets Inventory

ADOPTION

Digital Literacy

9. Promote the Nationwide Connect2Compete Program

Public Computer Centers

10. Procure a Multipurpose Mobile Technology Center
11. Provide Incentives to Encourage Computer Purchases among Students
12. Establish a "Community Technology Academy"

Broadband Awareness

13. Facilitate a Technology Summit
14. Implement a Community-Based Technology Awareness Program

Vulnerable Population Focus

15. Initiate a Community Computer Refurbishment Program
16. Develop a Technology Mentorship Program

USE

Economic Opportunity

17. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses
18. Establish a "Digital Factory"

Education

19. Improve Education through Digital Learning
20. Connect all School Classrooms to the Internet

Government

21. Improve Online Business Services Offered by the Government
22. Pursue Next Generation 911 Upgrades



Healthcare

23. Promote Telemedicine in Remote Areas



DETAILED FINDINGS

Current Community Technology Developments in St. Clair County

During the assessment process, the community team identified projects that are currently in development or implementation. These projects are helping to enhance technology in St. Clair County. As a result of the St. Clair Broadband Team's efforts, Frontier Communications is now working with residents in Kenockee Township to design and deliver a fixed wireless solution to that underserved area. Also as a result of the St. Clair Broadband Team, Air Advantage is now working with representatives of Cottrellville Township government to deliver a fixed wireless solution for that part of the county. These are just a couple of examples of actions underway to address broadband access concerns in specific areas of the county, with more to follow as additional areas in need are defined.

The St. Clair County Library System is recognized for its extensive offerings and curriculum to support digital literacy while also providing access to technology for community residents and businesses.

Educational institutions, such as the Regional Educational Service Agency (RESA) and St. Clair County Community College (SC4) are demonstrating strong leadership in the deployment and effective use of broadband technology to support their curriculums while also providing helpful online services to students, parents, and administrators.

St. Clair County has developed an extensive and complex real-time public safety system called "Resilient" (Regional Interoperability Collaboration Network) that relies heavily on fast and reliable broadband technology. The Department of Homeland Security uses Resilient to monitor and coordinate emergency situations and potential threats coming in from across the Canadian border and throughout the county area.

St. Clair County is also participating in a pilot Small Business Technology Taskforce, sponsored by Connect Michigan and CEDAM (Community Economic Development Association of Michigan), to raise the awareness and use of broadband by local businesses. A planning workshop has been recently conducted to support this effort, resulting in a plan to engage with local small businesses to assess their needs and provide training and other resources to help them grow their businesses online.

St. Clair County Assessment Findings

Today, residents in St. Clair County (or sections of the community) are served by 20 broadband providers. Currently, broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream. According to Connect Michigan’s latest broadband mapping update, the following providers have a service footprint in the St. Clair County Community:

Broadband Providers	Technology Type	Website Reference
Agri-Valley Services, Inc.	Fixed Wireless	http://www.avci.net
Air Advantage, LLC	Fixed Wireless	http://www.airadvantage.net
AT&T Michigan	DSL	http://www.att.com
AT&T Mobility LLC	Mobile Wireless	http://www.wireless.att.com
Banyanol	Fixed Wireless	http://www.banyanol.net
Cavalier Telephone	DSL	http://www.cavtel.com/internet
Charter Communications, Inc.	Cable	http://www.charter.com
Comcast	Cable	http://www.comcast.com
Frontier North, Inc.	DSL	http://www.frontier.com
Hughes Network Systems, LLC	Satellite	http://www.hughesnet.com
Iserv	DSL	http://www.iserv.net
iWarp	Fixed Wireless	http://www.iwarp.net
MetroPCS Wireless, Inc.	Mobile Wireless	http://www.metropcs.com
SpeedConnect	Fixed Wireless	http://www.speedconnect.com
Sprint	Mobile Wireless	http://www.sprint.com
StarBand Communications	Satellite	http://www.starband.com
Thumb Cellular	Mobile Wireless	http://www.thumbcellular.com
T-Mobile	Mobile Wireless	http://www.t-mobile.com
Verizon Wireless	Mobile Wireless	http://www.verizonwireless.com
ViaSat, Inc.	Satellite	http://www.exede.com

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

Organization Name	Website	Website Category
Economic Development Alliance	http://www.edascc.com	Business
Blue Water Chamber of Commerce	http://www.bluewaterchamber.com	Business
Blue Water Area Convention and Visitors Bureau	http://www.bluewater.org	Tourism
Blueways of St. Clair Website	http://www.bluewaysofstclair.org/	Tourism



St. Clair County Community College	http://www.sc4.edu/	Education
St. Clair County Regional Education Service Agency (RESA)	http://www.sccresa.org/	Education
Algonac Community Schools	http://algonac.k12.mi.us/	Education
Capac Community Schools	http://www.capac.k12.mi.us/	Education
East China School District	http://www.ecsd.us/	Education
Marysville Public Schools	http://www.marysville.k12.mi.us/	Education
Memphis Community Schools	http://www.memphisk12.org/	Education
Port Huron Area School District	http://www.phasd.us/	Education
Yale Public Schools	http://www.yale.k12.mi.us/	Education
St. Clair County Library System	http://www.sccl.lib.mi.us/	Libraries
Berlin Township	http://www.berlintwpstclair.org/	Government
Burtchville Township	http://burtchville.org/	Government
Casco Township	http://www.cascostclair.org/	Government
Charter Township of East China	http://www.eastchinatownship.org/	Government
Charter Township of Fort Gratiot	http://fortgratiottwp.org/	Government
China Township	http://www.chinatownship.net/	Government
City of Algonac	http://algonac-mi.gov/	Government
City of Marysville	http://www.cityofmarysvillemi.com/	Government
City of Memphis	http://memphismi.com/	Government
City of Port Huron	http://www.porthuron.org/Default.aspx	Government
City of Richmond	http://www.cityofrichmond.net/	Government
City of St. Clair	http://www.cityofstclair.com/	Government
City of Yale	http://www.yalemi.us/	Government
Clay Township	http://www.claytownship.org/	Government
Clyde Township	http://www.clydetownship.net/	Government
Community Information System Website	http://www.cis.stclaircounty.org/default.asp	Government
Cottrellville Township	http://www.cottrellvilletwp.org/	Government
Emmett Township	http://emmetttownship-stclair.org/	Government
Equalization Public Records Search	http://publicdeeds.stclaircounty.org/search.aspx?cabinet=opr	Government
Grant Township	http://www.granttownship.com/	Government
Greenwood Township	http://www.greenwoodtownship.com/	Government
Ira Township	http://www.iratownship.org/	Government
Kenockee Township	http://kenockeetwp.com/	Government
Kimball Township	http://www.kimballtownship.org/	Government
Marine City	http://www.marinecity-mi.org/	Government
Mussey Township	http://www.musseytownship.org/	Government
Office of Emergency Management	http://www.bereadystclaircounty.org	Government

	g/main/home.aspx	
Port Huron Township	http://www.porthurontownship.org/Home.aspx	Government
Southeastern Michigan Council of Governments	http://www.semkog.org	Government
St. Clair County	http://www.stclaircounty.org/Main/Default.aspx	Government
St. Clair County Court Records Search	http://www.stclaircounty.org/DCS/search.aspx	Government
St. Clair County Crime Map	http://gis.stclaircounty.org/PublicSafety/CrimeMap.aspx	Government
St. Clair County MSU Extension	http://msue.stclaircounty.org/Default.aspx	Government
St. Clair County Parcel/GIS Viewer	http://gis.stclaircounty.org/Land/ParcelViewer.aspx	Government
St. Clair County Road Commission	http://www.sccrc-roads.org/	Government
St. Clair Township	http://www.twp.stclair.mi.us/	Government
Village of Capac	http://www.villageofcapac.com/	Government
Wales Township	http://www.walestownship.org/	Government
Port Huron Hospital	http://www.porthuronhospital.org	Healthcare
St. Joseph Mercy Hospital	http://www.mymercy.us/	Healthcare

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

Company Name	Website	Provider Type
MrWebShots	http://www.mrwebshots.com	Web Developer
Port Huron Computer Consulting	http://www.pohoconsulting.com	Web Developer
Unforgettable Web Designs	http://www.unforgettablewebdesigns.com	Web Developer
Prompt Internet Solutions	http://www.promptinternet.com/	Web Developer
GeoGraphixz Web Design	http://www.geografixz.com/	Web Developer
WRAMPD	http://www.wrapmd.com/	Web Developer
Affordable Reliable	http://www.AffordableReliable.com	Web Developer

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

Organization Name	Resource Type
Harsens Island Readers Cove	Public Computer Facility
Capac Public Library	Public Computer Facility
Yale Public Library	Public Computer Facility



Port Huron Public Library	Public Computer Facility
Algonac Public Library	Public Computer Facility
St. Clair Public Library	Public Computer Facility
Marine City Public Library	Public Computer Facility
Burtchville Public Library	Public Computer Facility
G. Lynn Campbell Public Library	Public Computer Facility
Ira Township Public Library	Public Computer Facility
Marysville Public Library	Public Computer Facility
Memphis Public Library	Public Computer Facility
Washington Life Senior Center	Public Computer Facility
Port Huron Senior Center	Public Computer Facility
Yale Senior Center	Public Computer Facility
Capac Senior Center	Public Computer Facility
Delhut Village Computer Lab	Public Computer Facility

Connected Assessment

Community Technology Scorecard			
Community Champion: Lori Eschenburg			
Community Advisor: Dan Manning			
FOCUS AREA	ASSESSMENT CRITERIA	COMMUNITY SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	8	10
	Broadband Speeds	5	5
	Broadband Competition	4	5
	Middle Mile Access	6	10
	Mobile Broadband Availability	10	10
	TOTAL ACCESS SCORE	33	40
ADOPTION	Digital Literacy	10	10
	Public Computer Centers	6	10
	Broadband Awareness	8	10
	Vulnerable Population Focus	8	10
	TOTAL ADOPTION SCORE	32	40
USE	Economic Opportunity	10	10
	Education	10	10
	Government	10	10
	Healthcare	8	10
	TOTAL USE SCORE	38	40
COMMUNITY ASSESSMENT SCORE		103	120



ACCESS Score Breakdown

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

- **According to the October 2012 data collected by Connect Michigan, 97.64% of St. Clair County residents had access to broadband speeds of 3 Mbps or greater.**

Broadband Speeds (5 out of 5 Points Possible) – is measured by analyzing the speed tiers available within a community. Connected Nation will analyze broadband data submitted through its broadband mapping program. Specifically, Connected Nation will break down the coverage by the highest speed tier with at least 75% of households covered. In communities that may have broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- **According to the October 2012 data collected by Connect Michigan, 80.67% of St. Clair County residents had access to broadband speeds of 100 Mbps.**

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

- **According to the October 2012 data collected by Connect Michigan, 93.6% of St. Clair County residents had access to two or more broadband providers.**

Middle Mile Access (6 out of 10 Points Possible) – is measured based on a community's availability to fiber. Three aspects of availability exist: proximity to middle mile points of presence (POPs), number of POPs available, and available bandwidth. Data was collected by the community in coordination with Connected Nation.

- **St. Clair County is served by 1 middle mile fiber provider.**

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

- **According to the October 2012 data collected by Connect Michigan, 99.54% of St. Clair County residents had access to mobile broadband service.**



ADOPTION Score Breakdown

Digital Literacy (10 out of 10 Points Possible) – is measured by first identifying all digital literacy programs in the community. Once the programs are determined, a calculation of program graduates will be made on a per capita basis. A digital literacy program includes any digital literacy course offered for free or at very low cost through a library, seniors center, community college, K-12 school, or other group serving the local community. A graduate is a person who has completed the curriculum offered by any organization within the community. The duration of individual courses may vary. A listing of identified digital literacy offerings is below.

Organization Name	Program Description	Number of Grads
St. Clair Public Libraries - Marine City	Intro to Computers	50
St. Clair Public Libraries	eBay I	20
St. Clair Public Libraries	eBay II	20
St. Clair County Libraries	Computer Basics - hardware	120
St. Clair County Libraries	Computer Basics - software	120
St. Clair County Libraries	World Wide Web I	200
St. Clair County Libraries	World Wide Web II	200
St. Clair County Libraries	Word Processing I	120
St. Clair County Libraries	Word Processing II	120
St. Clair County Libraries	Word Processing III	120
St. Clair Public Libraries	Email I	100
St. Clair Public Libraries	Email II	100
St. Clair Public Libraries	Excel I	80
St. Clair Public Libraries	Excel II	80
St. Clair Public Libraries	Ancestry I	100
St. Clair Public Libraries	Ancestry II	100
St. Clair Public Libraries	Powerpoint	80
St. Clair Public Libraries	Digital Photography I	100
St. Clair Public Libraries	Digital Photography II	100
St. Clair Public Libraries	Mail Merge I	100
St. Clair Public Libraries	Mail Merge II	100
St. Clair Public Libraries	File Management	120
Total Graduates		2,250

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

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
Marine City Library	60	13	780
Washington Life Center - Marine City	60	14	840
Algonac-Clay Library	60	27	1620
Memphis Public Library	48	6	288
Main County Library	64	30	1920
Burtchville Twp Library	48	5	240
Capac Library	48	10	480
G. Lynn Campbell Library	48	6	288
Ira Township Library	48	7	336
Yale Public Library	60	10	600
St. Clair Public Library	60	12	720
Marysville Public Library	60	15	900
Delhut Village Computer Lab	55	15	825
Community Mental Health	45	3	135
Port Huron Senior Center	81	8	648
Yale Senior Center	40	2	80
Capac Senior Center	40	2	80

Broadband Awareness (8 out of 10 Points Possible) – is measured based on the percentage of the population reached. All community broadband awareness programs are first identified, and then each program’s community reach is compiled and combined with other campaigns. A listing of broadband awareness programs in St. Clair County is below.

Organization Name	Campaign Description	Community Reach
Cottrellville Township	Broadband Awareness campaign	3%
Tech-Port	Business incubator - recipient of small business technology grant	10%
St. Clair County Library System	Newsletters promoting technology education	100%
RESA/school districts	Newsletters/e-mails promoting digital learning	100%

Vulnerable Population Focus (8 out of 10 Points Possible) – A community tallies each program or ability within the community to encourage technology adoption among vulnerable groups. Methods of focusing on vulnerable groups may vary, but explicitly encourage technology use among vulnerable groups. Example opportunities include offering online GED classes, English as a Second Language (ESL) classes, video-based applications for the deaf, homework assistance for students, and job-finding assistance. Communities receive points for each group on which they focus. Groups may vary by community, but include low-income, minority, senior, children, etc. A listing of programs focusing on vulnerable populations in St. Clair County is listed below.

Organization Name	Program Description	Vulnerable Group
Washington Life Center - Marine City	Computer training for seniors	Seniors
St. Clair County Library	LBPH - Descriptive Video Services	Blind, Handicapped
Delhut Village - public housing	Computer lab (15 computers) for access and training	Low-Income, Seniors
St. Clair County Intervention Academy	Internet access and online education for disadvantaged youth and adults	Troubled Youth
Community Enterprises of St. Clair County	Computer and Internet classes	Adults with Intellectual and Developmental Disabilities



USE Score Breakdown

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

Application Provider	Description	Basic / Advanced
St. Clair County Tourism	Land and water trails of St. Clair County - www.bluewaysofstclair.org	Basic
Blue Water Visitors & Convention Bureau	Tourism and convention promotional site - www.bluewater.org	Basic

St. Clair County EDA	Website of county economic development resources www.edascc.com	Basic
EDA Social Media presence	Active Facebook and Twitter profile	Basic
Business property search	Online search of available county business properties and buildings	Advanced
Michigan Works	Presence of program to provide virtual employment assistance programs and individualized job training	Advanced
Virtual Campus Tours	St. Clair County Community College - virtual tours	Basic
Economic Development Strategic Plan	Website that describes EDA strategic plan - http://www.sccedsp.com	Basic

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

Application Provider	Description	Basic/ Advanced
Online Card Catalog	Online search of book titles across county library system - http://www.sccl.lib.mi.us/FindBook.aspx	Basic
Wireless Access in All Libraries	All eleven libraries in the SCC Library system provide wireless Internet access	Basic
Connectivity Across All Schools	Schools in all seven school districts are connected via fiber for Internet access	Basic
Destiny automated school library system	Automated online access to libraries and school resources	Advanced
EduLog computerized transportation system	System for bus scheduling and school boundary planning	Advanced
Zangle student information system	Integrated system for student records, attendance, including parent access	Advanced
WebStudy online education	Online courses offered through St. Clair County Community College (SC4)	Advanced

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

Application Provider	Description	Basic/Advanced
St. Clair County government website	Online county government information and services - www.stclaircounty.org	Basic
St. Clair County Community Information System	Online county planning information - www.cis.stclaircounty.org	Basic
St. Clair County Parcel/GIS Viewer	Online view of land parcels and maps	Advanced
County Crime Map	Online map and locations of recent crimes - http://gis.stclaircounty.org/PublicSafety/CrimeMap.aspx	Advanced
County Court Records Search	Online access to court dockets and records - http://www.stclaircounty.org/DCS/search.aspx	Advanced
Emergency Preparedness	Access to emergency planning tips, info, alerts - http://www.bereadystclaircounty.org/main/home.aspx	Basic
Equalization Public Records Search	Online search of public records - http://publicdeeds.stclaircounty.org/search.aspx?cabinet=opr	Advanced

Healthcare (8 out of 10 Points Possible) – A community receives one point per basic use of broadband and two points per advanced use of broadband. Entities within healthcare can include, but are not limited to, hospitals, medical and dental clinics, health departments, nursing homes, assisted living facilities, and pharmacies. Identified uses of broadband in the area of healthcare are listed below and identified as basic or advanced.

Application Name	Description	Basic/Advanced
Physician's Search	Online search for local physicians - www.porthuronhospital.org/phy/page.asp	Basic
Health Risk Assessment	Online tools to assess personal health - www.porthuronhospital.org/oth/Page.asp?PageID=OTH001236	Advanced
Interactive Health Calculators	Online tools to calculate individualized health factors - www.porthuronhospital.org/stw/Page.asp?contentTypeID=41	Advanced
Animation of Test Procedures	Online videos of common health test procedures - http://www.porthuronhospital.org/stw/Page.asp?collectionID=1713	Basic
Online bill payments	Online payment of bills to St. Joseph Mercy Hospital	Basic
St. Joseph Mercy Hospital Social Media presence	Actively used Twitter and Facebook profiles	Basic

ACTION PLAN

Priority Projects

This exercise has culminated in the outlining of projects to allow the community to continue its recognized excellence in technology and broadband planning across the community. Below are 6 priority projects, each describing a project plan with suggested steps. This is followed by a complete list of all recommended actions.

1) Identify, Map, and Validate Broadband Demand

Project Description:

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

Goal:

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

Action Items:

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

Implementation Team:

To be determined.

2) Perform a Broadband Build-out Analysis in Unserved Areas

Project Description:

Conduct an onsite visual assessment of the defined geographic area seeking broadband coverage. The assessment determines the feasibility of deploying various Internet systems in a defined area. You should gather site-specific information required for (i) determining use of existing infrastructure, (ii) designing wired and wireless Internet systems using these assets, and (iii) expanding the broadband coverage in the defined area.

Wireless may be the best likely solution. To assist with that, you should conduct a visual assessment of the vertical assets (broadcast towers and water tanks) to determine the feasibility of deploying a fixed wireless broadband Internet system in the unserved community and to gather site-specific information required for that purpose.

Goal:

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

Action Items:

Conduct a wireless assessment to include:

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

Implementation Team:

To be determined.

3) Complete a Vertical Assets Inventory

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 condition, with reasonably easy access to electricity and wired telecommunications, and with a significant height relative to the surrounding area. “Vertical assets” are defined as structures on which wireless broadband equipment can be mounted and positioned to broadcast a signal over as much terrain as possible. These assets include structures such as cell towers, water tanks, grain silos, and multi-story buildings.

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

Goal:

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

Action Items:

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

Implementation Team

To be determined.

4) Develop Public-Private Partnerships to Deploy Broadband Service

Project Description:

Public-private partnerships take many forms, limited only by the imagination and legal framework in which the municipality operates. Some communities issue municipal bonds to fund construction of a network, which they lease to private carriers, with the lease payments covering the debt service. Others create non-profit organizations to develop networks in collaboration with private carriers or provide seed investment to jumpstart construction of networks that the private sector is unable to cost-justify on its own.

A public-private partnership should not be simply seen as a method of financing. The strength of these partnerships is that each party brings something important to the table that the other doesn't have or can't easily acquire. The community can offer infrastructure (publicly-owned building rooftops, light poles, towers, and other vertical assets for mounting infrastructure) for the deployment of the system, as well as committed anchor tenants. Private-sector partners bring network-building and operations experience.

Goal:

Fund broadband network deployment.

Action Items:

- Identify potential partners.
- Assess scope and potential projects to discuss as partnering opportunities.

- Develop a finance and ownership model to support partnership activities.

Implementation Team:

To be determined.

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

Project Description:

Technology adoption is an opportunity for local small businesses and microbusinesses to strengthen and grow by lowering costs, increasing revenue, reaching new markets, and improving communications. To help local entrepreneurs realize this potential, they need access to flexible and relevant education and training.

To accomplish this, the Michigan Rural Council (MRC), Connect Michigan (CM) and Microenterprise Network of Michigan (MNM) have partnered to provide technical assistance and support for the development of local Small Business Technology Taskforces. MRC and MNM are both projects of the Community Economic Development Association of Michigan (CEDAM). MRC, CM, and MNM selected St. Clair County to be one of four pilot communities to create a local Small Business Technology Taskforce. With experience working with Connect Michigan to develop a broadband plan, and a dedicated and action-oriented core leadership group, St. Clair County is poised to launch a successful Taskforce. A local, collaborative Taskforce in St. Clair County will provide customized education and training to meet technology needs, support healthy small businesses, and promote a vibrant local economy.

To kickstart the development of a Small Business Technology Taskforce, representatives of MRC, MNM, and CM facilitated a workshop to identify needs, brainstorm resources, and target next steps. More details on the results of that workshop are available, including more detailed action plans and a Small Business Technology toolkit full of additional resources and references.

Goal:

Improve local economy and the health of the community by enabling local small businesses to better leverage broadband and the internet to grow and prosper.

Action Items:

- Recruit and organize taskforce participants.
- Coordinate outreach and awareness efforts
- Collect data from small businesses.
- Create small business technology highlight video.
- Assess data and provide assistance.
- Report and share results.

Implementation Team:

Initial team established and being expanded.

6) Pursue Next Generation 911 Upgrades

Project Description:

The overall system architecture of Public Safety Answering Points (PSAPs) has essentially not changed since the first 911 call was made in 1968. These 911 systems are voice-only networks based on original wireline, analog, circuit-switched infrastructure that prevents easy transmission of data and critical sharing of information that can significantly enhance the decision-making ability, response, and quality of service provided to emergency callers. To meet growing public expectations of 911-system functionality (capable of voice, data, and video transmission from different types of communication devices), that framework should be replaced. This would require replacing analog phone systems with an Internet Protocol (IP)-based system. This system would provide an enabling platform for current technology, as well as future upgrades.

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

Goal:

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

Action Items:

- Assess the scope and impact of the FirstNet initiative to determine its applicability to the current 911 system in St. Clair County.
- Consider which components of next-generation 911 systems to pursue, including:
 - A public-safety-class, IP-based network
 - IP-based call processing equipment (CPE) in public-safety answering points (PSAPs)
 - Geographic information system (GIS) data enhancements
 - Advanced 911 data capabilities and applications

Implementation Team:

To be determined.

Recommended Actions

ACCESS: Recommended Actions

Broadband Availability

1. Deploy Educational WiMAX

Deploy WiMAX to the community and provide students with WiMAX-enabled laptops to ensure equal access for all students regardless of socioeconomic status. WiMAX is primarily a wireless and highly cost effective means of extending the school district's intranet-based content and applications to the student body beyond the school campus and outside of school hours equating to anytime, anywhere instruction.

WiMAX is an IP-based, wireless broadband access technology that provides performance similar to Wi-Fi networks, but with the coverage and quality of service of cellular networks. WiMAX can provide broadband wireless access (BWA) up to 30 miles (50 km) for fixed stations, and 3 - 10 miles (5 - 15 km) for mobile stations. Developing a WiMAX network should be done in partnership with providers, technology organizations, and local government.

Community-wide WiMAX networks require significant infrastructure, including: towers (number and placement determined by a site survey conducted by the installation company); antennas; WiMAX transmitters and receivers; management server; Internet backhaul; and power. A one-to-one laptop and WiMAX program would include network and hardware maintenance costs. WiMAX infrastructure is a capital expense that can be amortized over many years. The typical infrastructure costs [\\$5-20 per student per month, over a five-year period](#), depending on factors such as population density, terrain, and the size of the area to be covered.

Goal:

Extend school district's intranet-based content and ensure equal access to home Internet.

Benefits:

- Affordable. WiMAX is cheaper than DSL, Cable, Fiber to the Home, and 3G wireless. This low cost per home passes brings it into the realm of possibilities for a school district to build its own private access network independent of commercial operators.
- Empowers all students to access online educational material after school hours so that digital content is not restricted to school or library computer labs for low-income students who cannot afford laptops or internet access at home.

- Provides equal hardware and Internet access to all students.
- Supports curriculum updates and increased push for STEM education.

Action Items:

- Develop partnership with area providers, technology and education organizations, local government, and school district.
- Assess infrastructure needs.
- Contact local or national WiMAX service and equipment providers.

2. Perform an Analysis of Local Policies and Ordinances

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

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

Goal:

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

Benefits:

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

Action Items:

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

3. Perform a Broadband Build-out Analysis in Unserved Areas

Conduct an onsite visual assessment of the defined geographic area seeking broadband coverage. The assessment determines the feasibility of deploying various Internet systems in a defined area. You should gather site specific information required for (i) determining use of existing infrastructure, (ii) designing wired and wireless Internet system using these assets, and (iii) expanding the broadband coverage in the defined area.

Wireless may be the best likely solution. To assist with that, you should conduct a visual assessment of the vertical assets (broadcast towers and water tanks) to determine the feasibility of deploying a fixed wireless broadband Internet system in the unserved community and to gather site-specific information required for that purpose.

Goal:

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

Benefits:

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

Action Items:

Conduct a wireless assessment to include:

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

4. Identify, Map, and Validate Broadband Demand

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

Goal:

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

Benefits:

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

Action Items:

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

Broadband Speeds

No recommended actions.

Broadband Competition

No recommended actions.

Middle Mile Access

5. Develop Public-Private Partnerships to Deploy Broadband Service

Public-private partnerships take many forms, limited only by the imagination and legal framework in which the municipality operates. Some communities issue municipal bonds to fund construction of a network, which they lease to private carriers, with the lease payments covering the debt service. Others create non-profit organizations to develop networks in collaboration with private carriers or provide seed investment to jumpstart construction of networks that the private sector is unable to cost-justify on its own.

A public-private partnership should not be simply seen as a method of financing. The strength of these partnerships is that each party brings something important to the table that the other doesn't have or can't easily acquire. The community can offer infrastructure (publicly-owned building rooftops, light poles, towers, and other vertical assets for mounting infrastructure) for the deployment of the system, as well as committed anchor tenants. Private-sector partners bring network-building and operations experience.

Goal:

Fund broadband network deployment

Benefits:

- The public sector transfers much of the risk for private investment. For example, the public sector has many funding tools available, including incentivizing continued investment through tax credits, encouraging greater availability of private capital

through government guaranteed loans, or government being a direct source of capital through loans or grants.

- The partnership can aggregate demand and reduce barriers to deployment. By working together, public and private parties can educate and build awareness needed for the public to better integrate the use of broadband into their lives, thereby improving the business case for broadband deployment.
- A good partnership concentrates investment on non-duplicative networks and aims to ensure that all residents have access to adequate broadband service.

Action Items:

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

6. Study and Possibly Reassess Major Telecom Purchase Contracts

Demand for broadband capacity across community institutions represents a key segment of the overall demand for broadband in many communities. The purchasing power of this collective should be leveraged to help promote greater competition in the broadband market and drive increased investment in backhaul and last mile broadband capacity.

Goal:

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

Benefits:

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

Action Items:

- Develop partnerships between local high-capacity demand institutions, including local civic leaders, government entities, public safety agencies, libraries, hospital or clinics, and schools, in a coordinated effort to aggregate local demand needs for increased broadband capacity and service.

7. Develop & Issue an RFP for Build-out

An RFP (request for proposals) is a widely used technique for establishing a selection of qualified responses for which to choose when contracting for services. The RFP should provide a guidance and due diligence framework for interested broadband providers and vendors. Furthermore, the RFP should request that interested parties provide plans for cost-effective

community broadband networks, including equipment lists, locations, and itemized engineering cost estimates. In addition, the completed design should also include what technology will be needed at customer premises, the performance that can be expected, and recurring costs associated with operating and maintaining the system once it is in place.

Goal:

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

Benefits:

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

Action Items:

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

Mobile Broadband Availability

8. Complete a Vertical Assets Inventory

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

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

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

Goal:

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

Benefits:

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

Action Items:

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

ADOPTION: RECOMMENDED ACTIONS

Digital Literacy

9. Promote the Nationwide Connect2Compete Program

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

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

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

- Multiple cable providers will offer discounted Internet service at \$9.95

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

Eligibility:

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

Goal:

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

Public Computer Access

10. Procure a Multipurpose Mobile Technology Center

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

Examples of existing mobile technology centers include:

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

Goal:

Provide unserved and underserved residents with computer and Internet access.

Benefits:

- Improves digital literacy skills of community.
- Provides outreach and awareness.
- Provides opportunity for residents to participate in community's technology-planning process.

Action items:

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

11. Provide Incentives to Encourage Computer Purchases among Students

Develop a program that will enable students to obtain computers. Programs could include refurbished computers or new laptops or tablets.

Consider a group purchasing program, which would allow:

1. Special discount pricing
2. Warranty availability
3. Wired and wireless usage throughout school and home
4. On campus access to tech support
5. Loaner computer access while devices are being repaired

Goal:

Provide equal access to computers and enable digital learning.

Benefits:

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

Action Items:

- Research grants and private funding opportunities.

- Assess whether developing a leasing or purchasing program is more appropriate for your school.

12. Establish a "Community Technology Academy"

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

Goal:

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

Benefits:

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

Action Items:

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

Broadband Awareness

13. Facilitate a Technology Summit

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

Goal:

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

Benefits:

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

Action Items:

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

14. Implement a Community-Based Technology Awareness Program

Conduct an extensive advertising campaign to raise awareness about the benefits of broadband and related technology. Develop a strategy to help the community become more aware of the benefits associated with Internet and computers adoption in their daily lives and activities. Methods of delivery include, but are not limited, to classroom style awareness sessions, press conferences led by community leaders, having a speaker at a community event, posting community posters, handouts, and public service announcements.

Additionally, the campaign should specifically target technology non-adopters. By using established media, the campaign reaches non-adopters where they are. Public radio, broadcast and cable TV, utility bill stuffers, and print newspapers have been utilized to reach households of many types. The public awareness campaign should focus on helping residents, particularly those from underserved communities, understand the personal value they can derive from an investment in information technology.

There are also opportunities to leverage existing resources to expand and enhance workforce training programs, encourage more post-secondary education, and create additional awareness within the community in regards to global resources. It is important to support the outcomes of awareness training with the development of technology training programs that will then teach community members how to use the technology.

Goal:

Organize, promote, and deliver a technology awareness program that would increase utilization of technology resources in the community.

Benefits:

- Success is achieved when a community experiences increased usage of computers and the Internet, improved basic computer skills, increased use of technology in day-to-day operations of a community, and increased access to economic opportunities.

Action Items:

- Determine the type of public awareness campaign that is appropriate for your community. Connect Ohio's statewide Every Citizen Online public awareness campaign provides an excellent case study of a professionally developed campaign: <http://connectohio.org/public-awareness-campaigns>
- Create a centralized technology portal/website which promotes local technology resources for use by residents. Resources would include calendars (promoting local tech events and showing available hours at public computing centers), online training resources, and local computer resources.

Vulnerable Population Focus

15. Initiate a Community Computer Refurbishment Program

The first step in establishing computer refurbishing is recruiting community members to sanitize old computers and install new software. There are several target groups for performing refurbishments: community volunteers, high school and college students, and prison inmates. Community computer refurbishing provides an opportunity for volunteers and students to gain valuable new skills and training that can be used for career enhancement, and in some cases earn credits for school or college, while reinvesting in their communities. Communities also have the option of using prison inmates to refurbish computers so that they leave prison with some valuable job skills.

There are also established residential recycling programs that your community can take advantage of. For example, [Dell's Reconnect program](#) is a residential computer recycling program that offers a convenient way to recycle your used computer equipment. You can drop off any brand of used equipment at participating Goodwill donation centers in your area. It's free, and participants receive a receipt for tax purposes. To view a full list of acceptable products and locations, visit the [Dell Reconnect](#) website.

Computer recycling is also good for the environment. Explore these additional resources for computer recycling and refurbishment.

- [Earth 911](#)
Earth 911 is a comprehensive communication medium for the environment. Earth 911 has taken environmental hotlines, websites, and other information sources nationwide,

and consolidated them into one network. Once you contact the Earth 911 network, you will find community-specific information on e-Cycling and much more.

- [Electronic Industries Alliance's Consumer Education Initiative](#)

The Electronic Industries Alliance's e-Cycling Central website helps you find reuse, recycling, and donation programs for electronics products in your state.

Goal:

Initiate a computer refurbishment program designed to help recycle computers donated by local businesses, government, schools and other organizations, and then distribute them to low-income households and other households who face affordability barriers to computer ownership.

16. Develop a Technology Mentorship Program

Develop a program designed to recruit local high school or college students who excel in school and exhibit advanced leadership and technology skills to assist in technology training, technical support, and outreach efforts in their communities. Recognizing students as a powerful resource for local outreach efforts, the program will challenge them to extend their technology experiences beyond the classroom. The program essentially taps into a technology knowledge base that exists through these exceptional students. Students will be required to develop programs such as training seniors to use computers, initiating a computer refurbishing program, offering basic computer training for local communities, building websites, etc.

Goal:

Utilize student technology knowledge to implement community programs.

Benefits:

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

USE: RECOMMENDED ACTIONS

Economic Opportunity

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

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

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

Additional training might include:

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

Goal:

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

Benefits:

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

customers, suppliers, and new markets. According to [Connected Nation's 2012 Jobs and Broadband Report](#), businesses that are using the Internet bring in approximately \$300,000 more in median annual revenues than their unconnected counterparts.

Action Items:

- Identify federally or state sponsored business support programs (e.g. Chamber of Commerce, SBA, EDA, Agriculture, or Manufacturing extension) that include assistance with broadband or IT content.
- Identify or develop a business awareness and training program.
- Identify or develop online training modules for businesses. For example, the Southern Rural Development Center, in partnership with 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. For more information, visit http://srdc.msstate.edu/ebeat/small_business.html#.

18. Establish a "Digital Factory"

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

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

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

Goal:

Connect IT training and education with remote employment opportunities.

Benefits:

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

Action Items:

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

Education

19. Improve Education through Digital Learning

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

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

Goal:

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

Benefits:

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

20. Connect all School Classrooms to the Internet

A K-12 broadband network should provide adequate performance and reach, including abundant wireless coverage in and out of school buildings. “Adequate” means enough bandwidth to support simultaneous use by all students and educators anywhere in the building and the surrounding campus to routinely use the Web, multimedia, and collaboration software. To reach the goal of sufficient broadband access for enhanced K-12 teaching and learning and improved school operations, the [State Educational Technology Directors Association](#) (SETDA) recommends that broadband speeds in schools should equate to a [minimum of 100 Kbps per student/staff](#). However, given that bandwidth availability determines which online content, applications, and functionality students and educators will be able to use effectively in the classroom, additional bandwidth will be required in many, if not most, K-12 districts in the coming years.

In order to evolve with technology, school districts must continue to update local educational policies and curriculum, assess their broadband and classroom technology needs, evaluate the professional development requirements of teachers, and provide tech support.

Goal:

Facilitate the connection of all classrooms to broadband Internet so that teachers and students can take advantage of global educational resources.

Benefits:

- Students can actively utilize school computers to access rich, multimedia-enhanced educational content and the Internet.
- Students can post their content (including audio and video podcasts) to school learning management systems, access their e-textbooks and get their assignments online, and collaborate daily across the network with other students via wikis and other Internet-based applications.
- Teachers can videoconference or download streaming media to classrooms and take their students on virtual field trips to interact with subject area experts.
- School systems can utilize online courses.
- Teachers can actively participate in online professional learning communities to share lessons and to participate in professional development.

Action Items:

- Assess current and future bandwidth needs.
- Utilize E-Rate funding. [E-Rate](#) is the commonly used name for the Schools and Libraries Program of the [Universal Service Fund](#), which is administered by the [Universal Service Administrative Company](#) (USAC) under the direction of the [Federal Communications Commission](#) (FCC). The program provides discounts to assist most schools and libraries to obtain affordable telecommunications and Internet access. Funding is requested under four categories of service: telecommunications services, Internet access, internal connections, and basic maintenance of internal connections. Discounts for support depend on the level of poverty and the urban/rural status of the population served and range from 20% to 90% of the costs of eligible services. Eligible schools, school districts and libraries may apply individually or as part of a consortium.
- If broadband capacity is lacking at the local level, seek partnerships with other local high-capacity demand institutions, including local civic leaders, government entities, public safety agencies, libraries, hospital or clinics, in a coordinated effort to aggregate local demand needs for increased broadband capacity and service. By aggregating demand within a local community, these institutions will be able to demonstrate to interested broadband providers existing pent-up demand and help justify private investments to bring greater capacity backhaul service to that community. That increased backhaul capacity can in turn benefit the whole community.

Government

21. Improve Online Business Services Offered by the Government

Developing more e-Government applications not only provides value to businesses, but also allows the government to realize cost savings and achieve greater efficiency and effectiveness.

Examples of activities include paying for permits and licensing, paying taxes, providing services to the government and other operations.

Goal:

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

Benefits:

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

Action Items:

- The first step in the process of providing e-government services to constituents is developing a functional web portal that allows businesses to have access to resources easily. Such a portal can enable outside businesses looking for new opportunities to make informed decisions about working in a certain community.
- In addition, often overlooked in e-Government deployment are the issues of audiences and needs. Local governments must determine who will visit the website and what sort of information and services they will typically seek. A first step toward meeting general needs of constituents is to provide online access to as broad a swath of governmental information and data as is possible.

The sort of information that should be included is:

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

22. Pursue Next Generation 911 Upgrades

The overall system architecture of Public Safety Answering Points (PSAPs) has essentially not changed since the first 911 call was made in 1968. These 911 systems are voice-only networks

based on original wireline, analog, circuit-switched infrastructure that prevents easy transmission of data and critical sharing of information that can significantly enhance the decision-making ability, response, and quality of service provided to emergency callers. To meet growing public expectations of 911-system functionality (capable of voice, data, and video transmission from different types of communication devices), that framework should be replaced. This would require replacing analog phone systems with an Internet Protocol (IP)-based system. This system would provide an enabling platform for current technology, as well as future upgrades.

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

Goal:

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

Benefits:

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

By capitalizing on advances in technologies, you are enabling:

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

Action Items:

If you're involved in PSAP decision making and are faced with replacing aging systems or purchasing new technology for the very first time, you need to consider what your most immediate requirements are and where you need to be 10 years from now. Your community can take a measured and practical approach that spreads the operational impact and costs of a Next Generation 911 transition over time. Your local agency should choose a starting point that

makes the most sense and provides immediate benefits for their PSAP, responders, and communities they serve. For example, according to [Intrado, Inc.](#), a provider of 911 and emergency communications infrastructure to over 3,000 public safety agencies, local public-safety agencies can implement any of the following next-generation 911 components today, and provide immediate benefits with little to no disruption of current operations:

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

Healthcare

23. Promote Telemedicine in Remote Areas

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

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

Goal:

Deliver improved healthcare services to rural residents.

APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND

Statewide Infrastructure

As part of the Michigan State Broadband Initiative (SBI), and in partnership and at the direction of the Michigan Public Service Commission (MPSC) Connect Michigan produced an inaugural map of broadband availability in spring 2010. The key goal of the map was to highlight communities and households that remain unserved or underserved by broadband service; this information was essential to estimating the broadband availability gap in the state and understanding the scope and scale of challenges in providing universal broadband service to all citizens across the state. Since the initial map’s release, Connect Michigan has collected and released new data every six months, with updates in October and April annually.

The most current statewide and county-specific broadband inventory maps released in the fall of 2012 depict a geographic representation of provider-based broadband data represented by cable, DSL, fiber-to-the-home, fixed wireless, and mobile wireless services. These maps also incorporate data such as political boundaries and major transportation networks in the state. Statewide maps can be found at <http://www.connectmi.org/mapping/state>. And the county maps can be found at http://www.connectmi.org/community_profile/find_your_county/michigan/st-clair.

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

SBI Download Speed Tiers	Unserved Households ('000)	Served Households ('000)	Percent Households by Speed Tier
At Least 768 Kbps/200 Kbps	50	3,823	98.71
At Least 1.5 Mbps/200 Kbps	63	3,810	98.38
At Least 3 Mbps/768 Kbps	137	3,735	96.45
At Least 6 Mbps/1.5 Mbps	319	3,554	91.77
At Least 10 Mbps/1.5 Mbps	342	3,530	91.16
At Least 25 Mbps/1.5 Mbps	534	3,339	86.22
At Least 50 Mbps/1.5 mbps	652	3,220	83.15
At Least 100 Mbps/1.5 Mbps	654	3,219	83.12
At Least 1 Gbps/1.5 Mbps	3,873	0	0

Source: Connect Michigan, November 2012

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband

service inventory (excluding mobile and satellite service) across the state of Michigan; it presents the number and percentage of unserved and served households by speed tiers. The total number of households in Michigan, based on the 2010 Census, is 3,872,508, for a total population of 9,883,640 people. Table 1 indicates that 98.71% of households are able to connect to basic broadband at speeds of at least 768 Kbps download/200 Kbps upload. This implies that the number of households originally estimated by Connect Michigan to be unserved has dropped from 121,701 households in the fall of 2010 to 49,916 households in the fall of 2012. Further, approximately 96.45% of households across Michigan have broadband available of at least 3 Mbps download/768 Kbps upload speeds. The percentage of Michigan households having fixed broadband access available of at least 6 Mbps download/1.5 Mbps upload speeds is estimated at 91.77%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.91% of Michigan households have broadband available from at least one provider at speeds of 768 Kbps download/200 Kbps upload or higher. This leaves 3,652 households in the state completely unserved by any form of terrestrial broadband (including mobile, but excluding satellite services).

As differences in broadband availability estimates between the fall of 2010 and the fall of 2012 show, additional participating broadband providers can have a large impact upon Michigan broadband mapping inventory updates. Further, the measured broadband inventory provides an estimate of the true extent of broadband coverage across the state. There is a degree of measurement error inherent in this exercise, which should be taken into consideration when analyzing the data. This measurement error will decrease as local, state, and federal stakeholders identify areas where the displayed coverage is underestimated or overestimated. Connect Michigan welcomes such feedback to be analyzed in collaboration with broadband providers to correct errors identified in the maps.

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

Interactive Map

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

city, county, or state. My ConnectView™ is available at <http://www.connectmi.org/interactive-map>.

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

Business and Residential Technology Assessments

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

Through Connect Michigan's research, many insights are able to be collected. The 2012 Residential Technology Assessment revealed the following key findings:

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

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

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



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

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

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

APPENDIX 2: PARTNER AND SPONSORS

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

Michigan Public Service Commission (MPSC) is the lead Michigan agency for the State Broadband Initiative that is responsible for working with Connect Michigan, overseeing the Michigan initiative, and providing direction of the project. The MPSC facilitates interactions with other state government entities, broadband providers, and other Michigan stakeholders. It views promoting Connect Michigan activities as complementary to its mission to “grow Michigan's economy and enhance the quality of life of its communities by assuring safe and reliable energy, telecommunications, and transportation services at reasonable rates.”
<http://www.michigan.gov/mpsc>

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

The **National Telecommunications and Information Administration (NTIA)** is an agency of the United States Department of Commerce that is serving as the lead agency in running the State Broadband Initiative (SBI). Launched in 2009, the NTIA’s State Broadband Initiative (SBI)

implements the joint purposes of the Recovery Act and the Broadband Data Improvement Act, which envisioned a comprehensive program, led by state entities or non-profit organizations working at their direction, to facilitate the integration of broadband and information technology into state and local economies. Economic development, energy efficiency, and advances in education and healthcare rely not only on broadband infrastructure, but also on the knowledge and tools to leverage that infrastructure.

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

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

APPENDIX 3: THE NATIONAL BROADBAND PLAN

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

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

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

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

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

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

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

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

To learn more, visit: www.broadband.gov

APPENDIX 4: WHAT IS CONNECTED?

The goal of Connect Michigan’s Connected program is to certify that each community that participates in the program has, in some relevant manner, addressed their community’s need for improved Access, Adoption, and Use of technology by assessing community technological resources, identifying gaps, and working to fill those gaps:

- **ACCESS** – Is Broadband infrastructure available to all residents?
- **ADOPTION** – Do residents use the technologies?
- **USE** – Are residents using technology to improve their quality of life?

Connected Certification Process



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

Step 1: Create a community technology team. Facilitate kickoff meetings and program orientation with regional leaders and community champions. Provide them with tools and resources to form a community team. This team will be represented by local leaders from key community sectors, including:

- Broadband Provider Community
- Government: General, Public Safety, Energy and Environment
- Economic Opportunity: Economic Development, Business Development, Tourism
- Agriculture
- Education: K-12, Higher Education
- Libraries
- Healthcare

Step 2: Perform a technology assessment. With support provided by a planning specialist, Connect Michigan will provide communities with tools (electronic or print depending on the community needs) to benchmark local community technology. Bolstered by benchmarking data that had been gathered through Connect Michigan’s mapping and market research, the St. Clair County Broadband Committee will work with community members to determine their overall broadband and technology grade on a 13-point “community certification AAU” model:

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

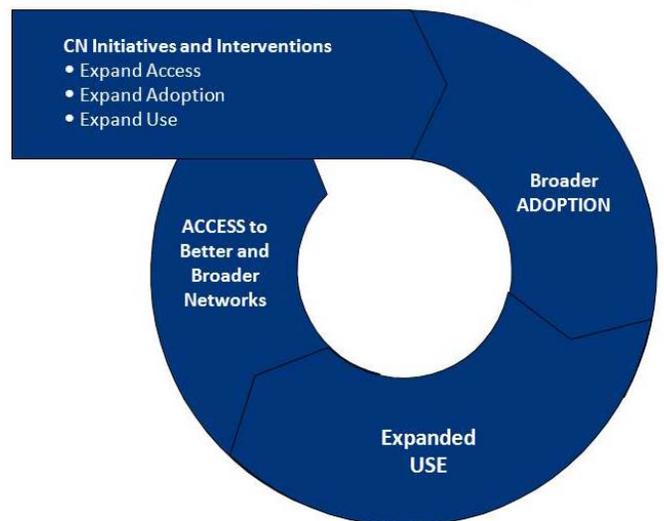
Step 3: Action Planning & Implementation.

Following Community Assessments, the data is analyzed, gaps will be determined, and recommended actions to help to fill gaps will be identified. After successful execution of projects the community will be certified as a Connected Community.

Step 4: Project Success and Expanded Local Empowerment.

Once a community is certified, the community will have an avenue to discuss its success and pursue opportunities as a recognized, technologically advanced community.

Broadband Catalysts for Change



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 implementations include LTE, WiMax, and others. Maximum speeds may reach 100 Mbps, with typical speeds over 10 Mbps.

A

ARRA - American Recovery and Reinvestment Act.

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

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

B

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

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

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

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

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

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

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

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

C

Cable Modem - A modem that allows a user to connect a computer to the local cable system to transmit data rather than video. It allows broadband services at speeds of five Mbps or higher.

CAP - Competitive Access Provider - (or “Bypass Carrier”) A company that provides network links between the customer and the Inter-Exchange Carrier or even directly to the Internet Service Provider. CAPs operate private networks independent of Local Exchange Carriers.

Cellular - A mobile communications system that uses a combination of radio transmission and conventional telephone switching to permit telephone communications to and from mobile users within a specified area.

CLEC - Competitive Local Exchange Carrier - Wireline service provider that is authorized under state and federal rules to compete with ILECs to provide local telephone and Internet service. CLECs provide telephone services in one of three ways or a combination thereof: a) by building or rebuilding telecommunications facilities of their own, b) by leasing capacity from another local telephone company (typically an ILEC) and reselling it, or c) by leasing discreet parts of the ILEC network referred to as UNEs.

CMTS - Cable Modem Termination System - A component (usually located at the local office or head end of a cable system) that exchanges digital signals with cable modems on a cable network, allowing for broadband use of the cable system.

CO - Central Office - A circuit switch where the phone and DSL lines in a geographical area come together, usually housed in a small building.

Coaxial Cable - A type of cable that can carry large amounts of bandwidth over long distances. Cable TV and cable modem broadband service both utilize this technology.

Community Anchor Institutions (CAI) - Institutions that are based in a community and larger user of broadband. Examples include schools, libraries, healthcare facilities, and government institutions.

CWDM - Coarse Wavelength Division Multiplexing - Multiplexing (more commonly referred to as WDM) with less than 8 active wavelengths per fiber.

D

Dial-Up - A technology that provides customers with access to the Internet over an existing telephone line. Dial-up is much slower than broadband.

DLEC - Data Local Exchange Carrier - DLECs deliver high-speed access to the Internet, not voice. DLECs include Covad, Northpoint, and Rhythms.

Downstream - Data flowing from the Internet to a computer (surfing the net, getting e-mail, downloading a file).

DSL - Digital Subscriber Line - The use of a copper telephone line to deliver “always on” broadband Internet service.

DSLAM - Digital Subscriber Line Access Multiplier - A piece of technology installed at a telephone company's CO that connects the carrier to the subscriber loop (and ultimately the customer's PC).

DWDM - Dense Wavelength Division Multiplexing - A SONET term which is the means of increasing the capacity of Sonet fiber-optic transmission systems.

E

E-rate - A federal program that provides subsidy for voice and data lines to qualified schools, hospitals, Community-Based Organization (CBOs), and other qualified institutions. The subsidy is based on a percentage designated by the FCC.

Ethernet - A local area network (LAN) standard developed for the exchange data with a single network. It allows for speeds from 10 Mbps to 10 Gbps.

EON - Ethernet Optical Network - The use of Ethernet LAN packets running over a fiber network.

EvDO - Evolution Data Only - A new wireless technology that provides data connections that are 10 times faster than a regular modem.

F

FCC - Federal Communications Commission - A federal regulatory agency that is responsible for, among other things, regulating VoIP.

Fixed Wireless Broadband - The operation of wireless devices or systems for broadband use at fixed locations such as homes or offices.

Franchise Agreement - An agreement between a cable provider and a government entity that grants the provider the right to serve cable and broadband services to a particular area - typically a city, county, or state.

FTTH - Fiber To The Home - Another name for fiber to the premises, where fiber optic cable is pulled directly to an individual's residence or building allowing for extremely high broadband speeds.

FTTN - Fiber To The Neighborhood - A hybrid network architecture involving optical fiber from the carrier network, terminating in a neighborhood cabinet that converts the signal from optical to electrical.

FTTP - Fiber To The Premise (Or FTTB – Fiber To The Building) - A fiber optic system that connects directly from the carrier network to the user premises.

G

Gbps - Gigabits per second - 1,000,000,000 bits per second or 1,000 Mbps. A measure of how fast data can be transmitted.

GPON - Gigabyte-Capable Passive Optical Network - Uses a different, faster approach (up to 2.5 Gbps in current products) than BPON.

GPS - Global Positioning System - A system using satellite technology that allows an equipped user to know exactly where he is anywhere on earth.

GSM - Global System for Mobile Communications - This is the current radio/telephone standard in Europe and many other countries except Japan and the United States.

H

HFC - Hybrid Fiber Coaxial Network - An outside plant distribution cabling concept employing both fiber optic and coaxial cable.

Hotspot - See *Wireless Hotspot*.

I

IEEE - Institute of Electrical and Electronics Engineers (pronounced “Eye-triple-E.”).

ILEC - Incumbent Local Exchange Carrier - The traditional wireline telephone service providers within defined geographic areas. They typically provide broadband Internet service via DSL technology in their area. Prior to 1996, ILECs operated as monopolies having the exclusive right and responsibility for providing local and local toll telephone service within LATAs.

IP-VPN - Internet Protocol - Virtual Private Network - A software-defined network offering the appearance, functionality, and usefulness of a dedicated private network.

ISDN - Integrated Services Digital Network - An alternative method to simultaneously carry voice, data, and other traffic, using the switched telephone network.

ISP - Internet Service Provider - A company providing Internet access to consumers and businesses, acting as a bridge between customer (end-user) and infrastructure owners for dial-up, cable modem, and DSL services.

K

Kbps - Kilobits per second - 1,000 bits per second. A measure of how fast data can be transmitted.

L

LAN - Local Area Network - A geographically localized network consisting of both hardware and software. The network can link workstations within a building or multiple computers with a single wireless Internet connection.

LATA - Local Access and Transport Areas - A geographic area within a divested Regional Bell Operating Company is permitted to offer exchange telecommunications and exchange access service. Calls between LATAs are often thought of as long-distance service. Calls within a LATA (IntraLATA) typically include local and local toll telephone services.

Local Loop - A generic term for the connection between the customer’s premises (home, office, etc.) and the provider’s serving central office. Historically, this has been a wire connection; however, wireless options are increasingly available for local loop capacity.

Low Income - Low income is defined by using the poverty level as defined by the U.S. Census Bureau. A community’s low-income percentage can be found at www.census.gov.

M

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

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

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

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

N

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

NIST - National Institute of Standards and Technology.

O

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

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

P

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

R

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

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

RUS - Rural Utility Service - A division of the United States Department of Agriculture that promotes universal service in unserved and underserved areas of the country through grants, loans, and financing.

S

Satellite - Satellite brings broadband Internet connections to areas that would not otherwise have access, even the most rural of areas. Historically, higher costs and lower reliability have prevented the widespread implementation of satellite service, but providers have begun to overcome these obstacles, and satellite broadband deployment is increasing. A satellite works by receiving radio signals sent from the Earth (at an uplink location also called an Earth Station) and resending the radio signals back down to the Earth (the downlink). In a simple system, a signal is reflected, or "bounced," off the satellite. A communications satellite also typically converts the radio transmissions from one frequency to another so that the signal getting sent down is not confused with the signal being sent up. The area that can be served by a satellite is determined by the "footprint" of the antennas on the satellite. The "footprint" of a satellite is the area of the Earth that is covered by a satellite's signal. Some satellites are able to shape their footprints so that only certain areas are served. One way to do this is by the use of small beams called "spot beams." Spot beams allow satellites to target service to a specific area, or to provide different service to different areas.

SBI - State Broadband Initiatives, formerly known as the State Broadband Data & Development (SBDD) Program.

SONET - Synchronous Optical Network - A family of fiber-optic transmission rates.

Streaming - A Netscape innovation that downloads low-bit text data first, then the higher bit graphics. This allows users to read the text of an Internet document first, rather than waiting for the entire file to load.

Subscribership - Subscribership is the number of customers that have subscribed for a particular telecommunications service.

Switched Network - A domestic telecommunications network usually accessed by telephones, key telephone systems, private branch exchange trunks, and data arrangements.

T

T-1 - Trunk Level 1 - A digital transmission link with a total signaling speed of 1.544 Mbps. It is a standard for digital transmission in North America.

T-3 - Trunk Level 3 - 28 T1 lines or 44.736 Mbps.

U

UNE - Unbundled Network Elements - Leased portions of a carrier's (typically an ILEC's) network used by another carrier to provide service to customers.

Universal Service - The idea of providing every home in the United States with basic telephone service.

Upstream - Data flowing from your computer to the Internet (sending e-mail, uploading a file).

V

VDSL (or VHDSL) - Very High Data Rate Digital Subscriber Line - A developing technology that employs an asymmetric form of ADSL with projected speeds of up to 155 Mbps.

Video On Demand - A service that allows users to remotely choose a movie from a digital library and be able to pause, fast-forward, or even rewind their selection.

VLAN - Virtual Local Area Network - A network of computers that behave as if they were connected to the same wire even though they may be physically located on different segments of a LAN.

VoIP - Voice over Internet Protocol - A new technology that employs a data network (such as a broadband connection) to transmit voice conversations.

VPN - Virtual Private Network - A network that is constructed by using public wires to connect nodes. For example, there are a number of systems that enable one to create networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

Vulnerable Groups -Vulnerable groups will vary by community, but typically include low-income, minority, senior, children, etc.

W

WAN - Wide Area Network - A communications system that utilizes cable systems, telephone lines, wireless, and other means to connect multiple locations together for the exchange of data, voice, and video.

Wi-Fi - Wireless Fidelity - A term for certain types of wireless local networks (WLANs) that uses specifications in the IEEE 802.11 family.

WiMax - A wireless technology that provides high-throughput broadband connections over long distances. WiMax can be used for a number of applications, including last mile broadband connections, hotspots, and cellular backhaul and high-speed enterprise connectivity for businesses.

Wireless Hotspot - A public location where Wi-Fi Internet access is available for free or for a small fee. These could include airports, restaurants, hotels, coffee shops, parks, and more.

Wireless Internet - 1) Internet applications and access using mobile devices such as cell phones and palm devices. 2) Broadband Internet service provided via wireless connection, such as satellite or tower transmitters.

Wireline - Service based on infrastructure on or near the ground, such as copper telephone wires or coaxial cable underground, or on telephone poles.