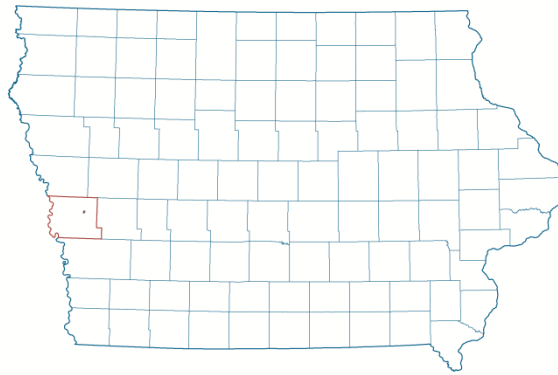


City of Woodbine

Technology Action Plan



Prepared by

**City of Woodbine and
Connect Iowa**

August 2015



ACCESS



ADOPTION



USE

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INTRODUCTION

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

Background

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

Despite the growing dependence on technology, the United States Census reports that 27% of Americans do not have a high-speed connection at home.² Connected Nation's studies also indicate that 19.1 million children do not have broadband at home, and 6.1 million of those children live in low-income households.³

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

Deploying broadband infrastructure, services, and application, as well as supporting the universal adoption and meaningful use of broadband, are challenging – but required – building blocks of a twenty-first century community. To assist communities, Connected Nation developed the Connected Community Engagement Program to help your community identify

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

² United States Census Bureau's American Community Survey Report, “Computer and Internet Use in the United States: 2013.” <http://www.census.gov/content/dam/Census/library/publications/2014/acs/acs-28.pdf>.

³ National estimates calculated using Connected Nation's 2014 Residential Technology Assessments.

⁴ Estimates based on Connected Nation's *2014 Business Technology Assessment* (<http://www.connectednation.org/survey-results/business>) and 2013 County Business Pattern data from the United States Census Bureau (<http://www.census.gov/econ/cbp/>).

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

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

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

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

Methodology

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

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

What Is Connected Certification?

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

CONNECTED ASSESSMENT

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

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

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

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

Analysis of Connected Assessment

The Community Technology Scorecard provides a summary of the community's Connected Assessment. The Connected Assessment's criteria are reflective of the recommendations made by the Federal Communications Commission's National Broadband Plan. These scores reflect the community's progress toward meeting these universal fixed broadband service national benchmarks, ubiquitous mobile service, and growing access to higher speed next-generation services. Lower scores do not necessarily signify a complete lack of access to broadband service but instead reflect that the broadband infrastructure in the community has not met these national goals and benchmarks.

Community Technology Scorecard Brief

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

- The community scored 34 out of a possible 40 points in broadband access primarily because Woodbine has close to 100% of households with access to 3 Mbps of broadband service and at least 75% with access to 10 Mbps of broadband service. Over 95% of households have access to more than one broadband provider and there is fiber middle mile service provided by one provider. Three mobile broadband service providers provide service to Woodbine.
- The community scored 36 out of a possible 40 points in broadband adoption. This score indicates an opportunity for the city of Woodbine to increase efforts to overcome the local barriers to home broadband subscription.
- The community scored 36 out of a possible 40 points in broadband use. This score indicates that the Economic, Education, Government and Healthcare industries in Woodbine are using broadband in an impactful and meaningful way.
- The city of Woodbine achieved a score of 106 points out of 120 for overall broadband and technology readiness, which indicates a strong commitment toward broadband access, adoption, and use from the community and broadband providers. There is room for improvement in Woodbine to expand broadband in the community through community planning and continued broadband expansion in the areas of access, adoption and use.
- The city of Woodbine exceeded the 32 points in each focus area that are required for certification and has qualified for full certification.

Community Technology Scorecard

Community Technology Scorecard Community Champions: Deb Sprecker Community Advisors: Dave Daack				
FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	98% to 100% of homes have access to 3 Mbps	10	10
	Broadband Speeds	>75% of households with access to less than at least 10 Mbps	3	5
	Broadband Competition	95% to 100% of households with access to more than 1 broadband provider	5	5
	Middle Mile Access	Availability of middle mile fiber infrastructure from 1 provider	6	10
	Mobile Broadband Availability	99% to 100% of households have access to mobile broadband	10	10
	ACCESS SCORE			34
ADOPTION	Digital Literacy	Program grads are greater than 10 per 1,000 residents over the past year	10	10
	Public Computer Centers	500 computer hours per 1,000 low-income residents per week	10	10
	Broadband Awareness	Campaigns reach 80% of the community	8	10
	Vulnerable Population Focus	4 groups	8	10
	ADOPTION SCORE			36
USE	Economic Opportunity	2 advanced, 5 basic uses	9	10
	Education	4 advanced, 2 basic uses	10	10
	Government	2 advanced, 3 basic uses	7	10
	Healthcare	5 advanced, 0 basic uses	10	10
	USE SCORE			36
COMMUNITY ASSESSMENT SCORE			106	120

Itemized Key Findings

The city of Woodbine identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment:

ACCESS

- 10 last mile broadband providers currently provide service in Woodbine:
 - 98% to 100% of households have access to 3 Mbps
 - 75% of households have access to at least 10 Mbps
 - 95% to 100% of households have access to more than 1 broadband provider
- Availability of middle mile fiber infrastructure from only 1 provider
- 99% to 100% of households with access to mobile wireless

ADOPTION

- 2 Digital Literacy Programs exists in the community resulting in 154 Program grads over the past year
- 3 Public Computer Centers (PCC) with a total of 9 computers available to the public
- 7 Broadband Awareness Campaigns are reaching 100% of the city of Woodbine
- 4 organizations are working with vulnerable populations

USE

- At least 7 uses of broadband were identified in the area of economic opportunity including 2 advanced uses and 5 basic uses
- At least 6 uses of broadband were identified in the area of education including 4 advanced uses and 2 basic uses
- At least 5 uses of broadband were identified in the area of government including 2 advanced uses and 3 basic uses
- At least 5 uses of broadband were identified in the area of healthcare including 5 advanced uses and 0 basic uses

In addition to the items identified above, the city of Woodbine identified the following technology resources in the community:

Technology Providers

- 10 broadband providers were identified in the city of Woodbine
- 1 hardware provider was identified in the city of Woodbine
- 0 network developers were identified in the city of Woodbine
- 0 web developers were identified in the city of Woodbine

Technology Facilities

- 2 public computer centers
- 0 wireless hotspots
- 0 videoconference facilities

Community Websites

- 2 Business-related websites (excluding private businesses)
- 1 Education-related website
- 2 Government-related websites
- 3 Healthcare-related websites
- 1 Library-related website
- 1 Tourism-related website
- 1 Agriculture-related website
- 0 Community-based-related websites

City of Woodbine Priority Projects

The Connected Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. There are 3 projects that the community has identified as priority projects.

Priority Projects Identified by the City of Woodbine**Develop Public-Private Partnerships to Deploy Broadband Service****Facilitate a Technology Summit****Improve the Online Presence of Government**

DETAILED FINDINGS

City of Woodbine Assessment Findings

Today, residents in the city of Woodbine (or sections of the community) are served by 10 providers. At the time of broadband assessment, broadband was defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream. According to Connect Iowa’s latest broadband mapping update, the following providers have a service footprint in city of Woodbine.

Broadband Providers	Website	Technology Type
AT&T	http://www.wireless.att.com	Mobile
Verizon Wireless	http://www.verizonwireless.com	Mobile
Via Sat	http://www.wildblue.com	Satellite
Hughes Network Systems, LLC	http://www.hughes.com	Satellite
Loganet	http://www.loganet.net	Fixed Wireless
Skycasters	http://www.skycasters.com	Satellite
StarBand Communications	http://starband.com	Satellite
US Cellular	http://www.uscellular.com	Mobile
Long Lines	http://www.longlines.com	Cable
Windstream	http://www.windstream.com	DSL

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

Organization Name	Website	Resource Type
Woodbine Community School	https://sites.google.com/a/woodbine.k12.ia.us	Videoconference Facility
Woodbine Carnegie Public Library	https://www.woodbinepubliclibrary.org	Public Computer Facility
Woodbine Community School	https://sites.google.com/a/woodbine.k12.ia.us	Public Computer Facility

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

Organization Name	Website	Category
Heartland Coop Woodbine Branch	www.heartlandcoop.com	Agriculture
Boustead Real Estate Services	www.bousteadrealestateservices.com	Business
Harrison Co. Rural Electric Cooperative	www.hcrec.coop	Business
Woodbine Community Schools	www.woodbine.k12.ia.us	Education
City of Woodbine & Municipal Utilities	www.woodbineia.com	Government
Harrison Co. Genealogical Society	http://iagenweb.org/harrison/hcgs/	Government
Rose Vista Continuing Care Campus	www.rosevista.net	Healthcare
CHI Alegent Health Clinic	www.chihealth.com	Healthcare
Thomsen Chiropractic	www.thomsenchiro.com	Healthcare
Woodbine Carnegie Public Library	www.woodbinepubliclibrary.org	Libraries
Woodbine Main Street	www.woodbineia.com	Tourism

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

Company Name	Website	Provider Category
TI Computer Services	http://www.ticomputerservices.com	Hardware Provider

Connected Assessment Analysis



Access Score Explanation

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

- **According to the October 2014 data collected by Connect Iowa, 98% to 100% of the city of Woodbine residents had access to broadband speeds of 3 Mbps or greater.**

Broadband Speeds (3 out of 5 Possible Points). Broadband Speeds are measured by analyzing the speed tiers available within a community. Data are collected by Connected Nation’s broadband mapping program. The Connected Assessment analyzes broadband coverage by the

highest speed tier with at least 75% of households covered. If broadband data is missing, the community team was able to improve the quality of data to ensure all providers are included.

- **According to the October 2014 data collected by Connect Iowa, 75% of the city of Woodbine residents had access to broadband speeds of 10 Mbps.**

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

- **According to the October 2014 data collected by Connect Iowa, 95% to 100% of the city of Woodbine residents had access to more than one broadband provider.**

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

- **The city of Woodbine is served by only 1 middle mile fiber provider.**

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

- **According to the October 2014 data collected by Connect Iowa, 99% to 100% of the city of Woodbine residents had access to mobile broadband service.**



Adoption Score Explanation

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

Organization Name	Program Description	Number of Grads
Woodbine Public Library	Staff guides patron users in basic Internet and other online needs.	104
Woodbine Community School	At enrollment, parent fact sheet, usage guidance, and password assignment given for online student grades and meals track, password driven.	50

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

Organization Name	Number of Open Hours Per Week	Number of Computers	Available Computer Hours Per Week
Woodbine Public Library	33	6	198
Woodlands Apartments	40	2	80
Rose Court Senior Living	30	1	30

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

Organization Name	Campaign Description	Community Reach
Woodbine Main Street	Monthly meeting and event calendar, business listserv bulletins	50%
The Woodbine Twiner	Weekly newspaper available online and on social media	75%
Woodbine Community School	Website communication portal for grade and lunch daily check-up, 1:1 teacher/parent interaction	50%
Harrison County Assessor	Promotes availability of public information	100%
Harrison County Treasurer	Promotes online property tax and license payments	100%
Municipal Power & Light	Promotes online information tools for energy usage and savings	100%
city of Woodbine	Promotes online access to city government meeting, minutes, programs	100%

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

Organization Name	Program Description	Vulnerable Group
Woodlands Apartments	Online apt request form, wireless Internet, community media room	seniors, disabled population
Woodbine Public Library	Media space with 6 computers; sign-in access	low-income, unemployed, seniors
DHS Harrison County	Online application for programs creates wider access	low-income families, children, disabled population
Rose Vista Continuing Care Campus	Media center in community area, on-site staff provides assistance	seniors



Use Score Explanation

Economic Opportunity (9 out of 10 Possible Points). A community receives one point per basic use of broadband and two points per advanced, or interactive, use of broadband. Categories within economic opportunity include: economic development, business development, tourism, and agriculture. Identified uses of broadband in the area of economic opportunity are listed below and identified as basic or advanced.

Application Provider	Description	Basic/Advanced
Woodbine Main Street www.woodbineia.com	Community and downtown development projects and resources, business and service listings	Basic
Heartland Coop www.heartlandcoop.com	Active market reporting, daily market analysis reporting, online payments on account	Advanced
Harrison Co. Development Corp www.hcdconline.com	County development projects and resource clearinghouse	Basic
The Woodbine Twiner www.loganwoodbine.com	Business advertising, news feeds	Basic
Harrison Co REC www.hcrec.coop	Business grants IA Area Development Group; facilitate grant programs, info on site	Basic
Woodbine Carnegie Public Library	Free wireless hot spot	Advanced
Farmers Trust & Savings Bank	Free online banking services	Basic

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

Application Provider	Description	Basic/Advanced
Woodbine Schools www.woodbineschools.com	Class work, assignments online, library catalog online	Advanced
Iowa Learning On Line http://www.iowalearningonline.org/	Local districts expand learning opportunities for their high school students through courses taught by licensed educators	Advanced
Woodbine Schools www.woodbineschools.com	One-To-One Computer Program focused on improving STEM	Advanced
Woodbine Schools	All students have access to AEA	Basic

www.woodbineschools.com	resources, online databases through the Greenhills portal	
Woodbine Schools Community School Library	100% of library connected to Internet via broadband	Basic
Iowa Western Community College www.iwcc.edu	Community College Dual Credit online courses/enrollment	Advanced

Government (7 out of 10 Possible Points). A community receives one point per basic use of broadband and two points per advanced use of broadband. Categories within government include general government, public safety, energy, and the environment. Identified uses of broadband in the area of government are listed below and identified as basic or advanced.

Application Provider	Description	Basic/Advanced
Harrison Co Rural Electric Cooperative www.hcrec.coop	Harrison Co. REC smart grid electricity technology in place	Basic
City of Woodbine www.woodbineia.com	Council and other Commission minutes, government activities online	Basic
Woodbine Police Department https://www.facebook.com/pages/Woodbine-Police-Department/714601385323331?fref=nf	Community safety and crisis awareness and other community events reminders	Advanced
Woodbine Municipal Utilities http://www.brightenergysolutions.com/municipalities	City-owned utility links to rebate and grant programs for energy efficiencies	Basic
Harrison County Public Health http://harrisoncountyhealth.org/	Online programs directed to mental, physical, and social health, tobacco cessation course	Advanced

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

Application Name	Description	Basic/Advanced
www.thomsenchiro.com	Online appointment scheduling	Advanced
www.chihealth.com/alegent-creighton-clinic	Online scheduling and physician video introductions	Advanced
http://harrisoncountyhealth.org/	Online programs directed to mental, physical, and social health, tobacco cessation course	Advanced

https://iowa.bluezonesproject.com/	Online health assessments, interactive community project to improve health and wellness for Woodbine	Advanced
www.chihealth.com/alegent-creighton-clinic	Availability of telemedicine	Advanced

ACTION PLAN

Complete List of the City of Woodbine Projects

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



ACCESS

Broadband Availability

Develop Public-Private Partnerships to Deploy Broadband Service

Goal

Fund broadband network deployment

Project Description

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

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

Benefits

1. The public sector transfers much of the risk for private investment. For example, the public sector has many funding tools available, including incentivizing continued investment through tax credits, encouraging greater availability of private capital through government guaranteed loans, or government being a direct source of capital through loans or grants.
2. The partnership can aggregate demand and reduce barriers to deployment. By working together, public and private parties can educate and build awareness needed for the public to better integrate the use of broadband into their lives, thereby improving the business case for broadband deployment.
3. A good partnership concentrates investment on non-duplicative networks and aims to ensure that all residents have access to adequate broadband service.

Action Items

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



ADOPTION

Broadband Awareness

Facilitate a Technology Summit

Goal

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

Project Description

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

Benefits

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

Action Items

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



USE

Government

Improve the Online Presence of Government

Goal

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

Project Description

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

Benefits

1. Makes government more efficient, resulting in greater public convenience and cost effectiveness.
2. Improves the quality and accessibility of government information, and helps agencies deliver the services most requested by their customers.

Action Items

1. Review the current e-government applications to identify gap areas. Compare current applications to other comparable government websites of like size from around the state to identify potential improvement areas.
2. Conduct an assessment of the usability of current applications.
3. Use current and draft survey instruments to identify applications of public interest. Use this survey to examine potential e-government applications.
4. Identify high-volume services to target for online automation. Emergency and first responder applications will be included.
5. Identify partners and entities to assist in implementation.
6. Develop and launch applications.

APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND

Statewide Infrastructure

As part of the Iowa State Broadband Initiative (SBI), and in partnership and at the direction of the Iowa Utilities Board, Connect Iowa produced an inaugural map of broadband availability in the spring of 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 Iowa 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 2014 depict a geographic representation of provider-based broadband data represented by cable, DSL, fiber, fixed wireless and mobile wireless. These maps also incorporate data such as political boundaries and major transportation networks in the state. A statewide map can be found at <http://www.connectiowa.org/mapping/state>. The county maps can be found at http://www.connectiowa.org/community_profile/find_your_county/iowa/adair.

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

SBI Download/Upload Speed Tiers	Unserved Households ('000)	Served Households ('000)	Percent Households by Speed Tier
At Least 768 Kbps/200 Kbps	20	1,202	98.38
At Least 1.5 Mbps/200 Kbps	42	1,180	96.59
At Least 3 Mbps/768 Kbps	73	1,148	93.99
At Least 6 Mbps/1.5 Mbps	215	1,006	82.37
At Least 10 Mbps/1.5 Mbps	237	985	80.62
At Least 25 Mbps/1.5 Mbps	308	913	74.76
At Least 50 Mbps/1.5 Mbps	333	889	72.74
At Least 100 Mbps/1.5 Mbps	388	834	68.27
At Least 1 Gbps/1.5 Mbps	1,187	35	2.86

Source: Connect Iowa, November 2014.

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile and satellite service) across the state of Iowa; it presents the number and percentage of unserved and served households by speed tiers. The total number of households in Iowa in 2010 was 1,221,576, for a total population of 3 million people. Table 1 indicates that 98.38% of households are able to connect to broadband at download speeds of at least 768 Kbps and upload speeds of at least 200 Kbps. This implies that the number of households originally estimated by Connect Iowa to be unserved has dropped from 53,335 households in the fall of 2010 to 19,820 households in the fall of 2014. Further, approximately 1,148,167 households across Iowa have broadband available of at least 3 Mbps download and 768 Kbps upload speeds. The percentage of Iowa households having fixed broadband access available of at least 6 Mbps download and 1.5 Mbps upload speeds is estimated at 82.37%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.99% of Iowa households have broadband available from at least one provider at download speeds of 768 Kbps or higher and upload speeds of 200 Kbps or higher. This leaves about 50 households in the state completely unserved by any form of terrestrial broadband (including mobile, but excluding satellite services).

As differences in broadband availability estimates between the fall of 2010 and the fall of 2014 show, additional participating broadband providers can have a large impact upon Iowa broadband mapping inventory updates. Further, the measured broadband inventory provides an estimate of the true extent of broadband coverage across the state. There is a degree of measurement error inherent in this exercise that should be taken into consideration when analyzing the data. This measurement error will decrease as local, state, and federal stakeholders identify areas where the displayed coverage is underestimated or overestimated. Connect Iowa 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 Iowa has been sent on a semi-annual basis to the NTIA to be used in the National Broadband Map, and comprises the source of Iowa's broadband availability estimates reported by the NTIA and the FCC in the National Broadband Map. The National Broadband Map can be found here: <http://www.broadbandmap.gov> and the Map's specific page for Iowa can be found here: <http://www.broadbandmap.gov/summarize/state/iowa>.

Interactive Map

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

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

Business and Residential Technology Assessments

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

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

- Broadband adoption in Iowa increased by 5 percentage points between 2012 and 2013.
- More than 113,000 school-age children in Iowa still do not have broadband access at home.
- More than three out of ten (31%) or 90,830 non-adopters in Iowa cite relevance as their main barrier to broadband adoption, while nearly one-fifth (16%) or 46,880 cite cost as their biggest barrier.

Additionally, an assessment of technology use among Iowa businesses released in September 2014 on Connect Iowa's website revealed the following key findings:

- Across Iowa, 81% of businesses subscribe to broadband service, leaving approximately 16,000 Iowa businesses that still do not use or benefit from broadband.
- 31% of Iowa businesses that want faster Internet service cannot get it at their location.
- More than 1 in 8 Iowa businesses say it is "important" or "very important" for new employees to be able to create or edit mobile apps, while 1 in 11 say it is important for new employees to know at least one programming language.
- Online sales in Iowa accounted for approximately \$20 billion in sales revenue last year, including nearly \$7.7 billion for small businesses with fewer than twenty employees and more than \$7 billion for rural Iowa businesses.

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

APPENDIX 2: PARTNER AND SPONSORS

Connect Iowa, in partnership with the Iowa Economic Development Authority (IEDA), supports Iowa's reinvention and technological transformation through innovation, job creation, and entrepreneurship via the expansion of broadband technology and increased usage by Iowa residents. In 2009, Connect Iowa partnered with the Iowa Utilities Board 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.connectiowa.org/>

The **Iowa Economic Development Authority (IEDA)** offers a variety of programs and services to individuals, communities, and businesses to attract and grow business, employment, and workforce in Iowa. Groundbreaking economic growth strategies focusing on cultivating start-up companies and helping existing companies become more innovative complement the activities already underway to retain and attract companies that are creating jobs for Iowans. Developing sustainable, adaptable communities ready for this growth is also an essential part of our work at IEDA — providing programs and resources that help communities reinvest, recover, and revitalize to make each community's vision a reality.

<http://www.iowaeconomicdevelopment.com/>

Connected Nation (Connect Iowa'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>

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

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 Iowa 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 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 Iowa's Connected program is to empower locally informed and collaborative technology planning that addresses each community's need for improved access, adoption, and use of technology:

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

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

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

Connected Planning Process

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



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

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

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

Access	Adoption	Use
<ol style="list-style-type: none"> 1. Broadband Availability 2. Broadband Speeds 3. Broadband Competition 4. Middle Mile Access 5. Mobile Broadband Availability 	<ol style="list-style-type: none"> 6. Digital Literacy 7. Public Computer Centers 8. Broadband Awareness 9. Vulnerable Population Focus 	<ol style="list-style-type: none"> 10. Economic Opportunity 11. Education 12. Government 13. Healthcare

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

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

APPENDIX 5: GLOSSARY OF TERMS

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

4G Wireless - Fourth Generation - Refers to the fourth generation of wireless cellular technology. It is the successor to 2G and 3G. Typical 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.

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.