STORY COUNTY

TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT IOWA
AND THE
STORY COUNTY BROADBAND COMMITTEE

DECEMBER, 2014

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 – 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 2013, 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 2014, Connected Nation also surveyed 4,206 businesses in 7 states. Based on this data, Connected Nation estimates that nearly 1.5 million businesses - 20% - in the United States do not utilize broadband technology today.[3]

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

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

2 *Pew Research Internet Project – Broadband Technology Fact Sheet*

3 Connected Nation, *2014 Business Technology Assessment,* http://www.connectednation.org/survey-results/business

4 Connected Nation, parent company for 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 Story County Broadband Committee is boosting the community's capabilities in education, healthcare, and public safety, and stimulating economic growth and spurring job creation. The Story 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.

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.

- Story County scored 40 out of a possible 40 points in broadband access, which indicates a high level of broadband availability across the community. With broadband availability at 99.18% of households having access to 3 Mbps, Story County is above the state average of 93.64%.
- The community also scored 36 out of a possible 40 points in broadband adoption, indicating that Story County has sufficient and valuable assets and programs to support continued broadband adoption by its residents and small businesses.

- The community also scored 40 out of a possible 40 points in broadband use, indicating that Story County has effectively employed broadband to deliver productive online services and applications to help improve the overall quality of life for local residents.
- Story County achieved a score of 116 points out of 120 for overall broadband and technology readiness which indicates that the community is exhibiting strong support of technology access, adoption, and use and has surpassed the score of 100 required for Connected certification.
- Story County exceeded the 32 points in each focus area that are required for certification and has qualified as a Certified Connected Community.

While the results indicate that the community has made tremendous strides and investments in technology, this technology plan will provide some insight and recommendations that will help the community continue to achieve success.

Community Technology Scorecard Community Champion: Wayne Clinton Community Advisor: Amy Kuhlers				
FOCUS AREA	**ASSESSMENT CRITERIA**	**DESCRIPTION**	**SCORE**	**MAXIMUM POSSIBLE SCORE**
ACCESS	Broadband Availability	99.18% of homes have access to 3 Mbps	10	10
	Broadband Speeds	78.81% of households with access to at least 100 Mbps	5	5
	Broadband Competition	98.65% of households with access to more than 1 broadband provider	5	5
	Middle Mile Access	Availability of middle mile fiber infrastructure from more than 1 provider	10	10
	Mobile Broadband Availability	100% of households with access to mobile broadband	10	10
	ACCESS SCORE		**40**	**40**
ADOPTION	Digital Literacy	Program grads are greater than 4 per 1,000 residents over the past year	6	10
	Public Computer Centers	500 computer hours per 1,000 low income residents per week	10	10
	Broadband Awareness	Campaigns reach 100% of the community	10	10
	Vulnerable Population Focus	At least 5 groups	10	10
	ADOPTION SCORE		**36**	**40**
USE	Economic Opportunity	13 advanced, 7 basic uses	10	10
	Education	13 advanced, 7 basic uses	10	10
	Government	8 advanced, 9 basic uses	10	10
	Healthcare	11 advanced, 6 basic uses	10	10
	USE SCORE		**40**	**40**
	COMMUNITY ASSESSMENT SCORE		**116**	**120**

Itemized Key Findings

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

ACCESS

- 16 last-mile broadband providers currently provide service in Story County:
  - 99.18% of households have access to 3 Mbps.
  - 78.81% of Story County homes have access to at least 100 Mbps service.
  - 98.65% of Story County households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from multiple providers in Story County.
- 99% to 100% of Story County households have access to mobile broadband.

ADOPTION

- 5 Digital Literacy Programs exist in the community resulting in 522 graduates over the past year.
- 11 Public Computer Centers (PCC) with a total of 76 computers are open to the public.
- 12 Broadband Awareness Campaigns are reaching 100% of Story County.
- At least 16 organizations are working with vulnerable populations.

USE

- At least 20 uses of broadband were identified in the area of economic opportunity including 13 advanced uses and 7 basic uses.
- At least 20 uses of broadband were identified in the area of education including 13 advanced uses and 7 basic uses.
- At least 17 uses of broadband were identified in the area of government including 8 advanced use and 9 basic uses.
- At least 17 uses of broadband were identified in the area of healthcare including 11 advanced use and 6 basic uses.

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

Technology Providers

- 26 broadband providers were identified in Story County
- 3 hardware or computer service providers
- 3 network integrators
- 7 web developers

Technology Facilities

- 18 public computing centers

- 2 wireless hotspots
- 0 video conference facilities

Community Websites

- 9 Business-related websites (excluding private businesses)
- 11 Education-related websites
- 24 Government-related websites
- 2 Healthcare-related websites
- 8 Library-related websites
- 3 Tourism-related websites
- 1 Agriculture-related website

Community Priority Projects

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

1. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses
2. Establish a "Community Technology Academy"
3. Facilitate a Technology Summit
4. Complete a Vertical Assets Inventory
5. Perform an Analysis of Local Policies and Ordinances

DETAILED FINDINGS

Story County Assessment Findings

Today, residents in the Story County (or sections of the community) are served by 26 providers. Currently, broadband is 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 the Story County Community:

Broadband Providers	Website	Technology Type
CCS (Stratford Mutual Telephone)	http://stratfordtelephone.com/services/gilbert_roland_jewell_internet/	Cable
Mediacom	http://mediacomcable.com/site/ames_iowa_internet_phone_cable_tv.html	Cable
Centurylink	http://www.centurylink.com/	DSL
Frontier Communications	http://frontier.com/	DSL
Midiowa Net	http://www.midiowa.net/	DSL
Minerva Valley	http://www.minervavalley.com/	DSL
OpenCom Internet Services	http://www.opencom.net/	DSL
Windstream	http://www.windstream.com/	DSL
Central Iowa Broadband	http://www.centraliowabroadband.org/	Fiber
Colo Telephone Company	http://www.colotel.org/	Fiber
Ellsworth Cooperative Telephone	http://www.ellsworthiowa.com	Fiber
Partner Communications Cooperative	http://www.pcctel.net	Fiber
Huxley Communications	http://www.huxcomm.net/index.php	Fiber, DSL
BTWI Wireless	http://www.btwi.net/	Fixed Wireless
ICS Advanced Technologies	www.ics-llc.net	Fixed Wireless
JAB Broadband	http://www.jabbroadband.com/	Fixed Wireless
Woolstock Mutual Telephone	http://wtccommunications.com	Fixed Wireless
AT&T Mobility	http://www.att.com/shop/wireless.html	Mobile
T-Mobile	http://www.t-mobile.com	Mobile
US Cellular	http://www.uscellular.com	Mobile
Verizon Wireless	http://www.verizonwireless.com	Mobile
Dish Network	http://www.dish.com/?WT.svl=mainnav	Satellite

Hughes Network	http://www.hughes.com	Satellite
Skycasters	http://www.skycasters.com	Satellite
Starband	http://starband.com	Satellite
ViaSat	http://www.wildblue.com/	Satellite

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

Company Name	Website	Provider Type
ATECH GROUP	http://www.atechgrp.com	Network Integrator
Heartland Technologies	http://www.heartlandtechnologies.com/services	Network Integrator
Majestic Data Services	http://www.majesticdata.biz/index.html	Network Integrator
Ames Computer Repair	http://www.amespcrepair.com	Computer Hardware/Services
Hometown Tech	http://hometowntech.com/locations/ames-computer-repair/	Computer Hardware/Services
Lees Computers and More	http://www.leescomputersandmore.com/	Computer Hardware/Services
BlueRock Designs	http://www.bluerockdesigns.com/index.html	Web Developer
Global Reach	http://www.globalreach.com/	Web Developer
Glossy Web Design	http://glossywd.com/	Web Developer
LBJ Designs	http://www.lbjdesigns.com/	Web Developer
Mere Agency	http://mereagency.com/	Web Developer
One21Labs	http://www.one21labs.com/	Web Developer
Winning Solutions, Inc.	http://www.winningsolutionsinc.com/Design/Web-Design/Web-Design.aspx#sthash.Ug0i1MIh.dpuf	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	Website	Resource Type
Colo-Nesco Elementary School	http://www.colo-nesco.k12.ia.us/elementary-school	Public Computer Facility
Zearing Public Library	http://www.zearing.lib.ia.us/	Public Computer Facility
City of Sheldahl	http://www.storycountyiowa.gov/index.aspx?NID=890	Wireless Hotspot
Roland Public Library	http://www.roland.lib.ia.us/	Public Computer Facility

Roland-Story Middle School	http://www.roland-story.k12.ia.us/ms/index.php	Public Computer Facility
Colo-Nesco Community School District Early Learning Center	http://www.colo-nesco.k12.ia.us/early-learning-center	Public Computer Facility
Maxwell Public Library	http://www.welcometomaxwell.com/city-government/library-1	Public Computer Facility
Collins-Maxwell Middle/High School	http://www.collins-maxwell.k12.ia.us/index.php?option=com_content&view=article&id=31&Itemid=104	Public Computer Facility
Colo Public Library	http://www.colo.lib.ia.us/	Public Computer Facility
Colo-Nesco Junior/Senior High School	http://www.colo-nesco.k12.ia.us/schools/jrsrhigh	Public Computer Facility
Gilbert Community School District	http://gilbert.k12.ia.us/index	Public Computer Facility
Collins-Maxwell Elementary School	http://www.collins-maxwell.k12.ia.us/index.php?option=com_content&view=article&id=47&Itemid=103	Public Computer Facility
Collins Public Library	http://www.collinspubliclibraryia.org/home	Public Computer Facility

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

Organization Name	Website	Website Category
Key Coop	http://www.keycoop.com/	Agriculture
Bethany Lutheran Church	http://bethanymccallsburg.org/	Business
Colo Business Park	http://showcase.netins.net/web/colo-iowa/busipark.html	Business
Colo Telephone Company	http://www.colotel.org/	Business
Daily Auction Company and Colo Implement	http://www.dailyauctioncompany.com/	Business
Heartland Co-op	http://www.heartlandcoop.com/pages/custom.php?id=174	Business
Innovative Lighting	http://www.innovativelight.com/	Business
Pioneer Seed Sales	https://www.pioneer.com/home/site/us/rep_homepage	Business
Roland Area Development Group	http://www.cityofroland.org/radc.htm	Business

Water Street Bar and Grill	https://www.facebook.com/pages/Water-Street-Bar-Grill/186806161419831	Business
Ballard Community School District	http://www.ballard.k12.ia.us/ShowSchoolLinkWest.aspx?WebMenuID=16	Education
Ballard Community School District	http://www.ballard.k12.ia.us/	Education
Ballard Community School District	http://www.ballard.k12.ia.us/	Education
Collins-Maxwell Community School District	http://www.collins-maxwell.k12.ia.us/	Education
Colo-Nesco Community School District	http://www.colo-nesco.k12.ia.us/elementary-school	Education
Colo-Nesco Community School District	https://sites.google.com/a/colo-nesco.k12.ia.us/main/	Education
Colo-Nesco Community School District Early Learning Center	http://www.colo-nesco.k12.ia.us/early-learning-center	Education
Colo-Nesco Schools	http://www.colo-nesco.k12.ia.us/	Education
Gilbert Community School District	http://gilbert.k12.ia.us/index	Education
North Polk Community School District	http://www.northpolk.org/pages/North_Polk_Comm_SD	Education
Roland-Story Community School District	http://www.roland-story.k12.ia.us/ms/	Education
City of Cambridge	http://www.cambridge-ia.us/index.html	Government
City of Cambridge	http://www.cambridge-ia.us/	Government
City of Collins	http://www.welcometocollins.com/home	Government
City of Collins	www.welcometocollins.com	Government
City of Collins	www.welcometocollins.com	Government
Story County Medical Center	www.storymedical.org	Healthcare
Story County Public Health	www.storycountyiowa.gov	Healthcare

Connected Assessment Analysis

Access Score Explanation

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 April 2014 data collected by Connect Iowa, 99.18% of Story 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 April 2014 data collected by Connect Iowa, 78.81% of Story County residents had access to broadband speeds of 100 Mbps.**

Broadband Competition (5 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 April 2014 data collected by Connect Iowa, 98.65% of Story County residents had access to more than one broadband provider.**

Middle Mile Access (10 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.

- **Story County is served by more than one 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 April 2014 data collected by Connect Iowa, 100% of Story County residents had access to mobile broadband service.**

Access Score Explanation

Digital Literacy (6 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
Heartland Adult Day Center	Computer classes as requested	20
Ames Public Library	Tech Talks - informal technology training and help	30
Ames Public Library	Learning Express - tutorials on Microsoft applications (Word, Excel, Powerpoint)	100
Nevada Public Library	12 computer classes annually	72
Osher Lifelong Learning Institute	Low-cost enrichment courses for Seniors (50+); "Social Media for Seniors," "Get to Know Your Kindle," "Mac Computers," more.	300
Total Graduates [2013-2014]		522

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

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
Ames Public Library	61	20	1220
Copyworks	168	9	1512
Bertha Bartlett Public Library	55	8	440
Zearing Public Library	30	5	150
Colo Public Library	38	5	190
Cambridge Memorial Library	20	5	100
Slater Public Library	47	3	141
Roland Public Library	51	5	255
Huxley Public Library	64.5	6	387
Nevada Public Library	54	9	486
Gilbert Public Library	10.5	1	10.5
Collins Public Library	21	2	42

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

Organization Name	Program Description	Community Reach %
City of Ames (http://www.cityofames.org/index.aspx?page=1208)	Ames Guest WI-FI Locations: City Hall, Auditorium and Community Center; Municipal Pool; Ames/ISU Ice Arena; Library; Furman Aquatic Center	50%
Bertha Bartlett Library	https://www.facebook.com/pages/Bertha-Bartlett-Public-Library/63709381803	40%
Bertha Bartlett Library	Online newsletter	40%
Story City Greater Chamber Connection	Facebook page for Story City Greater Chamber Connection	25%
Nevada School District	Online registration and access to grades	20%
Nevada School District	CubTv	10%
Roland-Story School District	Online grades	15%
Collins-Maxwell School District	Online grades	15%
Gilbert School District	Online grades	15%
Ballard School District	Online grades	15%
Colo-Nesco School District	Online grades	15%
Ames School District	Online payment system and Powerschool	10%

Story County	E-Services - summary of the types of information and services that can be accessed online	10%
Story County	Guest WI-FI at all public buildings	5%

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

Organization Name	Program Description	Vulnerable Group
Story City EDC	Online job listing at http://www.storycityedc.com/job-opportunities/	Unemployed
Zearing Health Care Center	Computer for residents and WI-FI throughout	Senior citizens
Colo Public Library, Nevada Public Library	Proctored exams	Unemployed
Ballard Creek Community	Computer for residents	Senior Citizens
Bethany Manor	Computer for residents	Senior Citizens
Green Hills Health Care Center	Computer for residents	Senior Citizens
Heartland Adult Day Center	Computer for residents	Senior Citizens
Northcrest Health Care Center	Computer for residents	Senior Citizens
Rose of Ames	Computer den with Internet connection	Senior Citizens
Windsor Manor Nevada	WI-FI	Senior Citizens
United Way of Story County	Iowa Reading Corps	Children
The Arc Story County	Online donation, volunteer opportunities and programs	Individuals with Disabilities
Story County VA	Resources online for vets	Veterans
Good Neighbor	Online donations	Households in need (poverty)
ACCESS	Identifying needs for those women who are in a shelter situation	Abused women and families
Emergency Residence Project	Online information about shelter opportunities	Homeless

Use Score Explanation

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
Ames Convention and Visitors Bureau	Ames CVB listing of events, places to stay, and other opportunities	Basic
Bid posting for city of Ames	Current bid postings	Basic
Great Western Bank	Online banking	Basic
Reiman Gardens	Online ticketing, overview of programs, class registrations	Basic
Reliance State Bank	Online banking	Basic
Scheman Center	Online information about events, rentals	Basic
Scheman Center	Online information about events, rentals	Basic
Story City Historical Society	Museum rental document to download and then send back in and online contact form at http://www.storycityhistory.org/contact-us-	Basic
Ackley State Bank	Online banking	Advanced
Colo Telephone Company	Online bill pay	Advanced
Community Bank	Online banking	Advanced
Exchange State Bank	Online banking	Advanced
Fidelity Bank	Online banking	Advanced
Great Iowa Credit Union	Online banking	Advanced
Utilities Online http://www.cityofames.org/index.aspx?page=179	Includes everything from signing up for service, to paying online to energy audits and much more.	Advanced
Maxwell State Bank	Online banking	Advanced
River Valley Credit Union	Online banking	Advanced
Security State Bank	Online banking	Advanced

South Story Bank	Online banking	Advanced
Vision Bank	Online banking	Advanced
WorkinAmes.com	Online job postings	Advanced

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

Application Provider	Description	Basic/ Advanced
Ames Public Library	Downloaded eBooks, audiobooks, and magazine	Basic
Ames Public Library	Ames Community School District's Digital Backpack link	Basic
Ballard School District	Subscribe to newsletter	Basic
Collins-Maxwell School District	Online grades	Basic
Collins-Maxwell School District	Alumni website	Basic
Nevada School District	CubTv	Basic
Roland-Story School District	Newsletter subscription	Basic
Ames Public Library	Online card catalog at http://www.amespubliclibrary.org/aboutLibrary/aboutTheLibraryHome.asp	Advanced
Ballard School District	Food service and student fee payments	Advanced
Ballard School District	Online card catalog	Advanced
Bertha Barlett Public Library	Online card catalog	Advanced
Collins-Maxwell School District	Online payment	Advanced
Colo-Nesco School District	Online payment	Advanced
Gilbert School District	Web-based P/T conference scheduling	Advanced
Nevada School District	Online payment using www.payforit.net	Advanced
Nevada School District	Online registration and access to grades	Advanced
Nevada School District	Online card catalog	Advanced
Roland-Story School District	Online payment	Advanced
Roland-Story School District	Online registration	Advanced
Roland-Story School District	Online media center	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
City of Ames	Permits to download-banner, beer, cigarette, encroachment, fireworks, house movers, pawnbrokers, peddlers, road race, and more	Basic
City of Cambridge	City Code online	Basic
City of Colo	Online printable forms for building permits	Basic
City of Huxley	Building permit application (download only)	Basic
City of Huxley	Sign up for quick alert (mass notification system)	Basic
City of McCallsburg	Online city permits and applications – to download and send back in	Basic
City of Story City	Sign-up for newsletter online	Basic
City of Story City Fire Department	Facebook page for announcements	Basic
Story County	Payment claims database	Basic
Ames Public Library	Ability to pay fines online	Advanced
City of Ames	GIS and mapping	Advanced
City of Ames	Pay City of Ames parking tickets online	Advanced
City of Nevada	Street light repair request	Advanced
City of Nevada	Water bill payments online	Advanced
Story County	Storyepay - online applications and payments	Advanced
Story County	Online Fines Recovery Application	Advanced
Story County	Property tax estimator	Advanced

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

Application Name	Description	Basic/ Advanced
City of Story City Parks and Recreation	Online gym schedule for parks and rec - open gym times noted	Basic
City of Story City Parks and Recreation	Online registration for some programs; others you can download the form and turn it in/mail in	Basic

Mary Greeley Medical Center	Cheer cards	Basic
Rebarcak Chiropractic Pain Relief Center	Forms available online	Basic
Rec Center & MGMC Fitness	Overview of hours and types of services available	Basic
Story Medical Center and Clinics in Ames, Zearing, Maxwell and Nevada	Send an e-card to a patient	Basic
Bartholomew Chiropractic	Online appointment	Advanced
Frideres Chiropractic Clinic, P.C.	Forms available online; appointment scheduling	Advanced
Mary Greeley Medical Center	Online gift shop	Advanced
Mary Greeley Medical Center	Online patient records	Advanced
Mary Greeley Medical Center	Online appointment	Advanced
NuCara Pharmacy/Corner Store	Online prescription service	Advanced
Parkview Pharmacy	Online prescription service	Advanced
Rebarcak Family Chiropractic	Online forms and online appointment	Advanced
Story Medical Center and Clinics in Ames, Zearing, Maxwell and Nevada	Online appointment request	Advanced
Story Medical Center and Clinics in Ames, Zearing, Maxwell and Nevada	Patient portal	Advanced
Team Chiropractic	Forms available online; appointment scheduling	Advanced

ACTION PLAN

Community 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 5 priority projects, each describing a project plan with suggested steps.

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 about Internet tools that are available at minimum or no cost to them.

- "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.

Benefit:

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

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

Establish a "Community Technology Academy"

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

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

Benefit:

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

Action Items:

1. Identify all organizations performing technology education and training services.

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

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:
Facilitate partnerships in order to provide digital literacy training.

Benefit:
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.

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 conditions, with reasonably easy access to electricity and wired telecommunications, and with a significant height relative to the surrounding area. “Vertical assets” are defined as structures on which wireless broadband equipment can be mounted and positioned to broadcast a signal over as much terrain as

possible. These assets include structures such as cell towers, water tanks, grain silos, and multi-story buildings.

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

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.

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

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

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 one 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 read" 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.

Action Items:

1. Review local policies, ordinances, and other barriers to broadband deployment and consult with community leaders, providers, utilities, and other members of the community to ensure that they are supporting policies (local ordinances, pole attachments, right-of-way) that are conducive to broadband build out.
2. 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.

Implementation Team:
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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 spring of 2014 depict a geographic representation of provider-based broadband data represented by cable, DSL, wireless, fiber, etc. residential services. 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/connectednationftp/iowa/Statewide_Maps/IA_Statewide_Broadband.pdf. The county maps can be found at http://www.connectiowa.org/community_profile/find_your_county/iowa.

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	22	1,200	98.19
At Least 1.5 Mbps/200 Kbps	43	1,179	96.52
At Least 3 Mbps/768 Kbps	78	1,144	93.64
At Least 6 Mbps/1.5 Mbps	**228**	**993**	**81.30**
At Least 10 Mbps/1.5 Mbps	251	970	79.44
At Least 25 Mbps/1.5 Mbps	332	889	72.78
At Least 50 Mbps/1.5 mbps	355	867	70.94
At Least 100 Mbps/1.5 Mbps	**497**	**725**	**59.35**
At Least 1 Gbps/1.5 Mbps	1,196	26	2.10

Source: Connect Iowa, April 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 98.196% 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 22,146 households in the spring of 2014. Further, approximately 1,143,847 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 81.37%.

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 70 households in the state completely unserved by any form of terrestrial broadband (including mobile, but excluding satellite services).

As differences in broadband availability estimates between the fall of 2010 and the spring of 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 ConnectView™, an online tool 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 provide "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
1. Broadband Availability	6. Digital Literacy	10. Economic Opportunity
2. Broadband Speeds	7. Public Computer Centers	11. Education
3. Broadband Competition	8. Broadband Awareness	12. Government
4. Middle Mile Access	9. Vulnerable Population Focus	13. Healthcare
5. Mobile Broadband Availability		

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

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

APPENDIX 5: GLOSSARY OF TERMS

#

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

4G Wireless - Fourth Generation - Refers to the fourth generation of wireless cellular technology. It is the successor to 2G and 3G. Typical implantations include LTE, WiMax, and others. Maximum speeds may reach 100 Mbps, with typical speeds over 10 Mbps.

A

ARRA - American Recovery and Reinvestment Act.

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

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

B

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

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

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

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

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

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

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

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

C

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

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

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

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

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

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

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

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

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

D

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

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

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

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

DSLAM - Digital Subscriber Line Access Multiplier - A piece of technology installed at a telephone company's CO that connects the carrier to the subscriber loop (and ultimately the customer's PC).
DWDM - Dense Wavelength Division Multiplexing - A SONET term which is the means of increasing the capacity of SONET fiber-optic transmission systems.

E

E-rate - A federal program that provides subsidy for voice and data lines to qualified schools, hospitals, Community-Based Organization (CBOs), and other qualified institutions. The subsidy is based on a percentage designated by the FCC.
Ethernet - A local area network (LAN) standard developed for the exchange data with a single network. It allows for speeds from 10 Mbps to 10 Gbps.
EON - Ethernet Optical Network - The use of Ethernet LAN packets running over a fiber network.
EvDO - Evolution Data Only - A new wireless technology that provides data connections that are 10 times faster than a regular modem.

F

FCC - Federal Communications Commission - A federal regulatory agency that is responsible for, among other things, regulating VoIP.
Fixed Wireless Broadband - The operation of wireless devices or systems for broadband use at fixed locations such as homes or offices.
Franchise Agreement - An agreement between a cable provider and a government entity that grants the provider the right to serve cable and broadband services to a particular area - typically a city, county, or state.
FTTH - Fiber To The Home - Another name for fiber to the premises, where fiber optic cable is pulled directly to an individual's residence or building allowing for extremely high broadband speeds.
FTTN - Fiber To The Neighborhood - A hybrid network architecture involving optical fiber from the carrier network, terminating in a neighborhood cabinet that converts the signal from optical to electrical.
FTTP - Fiber To The Premise (Or FTTB – Fiber To The Building) - A fiber optic system that connects directly from the carrier network to the user premises.

G

Gbps - Gigabits per second - 1,000,000,000 bits per second or 1,000 Mbps. A measure of how fast data can be transmitted.
GPON - Gigabyte-Capable Passive Optical Network - Uses a different, faster approach (up to 2.5 Gbps in current products) than BPON.
GPS - Global Positioning System - A system using satellite technology that allows an equipped user to know exactly where he is anywhere on earth.

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

H

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

I

IEEE - Institute of Electrical and Electronics Engineers (pronounced "Eye-triple-E.").
ILEC - Incumbent Local Exchange Carrier - The traditional wireline telephone service providers within defined geographic areas. They typically provide broadband Internet service via DSL technology in their area. Prior to 1996, ILECs operated as monopolies having the exclusive right and responsibility for providing local and local toll telephone service within LATAs.
IP-VPN - Internet Protocol - Virtual Private Network - A software-defined network offering the appearance, functionality, and usefulness of a dedicated private network.
ISDN - Integrated Services Digital Network - An alternative method to simultaneously carry voice, data, and other traffic, using the switched telephone network.
ISP - Internet Service Provider - A company providing Internet access to consumers and businesses, acting as a bridge between customer (end-user) and infrastructure owners for dial-up, cable modem, and DSL services.

K

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

L

LAN - Local Area Network - A geographically localized network consisting of both hardware and software. The network can link workstations within a building or multiple computers with a single wireless Internet connection.
LATA - Local Access and Transport Areas - A geographic area within a divested Regional Bell Operating Company is permitted to offer exchange telecommunications and exchange access service. Calls between LATAs are often thought of as long-distance service. Calls within a LATA (IntraLATA) typically include local and local toll telephone services.
Local Loop - A generic term for the connection between the customer's premises (home, office, etc.) and the provider's serving central office. Historically, this has been a wire connection; however, wireless options are increasingly available for local loop capacity.
Low Income - Low income is defined by using the poverty level as defined by the U.S. Census Bureau. A community's low-income percentage can be found at www.census.gov.

M

MAN - Metropolitan Area Network - A high-speed date intra-city network that links multiple locations with a campus, city, or LATA. A MAN typically extends as far as 50 kilometers (or 31 miles).
Mbps - Megabits per second - 1,000,000 bits per second. A measure of how fast data can be transmitted.
Metro Ethernet - An Ethernet technology-based network in a metropolitan area that is used for connectivity to the Internet.
Multiplexing - Sending multiple signals (or streams) of information on a carrier (wireless frequency, twisted pair copper lines, fiber optic cables, coaxial, etc.) at the same time. 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.