# CITY OF CRESTON

## TECHNOLOGY ACTION PLAN

**PREPARED BY CONNECT IOWA**
**AND THE**
**CITY OF CRESTON BROADBAND COMMITTEE**

**AUGUST 5, 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 2012, 30% of Americans did not have a high-speed connection at home.[2] Connected Nation's studies also show that 17 million families with children do not have broadband at home – and 7.6 million of these children live in low-income households. In 2012, Connected Nation also surveyed 7,004 businesses in 9 states. Based on this data, Connected Nation estimates that at least 1.8 million businesses - 24% - in the United States do not utilize broadband technology today.[3]

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

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

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

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

4 Connected Nation, parent company for Connect 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

## Methodology

By actively participating in the Connected Community Engagement Program, the City of Creston Broadband Committee is boosting the community's capabilities in education, healthcare, and public safety, stimulating economic growth, and spurring job creation. The City of Creston 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.

- The City of Creston achieved a score of 106 points out of 120 for overall broadband and technology readiness which indicates that the community is exhibiting high success in technology access, adoption, and use and has surpassed the total score of 100 required for Connected certification.
- The City of Creston scored 34 out of a possible 40 points in broadband access, with all or nearly all city residents and businesses having access to at least 3 Mbps broadband service.
- At least 75% of Creston households have access to at least 10 Mbps broadband service, which yields a score of 3 points (out of 5 possible) in the broadband speed section.

- The City of Creston exceeded the 32 points in each focus area that are required for certification and has qualified for full certification.

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

| Community Technology Scorecard<br>Community Champions: Ellen Gerharz<br>Community Advisor: Dan Manning | | | | |
|---|---|---|---|---|
| **FOCUS AREA** | **ASSESSMENT CRITERIA** | **DESCRIPTION** | **SCORE** | **MAXIMUM POSSIBLE SCORE** |
| **ACCESS** | Broadband Availability | 100% of homes have access to 3 Mbps | 10 | 10 |
| | Broadband Speeds | Highest speed tier for 75% of households is 10 Mbps | 3 | 5 |
| | Broadband Competition | 95.0% 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 middle mile provider | 6 | 10 |
| | Mobile Broadband Availability | 99% to 100% of households with access to mobile broadband | 10 | 10 |
| | **ACCESS SCORE** | | **34** | **40** |
| **ADOPTION** | Digital Literacy | Program grads are greater than 7 per 1,000 residents over the past year | 8 | 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** | | **34** | **40** |
| **USE** | Economic Opportunity | 5 advanced, 6 basic uses | 10 | 10 |
| | Education | 4 advanced, 2 basic uses | 8 | 10 |
| | Government | 2 advanced, 4 basic uses | 8 | 10 |
| | Healthcare | 4 advanced, 2 basic uses | 10 | 10 |
| | **USE SCORE** | | **38** | **40** |
| | **COMMUNITY ASSESSMENT SCORE** | | **106** | **120** |

## Itemized Key Findings

The City of Creston Broadband Committee identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment:

### ACCESS

- 2 last-mile (non-mobile, non-satellite) broadband providers currently provide service in the City of Creston:
  - 98% to 100% of households have access to 3 Mbps.
  - At least 75% of the City of Creston homes have access to 10 Mbps service.
  - 95% to 100% of the City of Creston households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from 1 provider in the City of Creston.
- 100% of the City of Creston households have access to mobile broadband.

### ADOPTION

- At least 6 digital literacy programs exist in the community resulting in over 70 graduates over the past year.
- 3 public computer centers (PCC) with a total of 47 computers are open to the public.
- 4 broadband awareness campaigns are reaching over 80% of the City of Creston.
- At least 2 organizations are working to help at least 4 vulnerable population groups improve their lives through technology.

### USE

- At least 11 uses of broadband were identified in the area of economic opportunity including 5 advanced uses and 6 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 6 uses of broadband were identified in the area of government including 2 advanced uses and 4 basic uses.
- At least 6 uses of broadband were identified in the area of healthcare including 4 advanced uses and 2 basic uses.

In addition to the items identified above, the City of Creston Broadband Committee identified the following technology resources in the community:

**Technology Providers**

- 9 broadband providers were identified in the City of Creston (including 4 satellite providers)
- 2 network integrators
- 2 web developers

**Technology Facilities**

- 3 public computing centers
- 9 wireless hotspots
- 0 video conference facilities

**Community Websites**

- 1 Business-related website (excluding private businesses)
- 1 Education-related website
- 1 Government-related website
- 2 Healthcare-related websites
- 1 Library-related website
- 1 Tourism-related website
- 1 Community-based 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 four priority projects, followed by a complete list of all action items.

1. Support the City of Creston's Future Leaders in Offering More Internet/Social Media Classes for Small Businesses.
2. Explore Partnerships with Existing and New Providers to Increase/Expand Broadband Access, Speeds, and Capacity.
3. Assess Need and Deploy Additional Public Computers to Address Local Demand.
4. Develop and Provide "Intermediate-level" Digital Literacy Training Program for Residents.

## Complete List of Action Items

Below is a complete list of 14 action items proposed by the City of Creston Broadband Team to accelerate broadband access, adoption, and use. Detailed descriptions of each solution proposed by Connect Iowa can be found in the *Action Plan* section later in this report.

### ACCESS

**Broadband Availability**

1. Perform an Analysis of Local Policies and Ordinances.
2. Explore Partnerships with Existing and New Providers to Increase/Expand Broadband Access, Speeds, and Capacity.

**Broadband Speeds**

3. Identify, Map, and Validate Broadband Demand.

**Broadband Competition** – No Action Items.

**Middle Mile Access**

4. Develop Public-Private Partnerships to Deploy Broadband Service.

**Mobile Broadband Availability** – No Action Items.

## ADOPTION

**Digital Literacy**

5. Distribute Digital Literacy Content.
6. Develop and Provide "Intermediate-level" Digital Literacy Training Program for Residents.

**Public Computer Centers**

7. Assess Need and Deploy Additional Public Computers to Address Local Demand.

**Broadband Awareness**

8. Implement a Community-Based Technology Awareness Program.
9. Support the City of Creston's Future Leaders in Offering More Internet/Social Media Classes for Small Businesses.

**Vulnerable Population Focus**

10. Develop a Technology Mentorship Program.

## USE

**Economic Opportunity**

11. Create Local Jobs Via Teleworking Opportunities.

**Education**

12. Improve Education through Digital Learning.

**Government**

13. Support Healthcare Providers Serving Rural Communities.
14. Improve Online Business Services Offered by the Government

**Healthcare** – No Action Items.

# DETAILED FINDINGS

## City of Creston Assessment Findings

Today, residents in the City of Creston (or sections of the community) are served by nine 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 City of Creston Community:

| Broadband Providers | Website | Technology Type |
|---|---|---|
| Chat Mobility | www.interstatecom.com | Mobile |
| Hughes Network | www.hughes.com | Satellite |
| MediaCom | www.mediacomcc.com | Cable |
| Skycasters | www.skycasters.com | Satellite |
| Starband | http://starband.com | Satellite |
| US Cellular | www.uscellular.com | Mobile |
| Verizon Wireless | www.verizonwireless.com | Mobile |
| ViaSat | www.wildblue.com | Satellite |
| Windstream | www.windstream.com | DSL |

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

| Company Name | Website | Provider Type |
|---|---|---|
| Vicker Programming & Svcs | www.vicker.com | Network Integrator/General IT |
| BuiltNetworks | www.builtnetworks.com | Network Integrator |
| Three C Design | www.threecd.com | Web Developer |
| KiKi's Graphic Design | www.kikisgraphics.com | Web Developer |

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

| Organization Name | Website | Resource Type |
|---|---|---|
| Gibson Memorial | www.creston.lib.ia.us/ | Public Computer Facility |

| | | |
|---|---|---|
| Library | | |
| Southwestern Iowa Community College | www.swcciowa.edu/ | Public Computer Facility |
| Adams Street Espresso | www.adamsstreetespresso.com/ | Wireless Hotspot |
| Creston Family Restaurant | www.facebook.com/pages/Creston-Family-Restaurant/104954142881064 | Wireless Hotspot |
| Hardee's | www.hardees.com/ | Wireless Hotspot |
| Leslie's Dance Emporium | www.lesliesdance.net/ | Wireless Hotspot |
| McDonald's | www.mciowa.com/6077 | Wireless Hotspot |
| Union County Courthouse | www.unioncountyiowa.org/ | Wireless Hotspot |
| Upper Crust Culinary Creations | www.uppercrustculinary.com/ | Wireless Hotspot |
| The Windrow Restaurant | www.facebook.com/pages/The-Windrow/119903048021355 | Wireless Hotspot |
| IowaWORKS Southern Hills - MATURA | www.maturacommunityaction.com/ | Public Computer Facility |
| Union County Tourism - Visitors Center | www.unioncountyiowatourism.com | Wireless Hotspot |

Below is a list of community websites designed to and promote local resources.

| Organization Name | Website | Website Category |
|---|---|---|
| Creston Chamber of Commerce | www.crestoniowachamber.com/ | Business |
| Union County Development Association | www.unioncountyiowa.com/ | Community Based |
| City of Creston Government | www.crestoniowa.gov/ | Government |
| Greater Regional Medical Center | www.greaterregional.org/ | Healthcare |
| Southwestern Iowa Community College | www.swcciowa.edu/ | Education |
| Gibson Memorial Library | www.creston.lib.ia.us/ | Libraries |
| Wilbur-Ellis | http://ag.wilburellis.com/Locations/Pages/Creston.aspx | Healthcare |
| Creston and Union County Tourism - Visitors Center | www.unioncountyiowatourism.com | Tourism |

## 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, 82.5% of the City of Creston residents had access to broadband speeds of 3 Mbps or greater.**

**Broadband Speeds** (3 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, the highest speed tier that is available to at least 75% of Creston households is 10 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, 99% (estimate) of the City of Creston residents had access to more than one broadband provider.**

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

- **The City of Creston is served by 1 middle mile fiber provider.**

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

- **According to the April 2014 data collected by Connect Iowa, 100% of the City of Creston residents had access to mobile broadband service.**


## Access Score Explanation

**Digital Literacy** (8 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 |
|---|---|---|
| Gibson Memorial Library | Computer literacy classes | 10 per year |
| IowaWORKS - Creston | Basic Computer/Internet course | 14 per year |
| IowaWORKS - Creston | Computer/Internet course for businesses | 32 per year |
| Green Hills Area Education Agency | Computer training for educators | Varies - for local educators only |
| Future Business Leaders of America - Creston chapter | "TechTalk" - technology support session for Creston residents/businesses | 10 per year |
| Future Business Leaders of America - Creston chapter | "Twitter Day" - social media support session for Creston small businesses | 5 per year |
| **Total Graduates [2013-2014]** | | 71 |

**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 the City of Creston is below.

| Organization Name | Number of Open Hours per Week | Number of Computers | Available Computer Hours per Week |
|---|---|---|---|
| Gibson Memorial Library | 49 | 12 | 588 |
| Southwestern Iowa Community College | 69 | 25 | 1725 |
| IowaWORKS Southern Hills - MATURA | 40 | 10 | 400 |

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

| Organization Name | Campaign Description | Community Reach |
|---|---|---|
| Gibson Memorial Library | Education and promotion of online resources | 80% |
| Southwestern Iowa Community College | Internet education for small businesses | 10% |
| Iowa WORKS | Use of online job search, job applications, and Internet skills development | 40% |
| Creston Future Business Leaders of America (FBLA) | Tech Talk, Twitter for business session | 10% |

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

| Organization Name | Program Description | Vulnerable Group |
|---|---|---|
| Creston Community Schools | Technology for special needs students | Children |
| MATURA Action Group | Workforce Investment Act Services | Low-income, unemployed, disabled, minorities |
| MATURA Action Group | Head Start education | Children |


## 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 |
|---|---|---|
| Wireless Hotspots | Creston Library and City Hall are wireless hotspots | Basic |
| SWICC Business Development Program | Business Development Programs available to support small and medium business development | Advanced |
| Utilization of Internet Communication | Creston Chamber and Development Association utilizes e-mail and social media to communicate with businesses and other stakeholders | Basic |
| Spur Innovation in Community | Development Association has small business competition to spur innovative businesses | Advanced |
| Online Financial Listings | My Ready resources offers financial programming list and tax incentives (Development Association) | Advanced |
| Online Business Sites Listings | Online listing of business sites | Basic |
| Online Internet Services Available | Online listing of Internet services available to businesses looking to relocate | Basic |
| Uptown Creston Website | Online listing of businesses in Uptown Creston | Basic |
| ISU Extension Resources | ISU Extension offers resources online | Basic |
| Job Finding Assistance | Iowa Workforce Development computer terminal | Advanced |

| | | |
|---|---|---|
| | available at Creston Library | |
| MATURA and IWD Job Finding Assistance | Provides job finding and benefits submitting assistance | 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 |
|---|---|---|
| Classroom Connectivity | All classrooms connected to broadband Internet | Basic |
| Classroom Websites | As of January 2013 all classrooms have an individualized webpage | Advanced |
| Digital Literacy | Creston Schools have over 90% of graduating seniors with digital literacy skills | Advanced |
| Online Parent and Student Interaction | Grades and other information online - parents and teachers can interact online | Advanced |
| Online Classes | Availability of online classes through SWICC and other colleges | Advanced |
| KeyTrain | Workforce skills development from IowaWORKS | Basic |

**Government** (8 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 Creston Website | The City of Creston has a website | Basic |
| Next Gen 911 System | Next generation 911 system installed but not available in Creston and the County | Advanced |
| Up-To Date Equipment | Communications equipment is up to date and interoperable | Basic |
| Smart Building of SWICC Campus and larger buildings (i.e. Wal Mart) | Parts of SWICC Campus and larger buildings (i.e. Wal Mart) are at least partially Smart Buildings | Basic |
| Mobile GIS Application | City workers utilize GIS software on mobile computers | Advanced |
| Smart Meters | Meters can be read wirelessly by handheld devices | Basic |

**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 |
|---|---|---|
| Computer Access for Older Population Areas | Crest Haven Care Center and the Iowana Apartments have computers with broadband Internet access for seniors | Basic |
| Healthcare Professionals List | Online list of healthcare professionals | Basic |
| Telemedicine | Utilized within the community | Advanced |
| Electronic Records | Hospital and other doctors have and utilize electronic medical records | Advanced |
| 100% of doctors with Adequate Bandwidth | 100% of doctors with adequate bandwidth | Advanced |
| Doctors Utilize E-Health | At least 75% of doctors utilize E-Health | 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 four priority projects, each describing a project plan with suggested steps. This is followed by a complete list of all action items.

### *Support Creston Future Leaders in Offering More Internet/Social Media Classes for Small Businesses*

**Project Description**

Continue to work with Creston's local Future Business Leaders of America organization to get local businesses online and growing. This action is currently underway through conversations with FBLA and promoting their offerings with flyers and publicity.

**Goal**

Enable Creston-area small businesses to take greater advantage of broadband and social media in order to grow their businesses.

**Action Items**

1. Identify and/or expand Internet and social media class content for small businesses.
2. Identify and schedule trainers to conduct classes.
3. Establish class schedules and locations for Internet/social media classes.
4. Publicize and encourage small business attendance at these classes.

**Implementation Team**

- Creston Chamber of Commerce
- Union County Development Association
- Future Business Leaders of America – Creston Chapter
- Internet/Social Media Trainers and Facilitators

### *Explore Partnerships with Existing or New Providers to Increase/Expand Broadband Access Speeds and Capacity*

**Project Description**

Completing this assessment has created an avenue for further conversations with existing broadband providers and those that might be considering expanding in the City of Creston.

**Goal**

Provide more pervasive and higher speed broadband access across the greater Creston area for local residents and businesses.

**Action Items**

1. Contact broadband providers identified through this assessment to discuss current coverage and future plans in the area.
2. Identify key provider needs and issues that may prevent or slow broadband expansion in the Creston area.
3. Explore potential solutions and additional funding sources to support and encourage broadband expansion by key providers.
4. Develop effective partnerships between broadband providers and Creston-area organizations/businesses to define and implement local projects for broadband improvements.

**Implementation Team**

- Creston Chamber of Commerce
- Union County Development Association
- Broadband Providers
- Supportive Creston-Area Organizations/Businesses

## *Assess Needs and Deploy Additional Public Computers to Address Local Demand*

**Project Description**

Work with local businesses and community support organizations to better understand public needs for connectivity and identify facilities to expand current public access. Connections Agency on Aging and MATURA are going to explore the possibility. The City of Creston will work with these agencies and businesses to obtain grants or locate computers inexpensively in order to make this happen.

**Goal**

Improve the availability and convenience in getting access to computer resources and broadband connectivity for Creston residents and visitors.

**Action Items**

1. Identify and encourage specific organizations/businesses to add more publicly available computers with Internet access

2. Explore and identify sources of new or used computers for this purpose.
3. Assess potential impact to existing broadband network at each business to ensure minimal cost and impact of adding computers.
4. Launch and communicate the availability of current and additional publicly available computers to the general public.

**Implementation Team**

- Public Computer Project Leader (TBD)
- Participating organization/business representative(s)
- Interested broadband and computer provider(s)

### *Develop and Provide "Intermediate-level" Digital Literacy Training Program for Local Residents*

**Project Description**

The Creston Chamber of Commerce & Union County Development Association are collaborating with Continuing Education at Southwestern Community College (SWCC), Creston IowaWORKS Office, Gibson Memorial Library, and others to maintain current digital literacy programs and expand these as necessary.

**Goal**

Enable the City of Creston to become a more technology-savvy community to take greater advantage of broadband/Internet applications and future online capabilities.

**Action Items**

1. Complete an assessment of current digital literacy offerings.
2. Determine the need for incremental training and content.
3. Identify or develop additional digital literacy training to provide the next skill level.

**Implementation Team**

- Creston Chamber of Commerce
- Union County Development Association
- Southwestern Community College (Continuing Education)
- Creston IowaWORKS
- Gibson Memorial Library

## Complete List of Action Items

Below is a list of all 14 action items proposed by the City of Creston Broadband Team to accelerate broadband access, adoption, and use.

## ACCESS

### Broadband Availability

#### 1. Perform a Broadband Build-out Analysis in Unserved Areas

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

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

**Goals**

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

**Benefits**

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

**Action Items**

1. Conduct a wireless assessment to include:
    - Determining the functionality of all potential transmit locations
    - Surveying the availability of adequate power sources at each location
    - Identifying any issues regarding ingress and egress at each location
    - Designing a wireless broadband system using these potential transmit locations

#### 2. Explore Partnerships with Existing and New Providers to Increase/Expand Broadband Access, Speeds, and Capacity

Completing this assessment has created an avenue for further conversations with existing broadband providers and those that might be considering expanding in the City of Creston.

**Action Items**

1. Contact broadband providers identified through this assessment to discuss current coverage and future plans in the area.
2. Identify key provider needs and issues that may prevent or slow broadband expansion in the Creston area.

3. Explore potential solutions and additional funding sources to support and encourage broadband expansion by key providers.
4. Develop effective partnerships between broadband providers and Creston-area organizations/businesses to define and implement local projects for broadband improvements.

**Implementation Team**

- Creston Chamber of Commerce
- Union County Development Association
- Broadband Providers
- Supportive Creston-Area Organizations/Businesses

**Broadband Speeds**

### 3. Identify, Map, and Validate Broadband Demand

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

**Goal**

The goal is to understand existing and potential markets for broadband subscribers (both residential and business) in the City of Creston.

**Benefits**

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

**Action Items**

1. The project team should be prepared to provide research project design, data collection services, data analysis and reporting, and presentation development and delivery.
2. HARBOR Inc. is a citizen based, non-profit, Michigan Corporation founded in 2001 and located in the City of Harbor Springs. The organization's broadband committee developed and mailed a broadband demand survey in July 2012 to approximately 6,300 addresses, comprising all of the local property owners/residents in the community. A copy of the survey can be reviewed here: http://is0.gaslightmedia.com/wwwharborincorg/_ORIGINAL_/fs72-1369322556-20386.pdf.

**Broadband Competition** – No Action Items.

**Middle Mile Access**

### 4. Develop Public-Private Partnerships to Deploy Broadband Service

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

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

**Goal**

It is the goal to fund broadband network deployment in the City of Creston.

**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

**Mobile Broadband Availability** – No Action Items.

## ADOPTION

### Digital Literacy

#### 5. Distribute Digital Literacy Content

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

**Goal**

Facilitate partnerships in order to provide digital literacy training.

**Benefit**

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

**Action Items**

1. Develop partnerships with local organizations and equip them with digital literacy content.
2. Train staff to deliver the curriculum to potential adopters.
3. Promote local organizations as a source of broadband access and training.
4. Engage non-adopters with a comprehensive public outreach campaign, helping them understand the benefits of broadband service and inviting them to experience the value at their libraries.
5. Provide curriculum to teach computer and Internet use as well as the skills required to utilize the Internet effectively for essential services, education, employment, civic engagement, and cultural participation.
6. Offer compelling promotion to participants, giving them the opportunity to adopt the technology for everyday use in their homes.

#### 6. Develop and Provide "Intermediate-Level" Digital Literacy Training Program for Local Residents

The Creston Chamber of Commerce & Union County Development Association are collaborating with Continuing Education at Southwestern Community College (SWCC), Creston IowaWORKS Office, Gibson Memorial Library, and others to maintain current digital literacy programs and expand these as necessary.

**Action Items**

1. Complete an assessment of current digital literacy offerings.
2. Determine the need for incremental training and content.
3. Identify or develop additional digital literacy training to provide the next skill level.

**Implementation Team**

- Creston Chamber of Commerce
- Union County Development Association
- Southwestern Community College (Continuing Education)
- Creston IowaWORKS
- Gibson Memorial Library

## Public Computer Access

### 7. Assess Needs and Deploy Additional Public Computers to Address Local Demand

Work with local businesses and community support organizations to better understand public needs for connectivity and identify facilities to expand current public access. Connections Agency on Aging and MATURA are going to explore the possibility. The City of Creston will work with these agencies and businesses to obtain grants or locate computers inexpensively in order to make this happen.

**Action Items**

1. Identify and encourage specific organizations/businesses to add more publicly available computers with Internet access
2. Explore and identify sources of new or used computers for this purpose.
3. Assess potential impact to existing broadband network at each business to ensure minimal cost and impact of adding computers.
4. Launch and communicate the availability of current and additional publicly available computers to the general public.

**Implementation Team**

- Public Computer Project Leader (TBD)
- Participating organization/business representative(s)
- Interested broadband and computer provider(s)

## Broadband Awareness

### 8. Implement a Community-Based Technology Awareness Program

Conduct an extensive advertising campaign to raise awareness about the benefits of broadband and related technology. Develop a strategy to help the community become more aware of the benefits associated with Internet and computer adoption in their daily lives and activities.

Methods of delivery include, but are not limited to, classroom style awareness sessions, press conferences led by community leaders, having a speaker at a community event, posting community posters, handouts, and public service announcements. Additionally, the campaign should specifically target technology non-adopters. By using established media, the campaign reaches non-adopters where they are. Public radio, broadcast and cable TV, utility bill stuffers, and print newspapers have been utilized to reach households of many types. The public awareness campaign should focus on helping residents, particularly those from underserved communities, understand the personal value they can derive from an investment in information technology. There are also opportunities to leverage existing resources to expand and enhance workforce-training programs, encourage more post-secondary education, and create additional awareness within the community in regards to global resources. It is important to support the outcomes of awareness training with the development of technology training programs that will then teach community members how to use the technology.

**Goal**

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

**Benefit**

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

**Action Items**

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

### 9. Support Creston Future Leaders in Offering More Internet/Social Media Classes for Small Businesses

Continue to work with Creston's local Future Business Leaders of America organization to get local businesses online and growing. This action is currently underway through conversations with the FBLA and promoting their offerings with flyers and publicity.

**Goal**

Enable Creston-area small businesses to take greater advantage of broadband and social media in order to grow their businesses.

**Action Items**

1. Identify and/or expand Internet and social media class content for small businesses.
2. Identify and schedule trainers to conduct classes.
3. Establish class schedules and locations for Internet/social media classes.
4. Publicize and encourage small business attendance at these classes.

**Implementation Team**

- Creston Chamber of Commerce
- Union County Development Association
- Future Business Leaders of America – Creston Chapter
- Internet/Social Media Trainers and Facilitators

## Vulnerable Population Focus

### 10. Develop a Technology Mentorship Program

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

**Benefits**

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

**Action Items**

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

## USE

### Economic Opportunity

#### 11. Create Local Jobs Via Teleworking Opportunities

Connected Nation's Digital Works program is a hybrid between an employment agency and a co-working facility that connects residents with online training courses and connections with companies that lack a physical presence in the community. The Digital Works program creates jobs in areas facing high unemployment by leveraging broadband technology for call center and IT outsourcing. Extended training is available for HTML programming and other technical positions as well. The program is providing an avenue for communities to create a job incubator, retaining workers in the area and attracting corporate jobs while providing a pathway for improving a worker's competitive advantage in the twenty-first century workforce with specified coursework and training.

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

**Goal**

Connect IT training and education with remote employment opportunities.

**Benefits**

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

turn fostering the demand-driven strengthening of your community's physical Internet infrastructure.

**Action Items**

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

## Education

### 12. Improve Education through Digital Learning

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

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

**Goal**

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

**Benefits**

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

**Government**

### 13. Support Healthcare Providers Serving Rural Communities.

Review the Universal Service Administration Company's (USAC) Universal Service Rural Health Care Program. The Rural Health Care program supports healthcare providers serving rural communities by funding telecommunications services necessary for the provision of healthcare. The program is intended to ensure that rural healthcare providers pay no more for telecommunications in the provision of healthcare services than their urban counterparts.

The Healthcare Connect Fund (HCF) Program is the newest component of the Rural Health Care Program. The HCF Program will provide a 65 percent discount on eligible expenses related to broadband connectivity to both individual rural health care providers (HCPs) and consortia, which can include non-rural HCPs (if the consortium has a majority of rural sites).

**Goal**

Ensure that rural healthcare providers in your community have access to the robust telecommunications infrastructure required for the provision of healthcare services.

*Eligibility*

There are three initial criteria a health care provider (HCP) must meet to participate in the Rural Health Care Program.

1. HCPs must be one of the following types of entities:

    - Post-secondary educational institutions offering healthcare instruction, such as teaching hospitals and medical schools,
    - Community health centers or health centers providing healthcare to migrants,
    - Local health departments or agencies,
    - Community mental health centers,
    - Not-for-profit hospitals,
    - Rural health clinics,
    - Consortia of HCPs consisting of one or more of the above entities,
    - Dedicated emergency departments of rural for-profit hospitals, or
    - Part-time eligible entities located in facilities that are ineligible.

2. HCPs must be a not-for-profit entity or a public entity.
3. HCPs must be located in an FCC-approved rural location.

Once your HCP has been established as eligible, you should ensure that the services you request are eligible for support.

*Contact Information:*
Telephone: (800) 229-5476
E-mail: rhc-admin@usac.org
Website: http://www.universalservice.org/rhc/default.aspx

### 14. Improve Online Business Services Offered by the Government.

Developing more e-Government applications not only provides value to businesses, but also allows the government to realize cost savings and achieve greater efficiency and effectiveness. Examples of activities include paying for permits and licensing, paying taxes, providing services to the government, and other operations.

**Goal**

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

**Benefits**

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

**Action Items**

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

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

**Healthcare** – No Action Items.

# 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 map's initial 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, fixed wireless and mobile wieless 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/Union.

**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 wireless 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 approximately 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 speeds available of at least 3 Mbps download and 768 Kbps upload. The percentage of Iowa households having fixed broadband access available of at least 6 Mbps download and 1.5 Mbps upload 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 wireless, 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 map's data. 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 November 2013 on Connect Iowa's website revealed the following key findings:

- Across Iowa, 71% of businesses subscribe to broadband service, leaving approximately 23,000 Iowa businesses that still do not use or benefit from broadband.
- Nearly one in five Iowa businesses (18%) use tablet computers, and 30% use mobile broadband, helping employees stay connected even when they are away from the office.
- Online sales in Iowa account for approximately $14.5 billion in annual sales revenue, 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

The **National Telecommunications and Information Administration** (**NTIA**) is an agency of the United States Department of Commerce that is serving as the lead agency in running the State Broadband Initiative (SBI). Launched in 2009, the NTIA's State Broadband Initiative implements the joint purposes of the Recovery Act and the Broadband Data Improvement Act, which envisioned a comprehensive program led by state entities or non-profit organizations working at their direction, to facilitate the integration of broadband and information technology into state and local economies. Economic development, energy efficiency, and advances in education and healthcare rely not only on broadband infrastructure, but also on the knowledge and tools to leverage that infrastructure.

The NTIA has awarded a total of $293 million for the SBI program to 56 grantees, one each from the 50 states, 5 territories, and the District of Columbia, or their designees. Grantees such as Connect 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 the NTIA to update the National Broadband Map, the first public, searchable nationwide map of broadband availability launched February 17, 2011.

# APPENDIX 3: THE NATIONAL BROADBAND PLAN

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

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

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

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

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

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

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

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

To learn more, visit: www.broadband.gov.

# APPENDIX 4: WHAT IS CONNECTED?

The goal of Connect 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 |
|---|---|---|
| 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. Mutiplexing, in technical terms, means transmitting in the form of a single, complex signal and then recovering the separate (individual) signals at the receiving end.

## N

**NTIA -** National Telecommunications and Information Administration, which is housed within the United State Department of Commerce.
**NIST -** National Institute of Standards and Technology.

## O

**Overbuilders -** Building excess capacity. In this context, it involves investment in additional infrastructure projects to provide competition.
**OVS - Open Video Systems -** A new option for those looking to offer cable television service outside the current framework of traditional regulation. It would allow more flexibility in providing service by reducing the build-out requirements of new carriers.

## P

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

## R

**Right-of-Way -** A legal right of passage over land owned by another. Carriers and service providers must obtain right-of-way to dig trenches or plant poles for cable and telephone systems and to place wireless antennae.
**RPR - Resilient Packet Ring -** Uses Ethernet switching and a dual counter-rotating ring topology to provide SONET-like network resiliency and optimized bandwidth usage, while delivering multi-point Ethernet/IP services.
**RUS - Rural Utility Service -** A division of the United States Department of Agriculture that promotes universal service in unserved and underserved areas of the country through grants, loans, and financing.

## S

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

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

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

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

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

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

## T

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

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

## U

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

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

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

## V

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

**Video On Demand -** A service that allows users to remotely choose a movie from a digital library and be able to pause, fast-forward, or even rewind their selection.
**VLAN - Virtual Local Area Network -** A network of computers that behave as if they were connected to the same wire even though they may be physically located on different segments of a LAN.
**VoIP - Voice over Internet Protocol -** A new technology that employs a data network (such as a broadband connection) to transmit voice conversations.
**VPN - Virtual Private Network -** A network that is constructed by using public wires to connect nodes. For example, there are a number of systems that enable one to create networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.
**Vulnerable Groups -**Vulnerable groups will vary by community, but typically include low-income, minority, senior, children, etc.

## W

**WAN - Wide Area Network -** A communications system that utilizes cable systems, telephone lines, wireless, and other means to connect multiple locations together for the exchange of data, voice, and video.
**Wi-Fi - Wireless Fidelity -** A term for certain types of wireless local networks (WLANs) that uses specifications in the IEEE 802.11 family.
**WiMax -** A wireless technology that provides high-throughput broadband connections over long distances. WiMax can be used for a number of applications, including last mile broadband connections, hotspots, and cellular backhaul and high-speed enterprise connectivity for businesses.
**Wireless Hotspot -** A public location where Wi-Fi Internet access is available for free or for a small fee. These could include airports, restaurants, hotels, coffee shops, parks, and more.
**Wireless Internet -** 1) Internet applications and access using mobile devices such as cell phones and palm devices. 2) Broadband Internet service provided via wireless connection, such as satellite or tower transmitters.
**Wireline -** Service based on infrastructure on or near the ground, such as copper telephone wires or coaxial cable underground, or on telephone poles.