WEST DES MOINES

TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT IOWA

AND THE

WEST DES MOINES BROADBAND COMMITTEE

CONNECT IOWA

CONNECTED
Community Engagement Program

OCTOBER 2013

ACCESS   ADOPTION   USE

TABLE OF CONTENTS

INTRODUCTION

The purpose of this report is to summarize the community's assessment of local broadband access, adoption, and use, and to provide an action plan for broadband acceleration.

Background

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. The success of a community has 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. Due in large part to private investment and market-driven innovation, broadband in America has improved considerably in the last decade. More Americans are online at faster speeds than ever before.

Despite the progress, there are still critical problems that slow the progress of the access, adoption, and use of broadband. Connected Nation estimates that approximately 70 million, or 30% of, Americans do not subscribe to home broadband service, and adoption varies significantly across socioeconomic lines.[1] 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. Connected Nation also estimates that at least 1.8 million businesses - 24% - in the United States do not utilize broadband technology today.[2]

In early 2009, Congress directed the Federal Communications Commission (FCC) to develop a National Broadband Plan (NBP) to ensure every American has "access to broadband capability."[3] Congress also required that the plan include a detailed strategy for achieving affordability and maximizing use of broadband to advance "consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence, and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes."[4]

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

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

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

[4] Ibid.

To fulfill Congress's mandate, the National Broadband Plan, released in 2010, makes recommendations to the FCC, the Executive Branch, Congress, and state and local governments that influence the broadband ecosystem – networks, devices, content, and applications – in four ways:

1. Design policies to ensure robust competition and, as a result, maximize consumer welfare, innovation, and investment.
2. Ensure efficient allocation and management of assets and government controls or influences, such as spectrum, poles, and rights-of-way, to encourage network upgrades and competitive entry.
3. Reform current universal service mechanisms to support deployment of broadband and voice in high-cost areas; and ensure that low-income Americans can afford broadband; and in addition, support efforts to boost adoption and utilization.
4. Reform laws, policies, standards, and incentives to maximize the benefits of broadband in sectors that government influences significantly, such as public education, healthcare and government operations.[5]

In addition to these recommendations, the plan recommended that the country set the following six goals for 2020 to serve as a compass over the 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.

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[5] Ibid.

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. Meeting these six goals will help achieve the Congressional mandate of using broadband to achieve national purposes, while improving the economics of deployment and adoption. While the National Broadband Plan recommends significant action by the FCC, the Executive Branch, and Congress, it requires a strong partnership among all broadband stakeholders. Federal action is necessary, but state, local, and Tribal governments, corporations, and community-based organizations must all do their part to build a high-performance America.

To assist communities in localizing the goals and recommendations made by the National Broadband Plan, Connected Nation developed the Connected Community Engagement Program. [6] The program is designed to help communities identify local technology assets, complete an assessment of local broadband access, adoption, and use, and develop an action plan for accelerating broadband's integration into the community's priorities.

Methodology

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

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[6] Connected Nation, parent company for Connect Iowa, is a national non-profit 501(c)(3) organization that expands access to and use of broadband Internet and the related technologies that are enabled when individuals and communities have the opportunity and desire to connect. Connected Nation works in multiple states to engage community stakeholders, state leaders, and technology providers to develop and implement technology expansion programs with core competencies centered around the mission to improve digital inclusion for people and places previously under-served or overlooked.

The Connected Assessment framework is comprised of three elements: access, adoption, and use. Each sub-assessment has a maximum of 40 points. To achieve Connected certification, the community must have 32 points in each sub-assessment and 100 points out of 120 points overall.

- The access assessment reviews whether an adequate broadband foundation exists for the community. The criteria within the access sub-assessment endeavors to identify gaps that could affect a local community broadband ecosystem including: last-mile 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."[7]

- Broadband adoption is important for consumers, institutions, and communities alike to take the next step in fully utilizing broadband appropriately. The adoption sub-assessment seeks to ensure the ability of all individuals to access and achieve meaningful use of broadband service by measuring the community's capability and commitment to eliminating the major barriers that keep non-adopters from getting broadband.

- Broadband use is the most important component of the framework 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 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.

Connected Assessment Criteria

The criteria for the Connected Assessment stems from the Federal Communication Commission's National Broadband Plan, as well as the broadband speed tiers used under the National Telecommunications and Information Administration's State Broadband Initiative Grant Program. The Connected Assessment's thirteen questions are as follows:

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

ACCESS

- **Broadband Availability:** What percentage of homes in the community has access to fixed broadband speeds of 3 Mbps or higher? [8]
- **Broadband Speeds:** What is the highest speed level available to at least 75% of the households in your community?
- **Broadband Competition:** What percentage of homes in the community has access to more than one broadband provider?
- **Middle Mile Access:** What is the availability of middle mile access to the community?
- **Mobile Broadband Availability:** What is the mobile broadband availability in your community?

ADOPTION

- **Digital Literacy:** What is the number of digital literacy program graduates over the past year in the community?
- **Public Computer Centers:** What is the number of public computer hours available per low-income resident per week?
- **Broadband Awareness:** What percentage of the community is reached by broadband awareness campaigns?
- **Vulnerable Population Focus:** How many vulnerable population groups are being targeted within the community?

USE

- **Economic Opportunity:** What economic opportunity applications are currently in place utilizing broadband technology?
- **Education:** What broadband-enabled applications are currently being utilized by the education sector?
- **Government:** What broadband-enabled applications are currently being utilized by the government sector?
- **Healthcare:** What broadband-enabled applications are currently being utilized by the Healthcare sector?

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[8] The Broadband Availability criterion is based on the speed tiers required by the National Telecommunications and Information Administration's State Broadband Initiative Grant Program. The closest combination of speeds for which NTIA collects data that would allow a consumer, according to the Federal Communications Commission's National Broadband Plan, to "access a basic set of applications that include sending and receiving e-mail, downloading web pages, photos and video, and using simple video conferencing" is 3 Mbps downstream and 768 kbps upstream. Downstream speed measures the rate at which a user can download data from the Internet, including viewing Web pages, receiving e-mails, or downloading music. Upstream speed measures the rate at which a user can upload data to the Internet, including sending e-mail messages and files. For more information, go to: http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf.

Community Technology Scorecard

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

Community Technology Scorecard Brief

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

- The community scored 34 out of a possible 40 points in broadband access primarily because almost all households (over 98%) have access to both fixed and mobile broadband, with at least 75% having access to at least 10 Mbps download speeds. Additionally, community members have several choices in broadband providers.
- The community scored 34 out of a possible 40 points in broadband adoption. This score indicates an opportunity for West Des Moines to increase efforts to overcome the local barriers to home broadband subscription.
- The community scored 39 out of a possible 40 points in broadband use. This score demonstrates that the community currently employs a variety of both basic and advanced broadband uses, and would likely benefit from continuing to create new innovative applications for citizens.
- West Des Moines 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 score of 100 required for Connected certification.
- West Des Moines 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

Community Champions: Naomi Hamlett
Community Advisor: Amy Kuhlers

FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	98% to 100% of households have access to fixed speeds of 3 Mbps	10	10
	Broadband Speeds	75% of households with access to at least 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 only 1 provider	6	10
	Mobile Broadband Availability	99.0% to 100.0% 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	3 advanced, 4 basic uses	10	10
	Education	3 advanced, 6 basic uses	10	10
	Government	3 advanced, 3 basic uses	9	10
	Healthcare	4 advanced, 4 basic uses	10	10
	USE SCORE		**39**	**40**
	COMMUNITY ASSESSMENT SCORE		**107**	**120**

Itemized Key Findings

The West Des Moines Broadband Committee identified the following key findings (in addition to findings illustrated in the community scorecard) through its technology assessment:

ACCESS

- 4 last mile broadband providers currently provide service in West Des Moines:
  - 98% of households have access to 3 Mbps.
  - More than 75% of West Des Moines homes have access to 10 Mbps service.
  - 95% of West Des Moines households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from one provider in West Des Moines.
- 99% of West Des Moines households have access to mobile broadband.

ADOPTION

- 4 Digital Literacy Programs exist in the community resulting in 474 graduates over the past year.
- 5 Public Computer Centers (PCC) with a total of 61 computers are open to the public.
- 5 Broadband Awareness Campaigns are reaching 80% of West Des Moines.
- 4 organizations are working with vulnerable populations.

USE

- At least 7 uses of broadband were identified in the area of economic opportunity including 3 advanced uses and 7 basic uses.
- At least 9 uses of broadband were identified in the area of education including 3 advanced uses and 6 basic uses.
- At least 6 uses of broadband were identified in the area of government including 3 advanced uses and 3 basic uses.
- At least 8 uses of broadband were identified in the area of healthcare including 4 advanced uses and 4 basic uses.

In addition to the items identified above, the West Des Moines Broadband Committee identified the following technology resources in the community:

Technology Providers

- 13 broadband providers were identified in West Des Moines
- 7 hardware providers
- 19 software providers
- 3 web developers

Technology Facilities

- 2 public computing centers
- 21 wireless hotspots

Community Websites
- 1 Business-related website (excluding private businesses)
- 6 Education-related websites
- 2 Government-related websites
- 1 Library-related website
- 1 Tourism-related website
- 2 Other websites

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 three priority projects that have been identified by the West Des Moines Broadband Committee followed by a complete list of all proposed projects. Detailed descriptions of each project can be found in the *Action Plan* section later in this report.

Grand Technology Gateway

Public-Private Partnerships to Deploy Broadband Service

Telecommuter Readiness

Proposed Projects

Below is a complete list of proposed projects. Detailed descriptions of each project 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. Grand Technology Gateway
3. Public-Private Partnerships to Deploy Broadband Service

Broadband Speeds
4. Identify, Map, and Validate Broadband Demand
5. Telecommuter Readiness

Broadband Competition – No proposed projects

Middle Mile Access
6. Develop Public-Private Partnerships to Deploy Broadband Service
7. Develop & Issue an RFP for Build-out

8. Study and Possibly Reassess Major Telecom Purchase Contracts

Mobile Broadband Availability
9. Complete a Vertical Assets Inventory

ADOPTION
Digital Literacy
10. Distribute Digital Literacy Content
11. Facilitate Internet Safety Classes

Public Computer Centers – No proposed projects

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

Vulnerable Population Focus
14. Initiate a Community Computer Refurbishment Program
15. Develop a Technology Mentorship Program

USE
Economic Opportunity
16. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses
17. Establish a "Digital Factory"

Education
18. Improve Education through Digital Learning

Government
19. Improve Online Business Services Offered by the Government
20. Pursue Next Generation 911 Upgrades

Healthcare – No proposed projects

DETAILED FINDINGS

Current Community Technology Developments in West Des Moines

During the Connected assessment, the community team identified projects that are currently in development or being implemented. These projects are helping to enhance technology in West Des Moines:

- Microsoft III & IV – Microsoft presently has a data center consisting of two buildings (DM-I and DM-II) in West Des Moines. Presently, it is considering a $700 million expansion to that site - DM-III and DM-IV.
- Iowa Network Services (INS) Fiber Build – INS is installing fiber along Jordan Creek Parkway, which will be part of a larger fiber loop.
- Grand Technology Gateway – The city has designated Grand Avenue, west of DMACC West to 105th Street and north to the city's boundary, as the Grand Technology Gateway. Presently, DMACC West and Microsoft serve as the main anchors. Most of the land is undeveloped, which allows the city to plan for the required utilities that the technology industry requires. The city hopes that involvement with Connect Iowa will help determine what is needed in guiding development of this area.
- Fiber Optic Network Audit & Documentation – The city has contracted with a consultant (GBA Systems Integrators) to create a database indicating which information is on the city-owned fiber network. The report is expected to be completed by the end of 2013.

West Des Moines Assessment Findings

Residents in West Des Moines (or sections of the community) are served by 13 providers. Currently, broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream.[9] According to Connect Iowa's latest broadband mapping update, the following providers have a service footprint in the West Des Moines Community:

Broadband Providers	Technology Type	Website Reference
AT&T	Mobile Wireless	www.att.com
CenturyLink	DSL	www.centurylinnk.com
HughesNet	Satellite	www.internet.hughesnet.com/satellite-internet/Iowa/W/West-Des-Moines
JAB Broadband	Fixed Wireless	www.jabbroadband.com
Mediacom	Cable	www.mediacombusiness.com
NexGen Communications	Fiber	www.nexgencom.com
Skycasters	Satellite	www.skycasters.com/satellite-internet-coverage/skycasters-coverage-iowa
Sprint	Mobile Wireless	www.sprint.com
StarBand Communications	Satellite	www.starband.com
T-Mobile	Mobile Wireless	www.t-mobile.com
US Cellular	Mobile Wireless	www.uscellular.com/uscellular
Verizon Wireless	Mobile Wireless	www.verizonwireless.com
ViaSat	Satellite	www.viasat.com/broadband-networks

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

Organization Name	Website	Website Category
West Des Moines Chamber of Commerce	www.wdmchamber.org	Business
West Des Moines Community School District	www.wdmcs.org	Education
Waukee Community School District	www.waukee.k12ia.us	Education
DMACC West	www.go.dmacc.edu/west/pages/welcome.aspx	Education

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[9] Organizations define broadband in different ways. For information to be included on the National Telecommunications and Information Administration's National Broadband Map, the technology must provide a two-way data transmission (to and from the Internet) with advertised speeds of at least 768 kilobits per second (Kbps) downstream and at least 200 Kbps upstream to end users. The Connected Community Engagement Program defines basic broadband as 768 Kbps downstream and 200 Kbps upstream.

Simpson College	www.simpson.edu/ewg	Education
Upper Iowa University	www.uiu.edu	Education
Viterbo University	www.viterbo.edu	Education
City of West Des Moines	www.wdm.iowa.gov	Government
City of West Des Moines	www.positionedperfectly.com	Government
West Des Moines Library	www.wdmlibrary.org	Libraries
Historic Valley Junction Foundation	www.valleyjunction.com	Tourism
Unity Point (aka. Methodist)	www.iowahealth.org	Other
Mercy	www.mercydesmoines.org	Other

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

Organization Name	Website	Provider Type
Black IOPS	www.blackiops.com	Hardware Provider
Embark IT	www.embarkit.com/contact.html	Hardware Provider
Iomada Solutions	www.iomada.com/Default.aspx	Hardware Provider
Sirius	www.msiinet.com	Hardware Provider
Accordance Systems	www.accordancesystems.com	Hardware Provider
Alexander Open Systems	www.aos5.com	Hardware Provider
Zirous	www.zirous.com	Hardware Provider
Embark IT	www.embarkit.com/contact.html	Software Provider
Textura	www.texturacorp.com/support/Contact.php	Software Provider
General Dynamics - IT	www.bcssi.com	Software Provider
Mediafour	www.mediafour.com	Software Provider
Rose International	www.roseint.com	Software Provider
Iomada Solutions	www.iomada.com/Default.aspx	Software Provider
Midwest Technical Partners	www.midwesttechnicalpartners.com	Software Provider
Qwest Solutions	www.quest-info.com	Software Provider
Shift Interactive	www.interactiveshift.com	Software Provider
G Forge Group	www.gforgegroup.com	Software Provider
Red 5 Interactive, Inc	www.rfi.com	Software Provider
Terra Spectrum Technologies	www.terra-spectrum.com	Software Provider
iapps24	www.iapps24.com	Software Provider
Sirius	www.msiinet.com	Software Provider
Alexander Open Systems	www.aos5.com	Software Provider
ICON Laboratories, Inc	www.icon-labs.com	Software Provider
Canvis	www.canvis.us	Software Provider
CISCO	www.cisco.com	Software Provider
Zirous	www.zirous.com	Software Provider

Red Five Interactive	www.r5i.com	Web Developer
Revenue Inbound	www.revenueinbound.com	Web Developer
Blue Compass Interactive	www.bluecompass.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.

Company Name	Website	Resource Type
West Des Moines Library	www.wdmlibrary.org	Public Computer Facility
West Des Moines Human Services	www.wdm.iowa.gov/Index.aspx?page=178	Public Computer Facility
Wellman's Pub & Rooftop	www.wellmanspub.com	Wireless Hotspot
Barnes & Noble Store 2921	http://store-locator.barnesandnoble.com/store/2921	Wireless Hotspot
Barnes & Noble Store 2220	http://store-locator.barnesandnoble.com/store/2220	Wireless Hotspot
Val Lanes Recreation Center	www.vallanes.com	Wireless Hotspot
McDonald's Store 12235	www.mciowa.com/12235	Wireless Hotspot
Jordan Creek Town Center	www.jordancreektowncenter.com/#	Wireless Hotspot
Buffalo Wild Wings	www.buffalowildwings.com	Wireless Hotspot
Legends American Grill	www.legendsamericangrill.com	Wireless Hotspot
Valley West Mall	www.valleywestmall.com	Wireless Hotspot
Rock Bottom Restaurant and Brewery	www.rockbottom.com	Wireless Hotspot
Caribou Coffee	www.cariboucoffee.com	Wireless Hotspot
Starbucks Store 15963	http://www.starbucks.com/store/15963	Wireless Hotspot
Starbucks Store 18518	www.starbucks.com/store/18518	Wireless Hotspot
Billy Joe's Lounge	www.billyjoes.com	Wireless Hotspot
Starbucks Store 6793	www.starbucks.com/store/6793/	Wireless Hotspot
Panera Bread Store 203207	www.panerabread.com	Wireless Hotspot
McDonald's Store 24462	www.mciowa.com/24462	Wireless Hotspot
Panera Bread Store 203205	www.panerabread.com	Wireless Hotspot
Friedrichs Coffee	www.sirfriedrich.com	Wireless Hotspot
Panera Bread Store 203215	www.panerabread.com	Wireless Hotspot
Biaggi's Ristorante Italiano	www.biaggis.com	Wireless Hotspot

Connected Assessment Analysis

A **ACCESS SCORE EXPLANATION**

Broadband Availability (10 out of 10 Points Possible) – is measured by analyzing the percentage of households in the community with access to fixed broadband speeds of 3 Mbps or higher. Data is collected by Connected Nation's broadband mapping program.[10] If broadband data is missing, the community team was able to improve the quality of data to ensure all providers are included.

- **According to the April 2013 data collected by Connect Iowa, 98% of West Des Moines 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. Data is collected by Connected Nation's broadband mapping program. The Connected Assessment analyzes broadband coverage by the highest speed tier with at least 75% of households covered. If broadband data is missing, the community team was able to improve the quality of data to ensure all providers are included.

- **According to the April 2013 data collected by Connect Iowa, at least 75% of West Des Moines residents had access to broadband speeds of 10 Mbps.**

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

- **According to the April 2013 data collected by Connect Iowa, at least 95% of West Des Moines residents had access to more than one broadband provider.**

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[10] Connected Nation is working across states and with the federal government to implement the State Broadband Initiative (SBI) program created by the Broadband Data Improvement Act of 2008 and managed by the National Telecommunications and Information Administration (NTIA) within the Department of Commerce. One of the main components of the SBI program is the creation of a detailed, nationwide map of broadband coverage in order to accurately pinpoint remaining gaps in broadband availability across the nation. Connected Nation is the largest mapping agent across the nation supporting the SBI program, and has worked in thirteen jurisdictions to collect, process, integrate, and validate provider data, and map the broadband inventory across these jurisdictions. Connected Nation has received, processed, and submitted records to the NTIA from over 1,400 service providers.

Middle Mile Access (<u>6 out of 10 Points Possible</u>) – 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. The community, in collaboration with Connected Nation, collected and analyzed middle mile access data.

- **West Des Moines is served by at least 1 middle mile fiber provider.**

Mobile Broadband Availability (<u>10 out of 10 Points Possible</u>) – 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 2013 data collected by Connect Iowa, 99% of West Des Moines residents had access to mobile broadband service.**

ADOPTION SCORE EXPLANATION

Digital Literacy (<u>8 out of 10 Points Possible</u>) – 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
West Des Moines School District	Community Education Adult Education Courses that are technology-related (typically 30 courses offered per year)	350
Waukee School District	Community Education	50
DMACC West	Computer Literacy Classes	70
WDM Human Services	Computer Literacy Classes	4
Total Graduates		**474**

Public Computer Centers (<u>10 out of 10 Points Possible</u>) – is measured based on the number of hours computers are available each week per 1,000 low-income residents. Available computer

hours are calculated by taking the overall number of computers multiplied by the number of hours open to a community during the course of the week. A listing of public computer centers available in West Des Moines is below.

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
West Des Moines Human Services	40	3	120
West Des Moines Library	68	30 desktops	2,040
West Des Moines Library (computer lab)	36	12 laptops	432
Valley Evangelical Free Church	60	1	60
Historic City Hall	40	15	600

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 West Des Moines is below.

Organization Name	Campaign Description	Community Reach
Iowa Network Services	Advertising fiber availability to businesses	30% of community
West Des Moines Schools	Infinite Campus: Access to online grades/attendance	80% of enrolled families
West Des Moines Library	New system (2/2013) allows electronic payment of fines and courtesy reminders via text/email about materials that are due	100% of library users who want to use system
Waukee School District	PowerSchool: Access to student grades, assignments, attendance, high school class registrations and scheduling, etc. Parents pay fees on-line through the portal as well	98% of enrolled families
Chamber of Commerce	Weekly e-newsletter, online RSVP for all events, online purchase of sponsorships, online posting of job openings, payment via PayPal through iPad/iPhone	100% of Chamber members

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 West Des Moines is listed below.

Organization Name	Program Description	Vulnerable Group
West Des Moines School District	E20-20: Online course recovery	At-risk students
West Des Moines Schools	ESL courses for K-12 students	Non-English speaking
Waukee School District	Online testing for make-up tests	At-risk students/students not on track for graduation
Waukee School District	ESL courses for K-12 students	Non-English speaking

USE SCORE EXPLANATION

Economic Opportunity (9 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
Wi-Fi Spots	1 free, publicly accessible wireless hotspot available per 5,000 residents	Basic
Historic Valley Junction Foundation	Availability of main street program online	Basic
Online Banking	Availability of free online banking for consumers and businesses	Basic
WDM Business Incubator	Initiative to Spur Innovation	Advanced
EBSCO Host	Online database for resources and funding opportunities for local businesses	Advanced
A to Z Database	Online database for resources and funding opportunities for local businesses	Advanced
Online Tourism Portal	Des Moines Convention and Visitors Bureau covers West Des Moines with their website - www.catchdesmoines.com	Basic

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

Application Provider	Description	Basic/ Advanced
Classroom Internet	100% of K-12 classrooms have broadband access	Basic
School Libraries	100% of K-12 libraries have broadband	Basic
Technology Training	Digital literacy and technology training available for 100% of teachers	Basic
School Library Automation	100% of K-12 libraries have automated systems	Basic
Online Catalog for School Library	100% of all K-12 schools have online catalogs available to the public	Basic
Online Grades	100% of students have online access to grades, attendance	Advanced
Online Courses	Online courses are available to secondary students	Basic
STEM Courses	4 years of STEM based courses are available through Project Lead The Way, providing engineering courses	Advanced
Online Catalog at Community Library	Online catalog is available to all users of WDM Library	Advanced

Government (9 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
Your Gov	Mobile service desk application	Advanced
City Maps	Maps are online on city website; users are allowed to create their own map using GIS	Basic
City website	Online info for each city department	Basic
City website	Online program registration for parks and library	Advanced
"Positioned Perfectly" Facebook and You Tube page	Information and videos about the city	Basic
WDM Trails	Mobile application for trails in WDM	Advanced

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

area of healthcare are listed below and identified as basic or advanced.

Application Name	Description	Basic/Advanced
Mercy - Find a Physician	Ability to search for doctors by specialty and geography www.mercydesmoines.org/for_patients/find_phys.cfm	Basic
Methodist - Find a Doctor	Ability to search for doctors by specialty and geography www.iowahealth.org/find-a-doctor.aspx	Basic
Vitals.com	Ability to search for doctors by specialty and geography	Basic
Restaurant Health Inspections	Ability to search for WDM restaurant inspection reports www.dia.iowa.gov/food/controller.aspx?cmd=NavFromMenu&mode=search	Basic
Mercy - telemedicine	Send and receive	Advanced
Mercy - electronic medical records	All physicians use an EMR (electronic medical record). Remote access to all physicians is provided so that they can review a patient's record, order tests, and prescribe medication from home, the office, or at the hospital.	Advanced
Methodist - telemedicine	Send and receive	Advanced
Methodist - electronic medical records	All physicians use an EMR (electronic medical record). Remote access to all physicians is provided so that they can review a patient's record, order tests, and prescribe medication from home, the office, or at the hospital.	Advanced

ACTION PLAN

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 three priority projects. This is followed by a complete list of all proposed solutions.

Grand Technology Gateway

Goals:
Improve infrastructure in the Grand Technology Gateway.

Project Description:
The City has designated a Grand Avenue, west of DMACC West to 105th Street, and north to I-80 as the Grand Technology Gateway. Presently, DMACC West and Microsoft serve as the main anchors. Most of the land is undeveloped, which allows the City to plan for the required utilities that the technology industry requires. The City hopes that involvement with Connect Iowa will help determine what infrastructure is needed as we guide development of this area. The team would also like to initiate a marketing campaign for the area. DMACC West has shown interest in partnering with the City on marketing.

Benefits:
Increased broadband access.

Action Items:
Plan for future development by determining infrastructure needs.

Implementation Team:
City of West Des Moines, DMACC, and Connect Iowa

Public-Private Partnerships to Deploy Broadband Service

Goals:
Improve broadband access along Highway 5.

Project Description:
While the City is relatively well-served by broadband service, there are areas that could use additional service. The area along Highway 5 is relatively undeveloped despite the large arterial

road providing ideal transportation. Data centers have shown interest in West Des Moines, but never in that area. The team would like to explore various options in making that area, as well as other areas in the City, more broadband-ready for specific users. The team would like to explore with our broadband providers the possibility of becoming a Gigabyte City.

Benefits:
Make portions of the city more broadband-ready for certain users.

Action Items:
Work with providers to determine approaches for providing better broadband access along Highway 5.

Implementation Team:
West Des Moines and area broadband providers.

Telecommuter Readiness

Goals:
Ensure West Des Moines is able to provide adequate broadband to telecommuters.

Project Description:
At one of the City's Visioning sessions, a futurist from Microsoft came to speak about the needs of the future. He mentioned that there will be an increase in telecommuting and that upload as well as download speeds will be important. The team would like to gather information about what is needed, by when, and by whom, to make sure that the City of West Des Moines can maintain and strengthen its vital business community.

Benefits:
Increased broadband access and speeds as well as ensuring business community's needs are met.

Action Items:
Collect information from businesses on what their needs are and when their employees will need such access.

Implementation Team:
West Des Moines and the business community.

All Proposed Projects

ACCESS

Broadband Availability

1. Perform an Analysis of Local Policies and Ordinances

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

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

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

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

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

2. Grand Technology Gateway

The City has designated a Grand Avenue, west of DMACC West to 105th Street, and north to I-80 as the Grand Technology Gateway. Presently, DMACC West and Microsoft serve as the main

anchors. Most of the land is undeveloped, which allows the City to plan for the required utilities that the technology industry requires. The City hopes that involvement with Connect Iowa will help determine what infrastructure is needed as we guide development of this area. The team would also like to initiate a marketing campaign for the area. DMACC West has shown interest in partnering with the City on marketing.

Goal
1. Improve infrastructure in the Grand Technology Gateway.

Benefits
1. Increased broadband access.

Action Items
1. Plan for future development by determining infrastructure needs.

3. Public-Private Partnerships to Deploy Broadband Service

While the City is relatively well-served by broadband service, there are areas that could use additional service. The area along Highway 5 is relatively undeveloped despite the large arterial road providing ideal transportation. Data centers have shown interest in West Des Moines, but never in that area. The team would like to explore various options in making that area, as well as other areas in the City, more broadband-ready for specific users. The team would like to explore with our broadband providers the possibility of becoming a Gigabyte City.

Goal
1. Improve broadband access along Highway 5.

Benefits
1. Make portions of the city more broadband-ready for certain users.

Action Items
1. Work with providers to determine approaches for providing better broadband access along Highway 5.

Broadband Speeds

4. 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

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

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.

5. **Telecommuter Readiness**

At one of the City's Visioning sessions, a futurist from Microsoft came to speak about the needs of the future. He mentioned that there will be an increase in telecommuting and that upload as well as download speeds will be important. The team would like to gather information about what is needed, by when, and by whom, to make sure that the City of West Des Moines can maintain and strengthen its vital business community.

Goal

1. Ensure West Des Moines is able to provide adequate broadband to telecommuters.

Benefits

1. Increased broadband access and speeds as well as ensuring business community's needs are met.

Action Items

1. Collect information from businesses on what their needs are and when their employees will need such access.

Broadband Competition – No proposed projects

Middle Mile Access

6. **Develop Public-Private Partnerships to Deploy Broadband Service**

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

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

Goal
1. Fund broadband network deployment.

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.

7. Develop & Issue an RFP for Build-out

An RFP (request for proposals) is a widely used technique for establishing a selection of qualified responses for which to choose when contracting for services. The RFP should provide a guidance and due diligence framework for interested broadband providers and vendors. Furthermore, the RFP should request that interested parties provide plans for cost-effective community broadband networks, including equipment lists, locations, and itemized engineering cost estimates. In addition, the completed design should include what technology will be needed at customer premises, the performance that can be expected, and recurring costs associated with operating and maintaining the system once it is in place.

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

Benefits

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

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

8. Study and Possibly Reassess Major Telecom Purchase Contracts

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

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

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

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

Mobile Broadband Availability

9. Complete a Vertical Assets Inventory

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

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

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

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

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

ADOPTION

Digital Literacy

10. 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.

Additionally, your community could create a partnership between libraries, school systems, computer suppliers, and broadband providers to provide free training and discounted computers and broadband service to low-income community members who are not participating in the digital age. An example of such a program is Connected Nation's Every Community Online program. This is an innovative program that is providing free digital literacy training, access to low-cost computers, and discounted broadband access to communities across the country.

Goal
1. Facilitate partnerships in order to provide digital literacy training.

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

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

11. Facilitate Internet Safety Classes
Some of the best ways to make sure community members are aware of how to navigate the Internet safely include instituting security-awareness training initiatives that include, but are not limited to, classroom style training sessions, security awareness website(s), helpful hints via

e-mail, or even posters. These methods can help ensure that community members have a solid understanding of cyber threats. There are many risks, some more serious than others.

Among these dangers are viruses erasing entire systems, a hacker breaking into a system and altering files, someone using someone else's computer to attack others, someone stealing credit card information, sexual predators making advances at children, and criminals making unauthorized purchases. Unfortunately, there's no 100% guarantee that even with the best precautions some of these things won't happen, but there are steps that can be taken to minimize the chances. Awareness training can also be used to alleviate anxiety for community members who are not using the Internet because of fear of cyber threats.

Goal
1. Create a program designed to help community members who are using the Internet to identify and avoid situations that could threaten their safety, threaten business or government networks, compromise confidential information, compromise the safety of children, compromise their identities and financial information, or destroy their reputations.

Public Computer Access – No proposed projects

Broadband Awareness

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

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

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

Goal

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

Benefits
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.

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

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

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

Action Items
1. Create community partnerships.
2. Identify funding sources and hosts.

3. Identify suitable speakers.
4. Develop relevant content.

Vulnerable Population Focus

14. Initiate a Community Computer Refurbishment Program

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

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

Computer recycling is also good for the environment. Explore these additional resources for computer recycling and refurbishment.
- Earth 911 - Earth 911 is a comprehensive communication medium for the environment. Earth 911 has taken environmental hotlines, websites, and other information sources nationwide, and consolidated them into one network. Once you contact the Earth 911 network, you will find community-specific information on e-Cycling and much more.
- Electronic Industries Alliance's Consumer Education Initiative - The Electronic Industries Alliance's e-Cycling Central website helps you find reuse, recycling, and donation programs for electronics products in your state.

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

15. 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 challenge them to extend their technology experiences beyond the classroom. The program essentially taps into a technology knowledge base that exists through these exceptional students. Students will be required to develop programs such as training seniors to use computers, initiating a computer refurbishing program, offering basic computer training for local communities, building websites, etc.

Goal

1. Utilize student technology knowledge to implement community programs.

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.

USE

Economic Opportunity

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

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

A training program, or entry-level "Broadband 101" course, could be utilized to give small and medium businesses an introduction on how to capitalize on broadband connectivity, as well as more advanced applications for IT staff. In addition, training should include resources for non-IT

staff, such as how to use commerce tools for sales, streamline finances with online records, or leverage knowledge management across an organization. Additional training might include:

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

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

Benefits
1. Provides entrepreneurial support.
2. Eliminates knowledge gap about how best to utilize broadband tools, increasing productivity.
3. Promotes business growth and workforce development.
4. Broadband empowers small businesses to achieve operational scale more quickly by lowering start-up costs through faster business registration and improved access to customers, suppliers, and new markets. According to Connected Nation's 2012 Jobs and Broadband Report, businesses that are using the Internet bring in approximately $300,000 more in median annual revenues than their unconnected counterparts.

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

17. Establish a "Digital Factory"

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

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

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

Another example would be Connected Nation's recently unveiled Digital Works program. 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. For more information, visit: http://www.connectednation.org/sites/default/files/connected-nation/files/cn_digital_works_launch_final.pdf.

Goal
1. 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 factory concept requires a site suitable for establishing office infrastructure, educational partners to develop the workforce, and business relationships with enterprises willing to hire workers through the digital factory.
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 who would provide contractual employment to program graduates.
5. This employment-focused program can be coupled with a digital literacy program, such as Connected Nation's Every Community Online program, in order to provide basic computer and Internet skills. Connected Nation provides a discounted, turnkey training lab solution, including refurbished or new computers, presentation equipment, training curriculum, and broadband service.

Education

18. 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

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

Benefits
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

19. 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
1. 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.

20. Pursue Next Generation 911 Upgrades

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

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

Goal

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

Benefits

Transitioning to a "Next Generation" IP-based network will enable the public to make voice, text, or video emergency calls from any communications device. With Next Generation 911, responders and PSAPs will gain greater situational awareness, which will enable better-informed decisions, resulting in better outcomes and, ultimately, a safer community. By capitalizing on advances in technologies, you are enabling:

1. Quicker and more accurate information to responders

2. Better and more useful forms of information
3. More flexible, secure and robust PSAP operations
4. Lower capital and operating costs

Action Items

If you're involved in PSAP decision making and are faced with replacing aging systems or purchasing new technology for the very first time, you need to consider what your most immediate requirements are and where you need to be 10 years from now. Your community can take a measured and practical approach that spreads the operational impact and costs of a Next Generation 911 transition over time. Your local agency should choose a starting point that makes the most sense and provides immediate benefits for their PSAP, responders, and communities they serve. For example, according to Intrado, Inc., a provider of 911 and emergency communications infrastructure to over 3,000 public safety agencies, local public-safety agencies can implement any of the following next-generation 911 components today, and provide immediate benefits with little to no disruption of current operations:

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

Healthcare – No proposed projects

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 spring 2010. The key goal of the map was to highlight communities and households that remain unserved or underserved by broadband service; this information was essential to estimating the broadband availability gap in the state and understanding the scope and scale of challenges in providing universal broadband service to all citizens across the state. Since the initial map's release, Connect 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 2013 depict a geographic representation of provider-based broadband data represented by cable, DSL, wireless, fiber, etc. These maps also incorporate data such as political boundaries and major transportation networks in the state. A statewide map is found at http://www.connectiowa.org/connectednationftp/iowa/Statewide_Maps/IA_Statewide_Broadband.pdf. The county maps are found at http://www.connectiowa.org/community_profile/find_your_county/iowa/des-moines.

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	98.23
At Least 1.5 Mbps/200 Kbps	30	1,191	97.50
At Least 3 Mbps/768 Kbps	63	1,158	94.81
At Least 6 Mbps/1.5 Mbps	234	988	80.87
At Least 10 Mbps/1.5 Mbps	262	959	78.54
At Least 25 Mbps/1.5 Mbps	858	363	29.72
At Least 50 Mbps/1.5 mbps	992	229	18.77
At Least 100 Mbps/1.5 Mbps	1,174	48	3.93
At Least 1 Gbps/1.5 Mbps	1,222	0	0

Source: Connect Iowa, May 2013.

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile and satellite service) across the state of Iowa; it presents the number and percentage of unserved and served households by speed tiers. The total number of households in Iowa in 2010 was 1,221,576, for a total population of 3 million people. Table 1 indicates that 98.23% 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 21,571 households in the spring of 2013. Further, approximately 1,158,167 households across Iowa have broadband available of at least 3 Mbps download and 768 Kbps upload speeds. The percentage of Iowa households having fixed broadband access available of at least 6 Mbps download and 1.5 Mbps upload speeds is estimated at 80.87%.

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

As differences in broadband availability estimates between the fall of 2010 and the spring of 2013 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, which should be taken into consideration when analyzing the data. This measurement error will decrease as local, state, and federal stakeholders, identify areas where the displayed coverage is underestimated or overestimated. Connect Iowa welcomes such feedback to be analyzed in collaboration with broadband providers to correct errors identified in the maps.

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

Interactive Map
Connect Iowa provides My ConnectView™, an online tool, developed and maintained by Connected Nation, intended to allow users to create completely customized views and maps of broadband infrastructure across the state. The self-service nature of this application empowers 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? And, 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 8 percentage points between 2011 and 2012.
- Approximately 936,000 Iowans go online to search for medical information, or communicate with healthcare professionals like doctors or insurance offices.
- More than three out of ten (31%) or 110,000 rural non-adopters in Iowa cite relevance as their main barrier to broadband adoption, while nearly one-fifth (19%) or 66,000 cite cost as their biggest barrier.

Additionally, an assessment on technology in businesses released in 2012 in a report titled *Technology Adoption among Iowa Businesses* revealed the following key findings:

- Iowa business establishments that use broadband report median annual revenues that are approximately $300,000 higher than businesses that do not use broadband.
- Online sales account for approximately $2.9 billion in annual sales revenue in the state.
- Approximately 21,000 businesses in Iowa allow their employees to work from home instead of commuting to a physical workplace.

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. To better facilitate the expanded role, key state partnership was transferred to the Iowa Economic Development Authority in 2011. 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. Ground-breaking economic growth strategies focusing on cultivating startup companies and helping existing companies become more innovative complement the activities 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 under-served or overlooked.
http://www.connectednation.org

The **National Telecommunications and Information Administration** (**NTIA**) is an agency of the

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

The NTIA has awarded a total of $293 million for the SBI program to 56 grantees, one each from the 50 states, 5 territories, and the District of Columbia, or their designees. Grantees such as Connect 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: WHAT IS CONNECTED?

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

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

Connected Process

The Connected process consists of a 4-step process:

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

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

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

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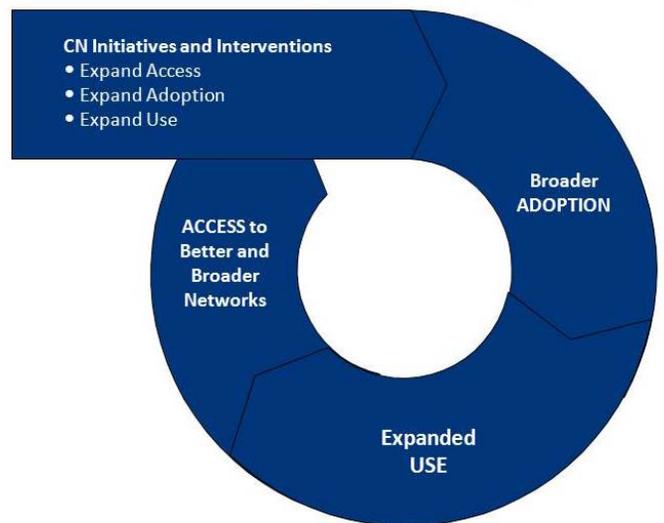12. Government
13. Healthcare

Step 3: Action Planning & Implementation.
Following Community Assessments, the data is analyzed, gaps will be determined, and recommended actions to help to fill gaps will be identified. After successful execution of projects the community will be certified as a Connected Community.

Broadband Catalysts for Change

CN Initiatives and Interventions
- Expand Access
- Expand Adoption
- Expand Use

ACCESS to Better and Broader Networks

Broader ADOPTION

Expanded USE

Step 4: Project Success and Expanded Local Empowerment. Once a community is certified, the community will have an avenue to discuss its success and pursue opportunities as a recognized, technologically advanced community.

APPENDIX 4: 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 un-served and under-served 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.