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LINCOLN COUNTY

TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT NEVADA

AND THE

LINCOLN COUNTY BROADBAND COMMITTEE

CONNECT Nevada

CONNECTED℠ Community Engagement Program

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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 applications, 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, healthcare 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.

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.[6]

[5] Ibid.
[6] Ibid.

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. [7] 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 Lincoln County Broadband Committee is boosting the community's capabilities in education, healthcare, and public safety, and stimulating economic growth and spurring job creation. The Lincoln County Broadband Committee has collaborated with multiple community organizations and residents to:

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

Lincoln County Geographic/Demographic Information

Lincoln County was established in 1866 after Nevada moved its state line eastward and southward at the expense of Utah and Arizona territories. It is named after Abraham Lincoln,

[7] Connected Nation, parent company for Connect Nevada, 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 underserved or overlooked.

the 16th President of the United States. Lincoln County initially included the town of Las Vegas; however, Clark County was formed into a separate county effective July 1, 1908, by an act of the Nevada Legislature. The controversial and highly classified military base known as "Area 51" is in Lincoln County, and the county sheriff acts in proxy for the perimeter security forces that patrol the area.

The county has a total area of 10,637 square miles, of which 10,634 square miles is land and only three square miles is water. Based on the 2010 U.S. Census, the county's population density is about 0.5 persons per square mile. About 77% of the County resides in the cities of Caliente, Alamo, Pioche, and Panaca. Almost 93% of the racial makeup of the County is White, 6.9% Hispanic/Latino, 2.9% Black or African American, and 1.3% Native American. The County Seat is located in the unincorporated community of Pioche which is 180 miles northeast of Las Vegas. Pioche currently contains the county administrative offices and has one of the oldest grade schools in the state.

About 86% of the county's population is high school graduates (25 years and older), and 16% have at least a bachelor's degree. Worker's travel time to work averages 29 minutes. The County's per capita income in the past 12 months is $18,298 while median household income is at $42,662. Based on the 2011 Census estimates, about 13.1% of the population is said to be living below the poverty level; 24% of those are under age 18 years, and 18.4% are persons 65 years of age and over.

An estimated 2,792 housing units are in the County, of which 72% are owned with a median home value of approximately $156,300. The average number of households in the county is estimated at 1,815 with an average of 2.67 persons per household.

U.S. Census QuickFacts	Lincoln County	Nevada
People		
2012 Population Estimates	5,405	2,758,931
Persons under 5 years, percent 2012	4.7%	6.6%
Persons under 18 years, percent 2012	23.9%	24.1%
Persons 65 years and over, percent 2012	18.4%	13.1%
High School Graduate: 25+years old, percent 2007-2011	85.6%	84.2%
Bachelor's Degree or higher, percent 2007-2011	16.4%	22.2%
Mean Travel time to work, workers 16+ yrs minutes (2007-2011)	29.1	23.6
Housing Units 2011	2,792	1,183,873
Homeownership Rate (2007-2011)	72.1%	59.1%
Housing Units in multi-unit structures, percent 2007-2011	3.9%	29.6%
Median value of owner-occupied housing units (2007-2011)	$156,300	$225,400
Living in same house 1 year & over percent 2007-2010	90.1%	78.2%
Households (2007-2011)	1,815	986,741

Persons per household (2007-2011)	2.67	2.67
Per capita money income in past 12 months, dollars (2011)	$18,298	$27,625
Median household income, dollars (2007-2011)	$42,662	$55,553
Persons below poverty level, percent 2007-2011	13.1%	12.9%
Business		
Private nonfarm establishments 2011	86	58,777
Private nonfarm employment 2011	610	1,006,610
Private nonfarm employment percent change 2010-2011	-1.5%	-0.2%
Non employer establishments 2011	243	180,711
Building Permits, 2012	12	9,071
Geography		
Land area in square miles 2010	10,633.20	108,781.18
Persons per square mile 2010	0.5	24.6

Source: U.S. Census Bureau State & County QuickFacts

Economic and Community Development Projects

The Lincoln County Regional Development Authority (LCRDA) was established in 1993 and became the primary entity responsible for economic development within Lincoln County. The LCRDA has undertaken several targeted marketing campaigns to bring targeted industries and prospective businesses to the county ranging from manufacturing, service oriented, and firms involved in renewable energy.

These firms are encouraged to consider Lincoln County industrial sites including the Meadow Valley Industrial Park (Caliente), Alamo Industrial Park; Lincoln Business Center (Rachel), and Coyote Springs.

The following information was provided by the LCRDA showing details and progress of its existing development projects:

- **MEADOW VALLEY INDUSTRIAL PARK**
  Project Description: A 65-acre plus industrial park owned and being developed by the City of Caliente. Located along U.S. Hwy 93 in the immediate vicinity of Caliente. Currently, improvements to the Park include roadway entrance from U.S. Hwy 93; entrance landscaping and signage; water system; sewer system; and utilities to the site.
  - Date of Implementation: In progress.
  - Goals/Objectives:
    - Attract investment by business and industry in the Park.
    - Expand Lincoln County and City of Caliente tax base.
    - Create employment and income opportunities for City residents.
  - Action Items:
    - Secure funding for Phase II interior roadway and sewer improvements.
    - Marketing.

- Implementation Team:
  - Lincoln County Regional Development Authority.
  - Caliente City Council.

- **ALAMO INDUSTRIAL PARK**
  Project Description: A 200-acre plus industrial park owned and being developed by Lincoln County. Located along U.S. Hwy 93 in the immediate vicinity of Alamo. Currently, water rights for the Park have been granted by the Nevada State Engineer; a well has been drilled and tied into the Town of Alamo water system; and final engineering drawings have been completed for Phase I infrastructure improvements. A parcel map for Phase 1 has been prepared and recorded.
  - Date of Implementation: In progress.
  - Goals/Objectives:
    - Funding and construction of Phase I infrastructure.
    - Attract investment by business and industry in the Park.
    - Expand Lincoln County tax base.
    - Create employment and income opportunities for County residents.
  - Action Items:
    - Secure funding for Phase I infrastructure improvements.
    - Marketing.
  - Implementation Team
    - Lincoln County Regional Development Authority.
    - Board of Lincoln County Commissioners.
    - Alamo Sewer and Water GID.
    - Alamo Power District.
    - Lincoln County Power District #1.

- **LINCOLN BUSINESS CENTER**
  Project Description: An area of 282 acres of industrial, commercial, and worker residential housing planned development adjacent to another 1,000-plus acres of residential development in the Rachel area. The Center is owned and is being developed by Torreson Industries.
  - Date of Implementation: In progress.
  - Goals/Objectives:
    - Attract investment by business and industry in the Lincoln Business Center.
    - Expand Lincoln County tax base.
    - Create employment and income opportunities for County residents.
  - Action Items:
    - Marketing.
  - Implementation Team:
    - Lincoln County Regional Development Authority.

- Board of Lincoln County Commissioners.
- Torreson Industries.

- **COYOTE SPRINGS**
  Project Description: A 25,000-acre plus mixed use development located along U.S. Hwy 93 at the Lincoln County/Clark County line. Two-thirds of the project area is located in Lincoln County. At build-out, the project will include up to 50,000 dwelling units, areas for commercial and industrial development, and a variety of public facilities including schools, police, and fire stations. Currently, an estimated $200 million of infrastructure improvements, including water and wastewater treatment; wells; pipelines; drainage; electrical substation; and an 18-hole championship golf course have been constructed. Most of the infrastructure improvements to date have been constructed in the Clark County portion of the project. The 500kV On-Line electrical generation line currently under construction by NV Energy is adjacent to the project area. An existing 69kV and planned 138kV electrical transmission lines are owned by Lincoln County Power District #1.
  - Date of Implementation: Ongoing.
  - Goals/Objectives:
    - Cost effective interconnections to existing and planned electrical transmission in the area.
    - Attraction of investments by business and industry within the Coyote Springs project (including high-tech clean industry and solar energy generation).
    - Expand Lincoln County tax base.
    - Create employment and income opportunities for County residents.
  - Action Items:
    - Cooperation of Lincoln County Power District #1 and NV Energy regarding provision of cost effective interconnections to existing and under-construction electrical transmission lines in the area.
    - Identify and secure funding for electrical transmission interconnections.
    - Marketing of Coyote Springs area to business and industry.
  - Implementation Team:
    - Lincoln County Regional Development Authority.
    - Board of Lincoln County Commissioners.
    - Coyote Springs Investments 4.
    - Lincoln County Power District #1.
    - NV Energy.

- **DRY LAKE VALLEY NORTH SOLAR ENERGY (SEZ)**
  Project Description: A 25,000-acre Bureau of Land Management (BLM) designated area intended for development of utility-scale solar energy development. Development of solar within the adjacent 600-acre private parcel is planned. The SEZ is immediately adjacent to the 500kV On-Line electrical transmission line currently under construction by NV Energy. The SEZ is also crossed by an existing 69kV electrical transmission line owned by Lincoln

County Power District #1.

- Date of Implementation: BLM designated SEZ in mid-2012.
- Goals/Objectives:
  - Investment by industry in utility-scale solar PV generation projects within the SEZ and adjacent private land.
  - Expand Lincoln County tax base.
  - Create employment and income opportunities for County residents.
- Action Items:
  - BLM completion of SEZ-specific regional mitigation strategy and bounded-analysis Environmental Assessment including related archeological and biological resource surveys.
  - Cooperation of Lincoln County Power District #1 and NV Energy regarding provision of cost effective interconnections to existing and under-construction electrical transmission lines in the area.
  - Marketing of SEZ to solar project developers.
- Implementation Team:
  - Lincoln County Regional Development Authority.
  - Board of Lincoln County Commissioners.
  - Lincoln County Power District #1.
  - NV Energy.

CONNECTED ASSESSMENT

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."[8]

- 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:

[8] *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?[9]
- **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?

[9] 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 30 out of a possible 40 points in broadband access. The community's broadband availability is at a very satisfactory level, but, notably, less than 60% of the households have access to more than one broadband provider. As it stands, their score in the access section fell short of the needed points for certification.
- The community scored 34 out of a possible 40 points in broadband adoption. This score indicates substantial efforts on the part of the community to promote adoption and address potential barriers to utilization of broadband.
- The community scored 37 out of a possible 40 points in broadband use. This score indicates high levels of utilization and meaningful use of broadband in critical areas in the community including the government, business/economic development, education, and healthcare.
- Lincoln County achieved a score of 101 points out of 120 for overall broadband and technology readiness. Though their score fell short of Connected Programs certification requirements the assessment results still indicated high success in technology access, adoption, and use.
- 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: Keith Larson Community Advisor: Ariel Martinez				
FOCUS AREA	**ASSESSMENT CRITERIA**	**DESCRIPTION**	**SCORE**	**MAXIMUM POSSIBLE SCORE**
ACCESS	Broadband Availability	95% to 97.9% of households have access to 3 Mbps	8	10
	Broadband Speeds	75% of households with access to at least 25 Mbps	4	5
	Broadband Competition	<60% of households with access to more than 1 broadband provider	0	5
	Middle Mile Access	Availability of middle mile fiber infrastructure from more than 1 provider	10	10
	Mobile Broadband Availability	95% to 98.9% of households with access to mobile wireless	8	10
	ACCESS SCORE		**30**	**40**
ADOPTION	Digital Literacy	Program grads are greater than 10 per 1,000 residents over the past year	10	10
	Public Computer Centers	500 computer hours per 1,000 low-income residents per week	10	10
	Broadband Awareness	Campaigns reach 80% of the community	8	10
	Vulnerable Population Focus	3 groups	6	10
	ADOPTION SCORE		**34**	**40**
USE	Economic Opportunity	2 advanced, 6 basic uses	10	10
	Education	4 advanced, 5 basic uses	10	10
	Government	1 advanced, 5 basic uses	7	10
	Healthcare	11 advanced, 2 basic uses	10	10
	USE SCORE		**37**	**40**
	COMMUNITY ASSESSMENT SCORE		**101**	**120**

Itemized Key Findings

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

ACCESS

- One last mile broadband provider currently provides service in Lincoln County:
  - 97.56% of households have access to 3 Mbps.
  - More than 75% of Lincoln County homes have access to 25 Mbps service.
- Middle mile fiber infrastructure is available from multiple providers in Lincoln County.
- 98.65% of Lincoln County households have access to mobile broadband.

ADOPTION

- 9 Digital Literacy Programs exist in the community resulting in at least 187 graduates over the past year.
- 7 Public Computer Centers (PCC) with a total of 46 computers open to the public.
- 3 Broadband Awareness Campaigns are reaching 80% of Lincoln County.
- 3 organizations are working with vulnerable populations.

USE

- At least 8 uses of broadband were identified in the area of economic opportunity including 2 advanced uses and 6 basic uses.
- At least 9 uses of broadband were identified in the area of education including 4 advanced uses and 5 basic uses.
- At least 6 uses of broadband were identified in the area of government including 1 advanced use and 5 basic uses.
- At least 13 uses of broadband were identified in the area of healthcare including 11 advanced uses and 2 basic uses.

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

Technology Providers

- 8 broadband providers (including satellite and mobile broadband) were identified in Lincoln County
- 1 web developer
- 1 other provider

Technology Facilities

- 5 public computing centers
- 1 video conference facility

Community Websites

- 8 Business-related websites (excluding private businesses)
- 2 Education-related websites
- 5 Government-related websites
- 2 Healthcare-related websites
- 1 Library-related website
- 1 Tourism-related website

Community Priority Projects

The Connected Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. Below are three priority projects. Detailed descriptions of each project can be found in the *Action Plan* section later in this report.

1. **Lincoln County School District Technology Upgrade Projects**
2. **Lincoln County Telephone System Fiber Cable Placement Project**
3. **Perform an Analysis of Local Policies and Ordinances**

All 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. Lincoln County Telephone System Fiber Cable Placement Project

Broadband Speeds

No proposed projects

Broadband Competition

2. Perform an Analysis of Local Policies and Ordinances

Middle Mile Access

No proposed projects

Mobile Broadband Availability

No proposed projects

ADOPTION

Digital Literacy

No proposed projects

Public Computer Centers
No proposed projects

Broadband Awareness
3. Facilitate a Technology Summit
4. Implement a Community-Based Technology Awareness Program

Vulnerable Population Focus
5. Initiate a Community Computer Refurbishment or Recycling Program
6. Develop a Technology Mentorship Program

USE

Economic Opportunity
7. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses

Education
8. Improve Education through Digital Learning
9. Lincoln County School District Technology Upgrade Projects

Government
10. Support Healthcare Providers Serving Rural Communities
11. Improve the Online Presence of Government
12. Pursue Next Generation 911 Upgrades
13. Improve Online Business Services Offered by the Government

Healthcare
No proposed projects

DETAILED FINDINGS

Lincoln County Assessment Findings

Residents in Lincoln County (or sections of the community) are served by eight providers. Currently, broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream.[10] According to Connect Nevada's latest broadband mapping update, the following providers have a service footprint in the Lincoln County Community:

Broadband Providers	Technology Type	Website Reference
AT&T Mobility, LLC	Mobile Broadband	www.wireless.att.com
Hughes Network Systems	Satellite	www.hughesnet.com
Lincoln County Telephone System, Inc.	Fiber & DSL	www.lctsys.com
Sprint	Mobile Broadband	www.sprint.com
Starband Communications	Satellite	www.starband.com
Verizon Wireless	Mobile Wireless	www.verizonwireless.com
ViaSat, Inc.	Satellite	www.wildblue.com
WUE, Inc	Mobile Wireless	Not Available

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

Organization Name	Website	Website Category
Cowboys Dream Bed & Breakfast	www.cowboysdream.com	Business
Integrated Device Technology	www.idt.com	Business
Lincoln County Central	www.lccentral.com	Business
Lincoln County Telephone Systems, Inc.	www.lctsys.com	Business
Overland Hotel	www.overlandhotelnv.com	Business

[10] 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.

Pine Tree Bed & Breakfast	http://pinetreebnb.com	Business
Pioche Chamber of Commerce	www.piochenevada.com	Business
Windmill Ridge Website	http://wind-mill-ridge.com	Business
Lincoln County School District	www.lcsdnv.com	Education
Rapport Executive Retreat Center - Alamo, NV	www.rapportleadership.com	Education
City of Caliente	www.cityofcaliente.com	Government
Lincoln County Nevada Website	www.lincolncountynevada.com	Government
Lincoln County Nuclear Oversight Program	www.lcnop.com	Government
Lincoln County Regional Development Authority	www.lcrda.com	Government
Lincoln Genealogy and Local History	http://www.nvgenweb.org/lincoln	Government
Grover C. Dils Medical Center	www.gcdmc.org	Healthcare
Rainbow Canyon Retreat - Caliente, NV	www.rainbowcanyonretreat.org	Healthcare
Lincoln County Libraries	http://www.clan.lib.nv.us/polpac/library/clan/lincoln.htm	Libraries
Beaver Dam State Park	http://parks.nv.gov/parks/parks-by-name	Tourism

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

Company Name	Website	Provider Type
Scoville Computers Consulting	www.lccentral.com/.../computer-repair/scoville-computers-consulting	Computer Repair & Support
Nevada Central Media, LLC	http://nvcmedia.com	Website Development, Support& Hosting

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

Organization Name	Website	Resource Type
Panaca Senior Center	www.nvaging.net/nvseniorcenters.htm#Lincoln	Public Computer Facility
LDS Family Research Center - (Panaca)	http://www.yellowpages.com/panaca-nv/mormon-church	Public Computer Facility

Pioche Public Library	http://www.everylibrary.com/Pioche-NV.html	Public Computer Facility
Caliente Public Library	http://www.everylibrary.com/Caliente-NV/Caliente-Branch-Library.html	Public Computer Facility
LDS Church Family Research Center - Alamo	http://www.yellowpages.com/alamo-nv/mormon-church	Public Computer Facility
University of Nevada Cooperative Extension	http://www.unce.unr.edu/counties/lincoln/	Video Conference Facility

Connected Assessment Analysis

ACCESS SCORE EXPLANATION

Broadband Availability (8 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.[11] If broadband data is missing, the community team was able to improve the quality of data to ensure all providers are included.

- **According to data collected by Connect Nevada, 97.56% of Lincoln County residents had access to broadband speeds of 3 Mbps or greater.**

Broadband Speeds (4 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.

[11] 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.

- **According to data collected by Connect Nevada, 93.36% of Lincoln County residents had access to broadband speeds of 25 Mbps.**

Broadband Competition (0 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 data collected by Connect Nevada, Lincoln County residents have access to only one broadband provider.**

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

- **Lincoln County is served by 2 or more middle mile fiber providers.**

Mobile Broadband Availability (8 out of 10 Points Possible) – is measured by analyzing provider availability of mobile broadband service gathered by Connected Nation's broadband mapping program. In communities that may have mobile broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- **According to data collected by Connect Nevada, 98.65% of Lincoln County residents had access to mobile broadband service.**

ADOPTION SCORE EXPLANATION

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

Organization Name	Program Description	Number of Grads
Spare Tire	Informal Instruction for accessing Internet	7
UNR Cooperative Extension	GED training; online job apps; Workforce Education	32
Pahranagat Valley H.S.	Adult Education/Community College Course	5
LDS Church Family Research Ctr - Panaca	Genealogy Training	60
LDS Church Family Research Ctr - Alamo	Genealogy Training	40
Caliente Library	Adult Education/Community College	4
Lincoln County H.S. Library	Job opportunity training	35
Pioche Library	Adult Education	4
Great Basin Computing	General Computing Skills (Joseph Lamb)	TBD

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

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
Caliente Library	20	4	80
Pioche Library	20	5	100
LDS Family Research Ctr - Panaca	16	8	128
LDS Church Family Research Ctr - Alamo	16	8	128
Lincoln County HS Library	32	12	384
Pahranagat Valley H.S. Library	32	8	256
Panaca Senior Center	8	1	8

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 Lincoln County is below.

Organization Name	Campaign Description	Community Reach
Lincoln County School District	Promotes broadband awareness and use of online services through school materials & meetings	80%
Lincoln County Telephone System	Customer notifications - online services	98%
Banks & Credit Unions	Online customer banking services	75%

Vulnerable Population Focus (6 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 Lincoln County is listed below.

Organization Name	Program Description	Vulnerable Group
Lincoln County School District	Alternative Education, Adult education & GED prep	Low Income
UNR Coop Extension	Workforce Education & Job Finding Assistance	Low income & at risk children
Lincoln County School District	Homework Assistance & ESL	at Risk Children & Minority

USE SCORE EXPLANATION

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

Application Name	Description	Basic / Advanced
Lincoln County Regional Development Authority Website	Informational Website for incoming business	Basic
Lincoln County Nevada Website	Tourism Website	Basic
LC Central Website	County Media Website	Basic
IDT Website	Informational Website	Basic
Pioche Chamber of Commerce Website	Informational Website	Basic
Cowboys Dream Website	Informational & Reservation Website	Advanced
Windmill Ridge Website	Informational & Reservation Website	Advanced
Rapport Leadership Website	Informational Website	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 Name	Description	Basic/ Advanced
Lincoln County School District Website	Informational website for the school system	Basic
Internet access in all classrooms	Internet access use for school instructions; one-to-one computing	Basic
Wi-Fi for All School Libraries	Wi-Fi Access for Library Patrons	Basic
Power School	Online access to curricula, homework, grades; online interaction with parents	Advanced
Odysseyware	Virtual Learning; Adult Education & Alternative Education	Advanced
Interactive Smartboards	Classroom Instructions	Advanced
Mimeos	Classroom Instructions	Advanced
iPod/Netbooks for 4-12 grades	Use for Classroom Instructions	Basic
iPads for all teachers	Use for instructions	Basic

Government (7 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
Lincoln County Website	Informational Website	Advanced
Lincoln County Nuclear Oversite Program Website	Informational Website	Basic
Caliente Youth Center Website	Informational Website	Basic
Lincoln County Genealogy & Local History Website	A Guide & Resource for Researchers	Basic
City of Caliente Website	Official Website for the City of Caliente	Basic
Websites for Nevada State Parks in the County	Informational Website for (5) State Parks in the County	Basic

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

Application Name	Description	Basic/ Advanced
Rainbow Canyon Retreat	Informational Website for Drug Rehab Facility	Basic
Grover C. Dils Medical Center Website	Informational Website for the Hospital	Basic
CPSI Mobile	Patient Accounting & Electronic Health Records	Advanced
MedWeb PACS	PACS & RIS	Advanced
Millenial Transcription	Medical Transcription	Advanced
CART Tool	State and Federal Quality Reporting	Advanced
Emdeon	Medicaid Verification	Advanced
Ivans	Medicare Verification	Advanced
National Business Factors	Private Billing & Collections	Advanced
MedAssets	Group Purchasing Organization	Advanced
AllScripts	Electronic Prescription System	Advanced
Anthelio	Medical Record Coding	Advanced
CPSI Lab Software	Laboratory Information System	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.

1. Lincoln County School District Technology Upgrade Projects

Overall technology upgrades in all schools of the Lincoln County School District to prepare for future needs and requirements including State-required online reporting and assessment (e.g. Smarter Balanced Assessment Consortium; NRS required teacher evaluation system).

Goals

1. Prepare for new growth needs in all areas of technology.
2. Create a better learning environment that is collaborative and meaningful for the students.
3. Facilitate communications within the school system as part of the Lincoln County School District Emergency/Crisis Management Plan.

Benefits

1. Improvement the level and quality of education in all schools in the Lincoln County School District.
2. Technology will support both teaching and learning in the classrooms (e.g. allow for expanded course offerings and better learning materials; increased student engagement and motivation).

Action Items

1. Placement of new computer servers to accommodate needs.
2. Installation and upgrades of wireless access points in each school.

Implementation Team

1. LCSD Office Staff
2. Jim Manner
3. Ben Rowley
4. Joseph Lamb

2. Lincoln County Telephone System Fiber Cable Placement Project

Outside Plant Construction - fiber line expansion to service areas. Estimated project completion is December 2013.

Goals

1. Replacement of aging copper plant.
2. Increase broadband speeds.

Benefits

1. Improve quality of service and customer satisfaction.

Action Items

1. Install fiber 40 miles from Pioche to cover Dry Valley and Rose Valley.
2. Install additional 14 miles of fiber between Panaca and Caliente.

Implementation Team

Lincoln County Telephone System, Inc.

3. Perform an Analysis of Local Policies and Ordinances

High capital investment costs, including permit processing, pole attachment costs, and lack of effective planning and coordination with public authorities, negatively impact the case for deployment. For example, the FCC's National Broadband Plan concludes that, "the rates, terms, and conditions for access to rights of way [including pole attachments] significantly impact broadband deployment." The costs associated with obtaining permits and leasing pole attachments and rights-of-way are one of the most expensive cost functions in a service provider's plans to expand or upgrade service, especially in rural markets where the ration of poles to households goes off the charts. Furthermore, the process is time consuming. "Make 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.

Goals

1. Lincoln County will 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. Propose project details to the Board of Commissioners for approval and assignment to the appropriate functional department.

2. 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.
3. Develop an awareness campaign targeted towards community leaders to inform them of the benefits of broadband to the entire community derived from access to global resources that outweigh the need for some policies.

Implementation Team
To be determined by the Lincoln County Board of Commissioners.

All Proposed Projects

ACCESS

Broadband Availability

1. Lincoln County Telephone System Fiber Cable Placement Project

Outside Plant Construction - fiber line expansion to service areas. Estimated project completion is December 2013.

Goals
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Benefits
1. Improve quality of service and customer satisfaction.

Action Items
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Implementation Team
Lincoln County Telephone System, Inc.

Broadband Speeds

No proposed projects

Broadband Competition

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Implementation Team

To be determined by the Lincoln County Board of Commissioners.

Middle Mile Access

No proposed projects

Mobile Broadband Availability

No proposed projects

ADOPTION

Digital Literacy

No proposed projects

Public Computer Access

No proposed projects

Broadband Awareness

3. 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.

Goals

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.

4. 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.

Goals

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.

Vulnerable Population Focus

5. Initiate a Community Computer Refurbishment or Recycling Program

Recruit 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. Alternatively, if the computers are beyond refurbishment, the community can develop a computer recycling program. Recycling and reusing electronic equipment reduces the amount of hazardous materials that may enter the environment. Recycling and reuse programs also reduce the quantities of electronic scrap being landfilled in the state.

Goals

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. Alternatively, develop a community recycling program to reduce the amount of hazardous materials that may enter the environment.

Benefits

1. Computer refurbishing programs have shown to be an excellent work force training tool for correctional facilities, young adults, and the mentally and physically challenged. The correctional facility program trains inmates with computer skills that should help them find jobs upon their release.
2. The process by which computers and other electronic equipment are refurbished or broken down to their basic parts is called *de-manufacturing*. This helps conserve energy and raw materials needed to manufacture new computers and electronic equipment. These parts are then reused in upgrading other computers.

Action Items

1. Develop a model for computer refurbishing or recycling. A basic framework might include:
    - Step 1: Project Planning
        - Determination of minimum computer specifications
        - Acquisition and storage of donated computers
        - Determination and installation of appropriate computer operating system
        - Calculation of costs needed to carry out the program
    - Step 2: Inventory Management

    - Examine how equipment and software will be sorted and managed. Manage your inventor by identifying computers that are ready to be refurbished from those that are non-functioning.
  - Step 3: Volunteer Training
2. Review established residential refurbishment and recycling programs that your community can take advantage of:
   - 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.
   - 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.

6. Develop a Technology Mentorship Program

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

Goals

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.

Action Items

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

USE

Economic Opportunity

7. 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.

Goals

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#.

Education

8. 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.

Goals

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

Benefits

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

9. Lincoln County School District Technology Upgrade Projects

Overall technology upgrades in all schools of the Lincoln County School District to prepare for future needs and requirements including State required online reporting and assessment (e.g. Smarter Balanced Assessment Consortium; NRS required teacher evaluation system).

Goals

1. Prepare for new growth needs in all areas of technology.
2. Create a better learning environment that is collaborative and meaningful for the students.
3. Facilitate communications within the school system as part of the Lincoln County School District Emergency/Crisis Management Plan.

Benefits

1. Improvement the level and quality of education in all schools in the Lincoln County School District.
2. Technology will support both teaching and learning in the classrooms (e.g. allow for expanded course offerings and better learning materials; increase student engagement and motivation).

Action Items

1. Placement of new computer servers to accommodate needs.
2. Installation and upgrades of wireless access points in each school.

Implementation Team

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Government

10. Support Healthcare Providers Serving Rural Communities

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

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

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

- HCPs must be one of the following types of entities:
  - Post-secondary educational institutions offering health care instruction, such as teaching hospitals and medical schools
  - Community health centers or health centers providing health care to migrants,
  - Local health departments or agencies
  - Community mental health centers
  - Not-for-profit hospitals
  - Rural health clinics
  - Consortia of HCPs consisting of one or more of the above entities
  - Dedicated emergency departments of rural for-profit hospitals
  - Part-time eligible entities located in facilities that are ineligible
- HCPs must be a not-for-profit entity or a public entity.
- HCPs must be located in an FCC-approved rural location.

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

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

Goals

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

11. Improve the Online Presence of Government

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

Goals

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

Benefits

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

Action Items

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

6. Develop and launch applications.

12. 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 which 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.

Goals

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

1. Transitioning to a "Next Generation" IP-based network will enable the public to make voice, text, or video emergency calls from any communications device. With Next Generation 911, responders and PSAPs will gain greater situational awareness, which will enable better-informed decisions, resulting in better outcomes and, ultimately, a safer community. By capitalizing on advances in technologies, you are enabling:
    - Quicker and more accurate information to responders
    - Better and more useful forms of information
    - More flexible, secure and robust PSAP operations
    - Lower capital and operating costs

Action Items

1. If you're involved in PSAP decision making and are faced with replacing aging systems or purchasing new technology for the very first time, you need to consider what your most

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

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

13. 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.

Goals

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.

Healthcare

No proposed projects

APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND

Statewide Infrastructure

As part of the Nevada State Broadband Initiative (SBI), and in partnership and at the direction of the Nevada Broadband Task Force, Connect Nevada 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 Nevada 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.connectnv.org/mapping/state. The county maps are found at http://www.connectnv.org/community_profile/find_your_county/nevada/Lincoln.

Table 1: Estimate of Broadband Service Availability in the State of Nevada 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	9	997	99.11
At Least 1.5 Mbps/200 Kbps	10	997	99.04
At Least 3 Mbps/768 Kbps	18	989	98.25
At Least 6 Mbps/1.5 Mbps	**26**	**980**	**97.41**
At Least 10 Mbps/1.5 Mbps	47	960	95.36
At Least 25 Mbps/1.5 Mbps	80	926	92.00
At Least 50 Mbps/1.5 mbps	91	916	91.00
At Least 100 Mbps/1.5 Mbps	**782**	**224**	**22.27**
At Least 1 Gbps/1.5 Mbps	1,006	0	0

Source: Connect Nevada April 2013

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile and satellite service) across the state of Nevada; it presents the number and percentage of unserved and served households by speed tiers. The total

number of households in Nevada in 2010 was 1,006,250, for a total population of 2,700,551 people. Table 1 indicates that 99.11% 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 Nevada to be unserved has dropped from 9,950 households in the fall of 2010 to 8,956 households in the spring of 2013. Further, approximately 989,000 households across Nevada have broadband available of at least 3 Mbps download and 768 Kbps upload speeds. The percentage of Nevada households having fixed broadband access available of at least 6 Mbps download and 1.5 Mbps upload speeds is estimated at 97.41%.

Taking into account both fixed and mobile broadband service platforms, an estimated 99.72% of Nevada 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 2,806 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 Nevada 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 Nevada 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 Nevada has been sent on a semi-annual basis to the NTIA to be used in the National Broadband Map, and comprises the source of Nevada'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 Nevada can be found here: http://www.broadbandmap.gov/summarize/state/nevada.

Interactive Map

Connect Nevada 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 Nevada'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.connectnv.org/interactive-map

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

Business and Residential Technology Assessments

To complement the broadband inventory and mapping data, Connect Nevada 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 Nevada. Key questions the data address are: who, where, and how are households in Nevada using broadband technology? How is this technology impacting Nevada households and residents? Who is not adopting broadband service and why? What are the barriers that prevent citizens from embracing this empowering technology?

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

- Three out of four Nevada adults (75%, or approximately 1.5 million adults in Nevada) subscribe to home broadband service. This is an increase of eight percentage points since 2011.
- Over half a million adults in Nevada still do not subscribe to home broadband service, including 210,000 who do not have Internet access at any location.
- Nearly three out of four Nevadans with Internet access (73%) bank online, 57% access e-health information, and 44% search or apply for jobs online.

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

- Across Nevada, 77% of businesses subscribe to broadband service, a slight increase from 2010 when 75% of businesses subscribed.
- Nevada business establishments that use broadband report median annual revenues that are approximately $300,000 higher than businesses that do not use broadband. Approximately 21,000 Nevada businesses use the Internet to advertise job openings or accept job applications, including 2,000 businesses that only accept applications via the Internet.

For more information on the statewide information described, visit the Connect Nevada website at http://www.connectnv.org/research.

APPENDIX 2: PARTNER AND SPONSORS

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

On July 15, 2009, the Nevada Broadband Task Force was created by executive order. Connect Nevada serves as a primary consultant to the Task Force as it carries out its mission.

Task Force Membership: According to the Executive Order, the Nevada Broadband Task Force shall consist of 11 members appointed by the Governor of Nevada. The Governor shall also appoint one member as chairman. Members of the task force will be appointed from the following areas: rural health and hospitals, rural K-12 school districts, rural libraries, distance education/higher education, public safety/Nevada Department of Transportation, the telecommunications industry, the cable industry, the wireless industry, local government, Nevada Commission on Economic Development, city/county organizations and Nevada Native Americans.

Task Force Members:

NAME	AFFILIATION	REPRESENTING
Daphne DeLeon, Chair	Nevada State Library and Archives	Rural Libraries
Randy Brown, Vice Chair	AT&T Nevada	Wireless Industry
Gerald Ackerman	Center for Education and Health Services Outreach	Rural Health and Hospitals
Ed Anderson	Nevada System of Higher Education	Distance and Higher Education
Jeff Fontaine	Nevada Association of Counties	City / County Organizations

Brad Lyon	Moapa Valley Telephone	Telecommunications Industry
Elmer Porter	Eureka County School District	Rural K-12 Schools
Sherry Rupert	Nevada Indian Commissions	Nevada Native Americans
Frank Woodbeck	Department of Employment Rehabilitation and Training	Economic Development
Linda Stinar	CenturyLink	Cable
James Garza	White Pine County Community & Economic Development	Local Government
Richard Nelson	Nevada Department of Transportation	Transportation/Public Safety

Task Force Responsibilities: According to the Executive Order, the Task Force will work to identify and remove barriers to broadband access and identify opportunities for increased broadband applications and adoption in unserved and underserved areas of Nevada. The Task Force shall also oversee all necessary duties and responsibilities to reach the goal to expand broadband technology, including the application of federal funding/grants, grant compliance, mapping, and data management.

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

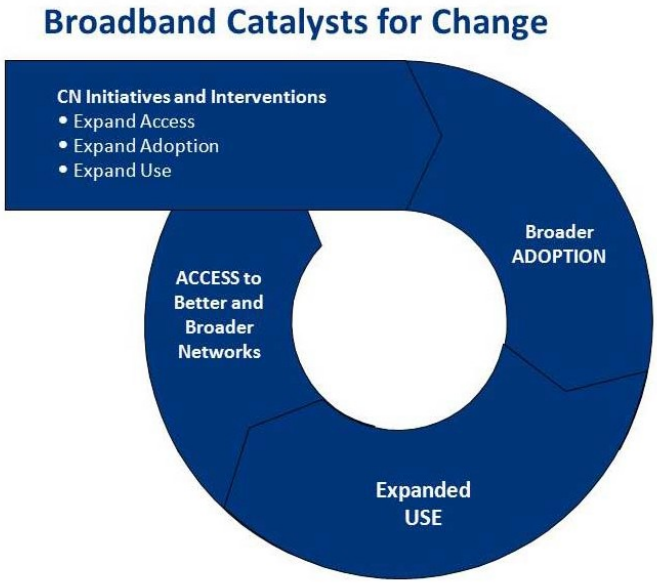
- Broadband Provider Community
- Government: General, Public Safety, Energy and Environment
- Economic Opportunity: Economic Development, Business Development, Tourism
- Agriculture
- Education: K-12, Higher Education
- Libraries
- Healthcare

Step 2: Perform a technology assessment. With support provided by a planning specialist, Connect Nevada 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 Nevada's mapping and market research, the Lincoln County 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 projects are identified to help to fill gaps. After successful execution of projects the community will be certified as a Connected Community.

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



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 underserved areas of the country through grants, loans, and financing.

S

Satellite - Satellite brings broadband Internet connections to areas that would not otherwise have access, even the most rural of areas. Historically, higher costs and lower reliability have prevented the widespread implementation of satellite service, but providers have begun to overcome these obstacles, and satellite broadband deployment is increasing. A satellite works by receiving radio signals sent from the Earth (at an uplink location also called an Earth Station) and resending the radio signals back down to the Earth (the downlink). In a simple system, a signal is reflected, or "bounced," off the satellite. A communications satellite also typically converts the radio transmissions from one frequency to another so that the signal getting sent down is not confused with the signal being sent up. The area that can be served by a satellite is determined by the "footprint" of the antennas on the satellite. The "footprint" of a satellite is the area of the Earth that is covered by a satellite's signal. Some satellites are able to shape their footprints so that only certain areas are served. One way to do this is by the use of small beams called "spot beams." Spot beams allow satellites to target service to a specific area, or to provide different service to different areas.
SBI - State Broadband Initiatives, formerly known as the State Broadband Data & Development (SBDD) Program.
SONET - Synchronous Optical Network - A family of fiber-optic transmission rates.
Streaming - A Netscape innovation that downloads low-bit text data first, then the higher bit graphics. This allows users to read the text of an Internet document first, rather than waiting for the entire file to load.
Subscribership - Subscribership is the number of customers that have subscribed for a particular telecommunications service.
Switched Network - A domestic telecommunications network usually accessed by telephones, key telephone systems, private branch exchange trunks, and data arrangements.

T

T-1 - Trunk Level 1 - A digital transmission link with a total signaling speed of 1.544 Mbps. It is a standard for digital transmission in North America.
T-3 - Trunk Level 3 - 28 T1 lines or 44.736 Mbps.

U

UNE - Unbundled Network Elements - Leased portions of a carrier's (typically an ILEC's) network used by another carrier to provide service to customers.
Universal Service - The idea of providing every home in the United States with basic telephone service.
Upstream - Data flowing from your computer to the Internet (sending e-mail, uploading a file).

V

VDSL (or VHDSL) - Very High Data Rate Digital Subscriber Line - A developing technology that employs an asymmetric form of ADSL with projected speeds of up to 155 Mbps.
Video On Demand - A service that allows users to remotely choose a movie from a digital library and be able to pause, fast-forward, or even rewind their selection.

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

W

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