ABBEVILLE COUNTY

TECHNOLOGY ACTION PLAN

PREPARED BY CONNECT SOUTH CAROLINA
AND THE
ABBEVILLE COUNTY BROADBAND COMMITTEE

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INTRODUCTION

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

Background

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

Despite the growing dependence on technology, as of 2013, 30% of Americans did not have a high-speed connection at home.[2] Connected Nation's studies also show that 17 million families with children do not have broadband at home – and 7.6 million of these children live in low-income households. In 2014, Connected Nation also surveyed 4,206 businesses in 7 states. Based on this data, Connected Nation estimates that nearly 1.5 million businesses - 20% - in the United States do not utilize broadband technology today.[3]

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

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1 *Connecting America: The National Broadband Plan,* Federal Communications Commission, April 2010, http://www.broadband.gov/download-plan/
2 *Pew Research Internet Project – Broadband Technology Fact Sheet*
3 Connected Nation, *2014 Business Technology Assessment,* http://www.connectednation.org/survey-results/business
4 Connected Nation, parent company for Connect South Carolina, is a national non-profit 501(c)(3) organization that works in multiple states to engage community stakeholders, state leaders, and technology providers to develop and implement technology expansion programs with core competencies centered around the mission to improve digital inclusion for people and places previously underserved or overlooked.

Methodology

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

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

CONNECTED ASSESSMENT

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

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

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

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

Analysis of Connected Assessment

The Community Technology Scorecard provides a summary of the community's Connected Assessment. The Connected Assessment's criteria are reflective of the recommendations made by the Federal Communications Commission's National Broadband Plan. Lower scores indicate weaknesses in the community's broadband ecosystem, but do not necessarily signify a lack of service.

- Abbeville County achieved a score of 108 points out of 120 for overall broadband and technology readiness which indicates that the community is exhibiting high success in technology access, adoption, and use and has surpassed the score of 100 required for Connected certification.
- The county scored 36 out of a possible 40 points in broadband access primarily because of some gaps in broadband availability. While broadband availability is at 97.92% of households having access to 3 Mbps, Abbeville County is generally consistent with the state average of 98.06%.

- Abbeville County exceeded the 32 points in each focus area that are required for certification and has qualified for full certification.

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

Community Technology Scorecard
Community Champion: Jane Hannah
Community Advisor: Leslie Callison

FOCUS AREA	ASSESSMENT CRITERIA	DESCRIPTION	SCORE	MAXIMUM POSSIBLE SCORE
ACCESS	Broadband Availability	97.92% of homes have access to 3 Mbps	10	10
	Broadband Speeds	82.03% of households with access to less than 50 Mbps	5	5
	Broadband Competition	68.90% of households with access to more than 1 broadband provider	1	5
	Middle Mile Access	Availability of middle mile fiber infrastructure from 2 providers	10	10
	Mobile Broadband Availability	99.63% of households with access to mobile broadband	10	10
	ACCESS SCORE		**36**	**40**
ADOPTION	Digital Literacy	Program grads are greater than 7 per 1,000 residents over the past year	8	10
	Public Computer Centers	350 computer hours per 1,000 low income residents per week	6	10
	Broadband Awareness	Campaigns reach 100% of the community	10	10
	Vulnerable Population Focus	At least 5 groups	10	10
	ADOPTION SCORE		**34**	**40**
USE	Economic Opportunity	2 advanced, 4 basic uses	8	10
	Education	5 advanced, 10 basic uses	10	10
	Government	4 advanced, 4 basic uses	10	10
	Healthcare	3 advanced, 4 basic uses	10	10
	USE SCORE		**38**	**40**
	COMMUNITY ASSESSMENT SCORE		**108**	**120**

Itemized Key Findings

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

ACCESS

- 16 last-mile broadband providers currently provide service in Abbeville County:
  - 97.92% of households have access to 3 Mbps.
  - More than 82.03% of Abbeville County homes have access to 50 Mbps service.
  - 68.90% of Abbeville households have access to more than 1 provider.
- Middle mile fiber infrastructure is available from 2 providers in Abbeville County.
- 99.63% of Abbeville County households have access to mobile broadband.

ADOPTION

- 1 Digital Literacy Program exists in the community resulting in 211 graduates over the past year.
- 6 Public Computer Centers (PCC) with a total of 52 computers are open to the public.
- 3 Broadband Awareness Campaigns are reaching the all of Abbeville County.
- 5 organizations are working with vulnerable populations.

USE

- At least 6 uses of broadband were identified in the area of economic opportunity including 2 advanced uses and 4 basic uses.
- At least 15 uses of broadband were identified in the area of education including 5 advanced uses and 10 basic uses.
- At least 8 uses of broadband were identified in the area of government including 4 advanced uses and 4 basic uses.
- At least 7 uses of broadband were identified in the area of healthcare including 3 advanced uses and 4 basic uses.

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

Technology Providers
- 16 broadband providers were identified in Abbeville County

Technology Facilities
- 5 public computing centers
- 3 wireless hotspots
- 0 video conference facilities

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

Community Priority Projects

The Connected Assessment has culminated in the outlining of projects designed to empower the community to accelerate broadband access, adoption, and use. Below are 3 priority projects, followed by a complete list of all action items.

1. Complete a Vertical Assets Inventory
2. Improve Education through Digital Learning
3. Facilitate a Technology Summit

Complete List of Action Items

Below is a complete list of 8 action items proposed by the Abbeville County Broadband Team to accelerate broadband access, adoption, and use. Detailed descriptions of each solution proposed by Connect South Carolina can be found in the *Action Plan* section later in this report.

ACCESS

Broadband Availability
1. Complete a Vertical Assets Inventory

Broadband Speeds– No Action Items.

Broadband Competition – No Action Items.

Middle Mile Access– No Action Items.

Mobile Broadband Availability– No Action Items.

ADOPTION

Digital Literacy– No Action Items.

Public Computer Centers
2. Establish a "Community Technology Academy"
3. Initiate a Community Computer Refurbishment or Recycling Program

Broadband Awareness
4. Facilitate a Technology Summit

Vulnerable Population Focus– No Action Items.

USE

Economic Opportunity
5. Host Website and Social Media Classes for Local Businesses
6. Develop or Identify a Broadband Training and Awareness Program for Small and Medium Businesses

Education
7. Improve Education through Digital Learning

Government– No Action Items.

Healthcare
8. Promote Telemedicine in Remote Areas

DETAILED FINDINGS

Current Community Technology Developments in Abbeville County

During the assessment process, the community team identified projects that are currently in development or implementation. These projects are helping to enhance technology in Abbeville County:

The Abbeville County School District has several projects to report. John C. Calhoun Elementary school has increased their capacity with Chromebook labs. Three different schools in the district will have their computer labs updated or replaced. Abbeville County students will be issued accounts in the district Google apps domain. This will facilitate real-time collaboration and sharing between students and teachers across the Abbeville County School District. New wireless networks are being deployed for Westwood Elementary and the Career Center. For more information please contact the Abbeville County School District.

Abbeville County 911 is kicking off the new SMART 911.

Abbeville County 911 currently offers a weather notification service to anyone who would like to subscribe.

Abbeville County Assessment Findings

Today, residents in Abbeville County (or sections of the community) are served by 16 providers. Currently, broadband is defined as Internet service with advertised speeds of at least 768 Kbps downstream and 200 Kbps upstream. According to Connect South Carolina's latest broadband mapping update, the following providers have a service footprint in the Abbeville County Community:

Broadband Providers	Website	Technology Type
Charter Communications, Inc.	www.charter.com	Cable
Northland Cable Television, Inc.	www.northlandcabletv.com	Cable
AT&T, Inc.	*www.att.com*	DSL
CenturyTel, Inc.	www.centurylink.com	DSL
Frontier Communications of the Carolinas, Inc.	www.frontier.com	DSL
Piedmont Rural Telephone Cooperative	www.prtcnet.com	DSL
West Carolina Rural Telephone Cooperative, Inc.	www.wctelephone.com	Fiber/DSL
AT&T Mobility LLC	http://wireless.att.com	Mobile Wireless
Cellco Partnership	www.verizonwireless.com	Mobile Wireless
Piedmont Rural Telephone Cooperative	www.prtcnet.com	Mobile Wireless
Sprint Nextel Corporation	www.sprint.com	Mobile Wireless
T-Mobile USA, Inc.	www.t-mobile.com	Mobile Wireless
Hughes Network Systems, LLC	www.hughesnet.com	Satellite
Skycasters	www.skycasters.com	Satellite
pacenet, Inc.	http://starband.com	Satellite
ViaSat	www.wildblue.com	Satellite

There currently are no local technology companies that are providing technical services or distributing/selling technical resources in Abbeville County.

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

Company Name	Website	Provider Type
Library	www2.youseemore.com/Abbeville	Public Computer Facility
Library	www2.youseemore.com/abbeville	Public Computer Facility
Library	www2.youseemore.com/abbeville	Public Computer Facility
Senior Center	piedmontaoa.com	Public Computer Facility
McDonald's	www.mcsouthcarolina.com/15605	Wireless Hotspot
West Carolina Tel	www.wctel.net	Public Computer Facility
West Carolina Tel	www.wctel.net	Wireless Hotspot
Chamber of Commerce	www.abbevillecountychambersc.com	Wireless Hotspot

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

Organization Name	Website	Website Category
Clemson Extension Service	www.clemson.edu/extension/county/abbeville	Agriculture
Abbeville First	www.abbevillefirst.com	Business
Bank of America	www.bankofamerica.com	Business
First Citizens	www.firstcitizensonline.com	Business
Greater Abbeville Federal Credit Union	www.gafcu.net	Business
Little River Electric Cooperative	www.LRECI.coop	Business
Park Sterling Bank	www.parksterlingbank.com	Business
West Carolina Telephone Cooperative	www.wctel.net	Business
Abbeville County School District	www.acsd.k12.sc.us	Education
Erskine College	www.erskine.edu	Education
Piedmont Technical College	www.ptc.edu	Education
Abbeville County	www.abbevillecountysc.com	Government
City of Abbeville	abbevillecitysc.com	Government
Development Services	www.discoverabbeville.sc.gov	Government
SC Dept. of Motor Vehicles	www.scdmvonline.com	Government
Upper Savannah COG	www.uppersavannah.com	Government
Abbeville Area Medical Center	www.abbevilleareamc.com	Healthcare
Abbeville County Library	www2.youseemore.com/abbeville	Libraries
State Library	www.statelibrary.sc.gov	Libraries
Greater Abbeville Chamber of Commerce	www.abbevillechambersc.com	Tourism

Connected Assessment Analysis

Access Score Explanation

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

- **According to the April 2014 data collected by Connect South Carolina, 97.92% of Abbeville County residents had access to broadband speeds of 3 Mbps or greater.**

Broadband Speeds (5 out of 5 Points Possible) – is measured by analyzing the speed tiers available within a community. Connected Nation will analyze broadband data submitted through its broadband mapping program. Specifically, Connected Nation will break down the coverage by the highest speed tier with at least 75% of households covered. In communities that may have broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- **According to the April 2014 data collected by Connect South Carolina, 82.03% of Abbeville County residents had access to broadband speeds of 50 Mbps.**

Broadband Competition (1 out of 5 Points Possible) – is measured by analyzing the number of broadband providers available in a particular community and the percentage of that community's residents with more than one broadband provider available. Connected Nation performed this analysis by reviewing the data collected through the broadband mapping program. In communities that may have broadband data missing, community teams were able to improve the quality of data to ensure all providers are included.

- **According to the April 2014 data collected by Connect South Carolina, 68.9% of Abbeville County residents had access to more than one broadband provider.**

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

- **Abbeville County is served by two middle mile fiber providers.**

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

- **According to the April 2014 data collected by Connect South Carolina, 99.63% of South Carolina residents had access to mobile broadband service.**

Access Score Explanation

Digital Literacy (<u>8 out of 10 Points Possible</u>) – is measured by first identifying all digital literacy programs in the community. Once the programs are determined, a calculation of program graduates will be made on a per capita basis. A digital literacy program includes any digital literacy course offered for free or at very low cost through a library, senior 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
Abbeville County Adult Education	Intro Computer Classes	211
Total Graduates 2013-2014		211

Public Computer Centers (<u>6 out of 10 Points Possible</u>) – is measured based on the number of hours computers are available each week per 1,000 low-income residents. Available computer hours is calculated by taking the overall number of computers multiplied by the number of hours open to a community during the course of the week. A listing of public computer centers available in Abbeville County is below.

Organization Name	Number of Open Hours per Week	Number of Computers	Available Computer Hours per Week
Abbeville County Library	53.5	13	6,955
Abbeville County Library Donald's	40	7	280
Abbeville County Library Calhoun Falls	38.5	9	346.5
Abbeville Senior Center	35	3	105
West Carolina Telephone Coop.	12	12	144
SC WORKS	37.5	8	300

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

Organization Name	Campaign Description	Community Reach
Abbeville County Adult Education	Introduction to computer classes	19%
Abbeville County Library	Abbeville County has 3 branches and they help patrons learn about computers and setting up email addresses which helps with job applications	75%
West Carolina Telephone	Connections Magazine- mailed to all households in Abbeville County	100%

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

Organization Name	Program Description	Vulnerable Group
Abbeville County Adult Education	Designed to assist in the completion of GEDs	Adults of Abbeville County without high school diplomas
Abbeville County Library	3 branches located all over the county	Children, adults and seniors without computers
Abbeville Senior Center	A senior center that also helps seniors with using computers	Elderly
Covenant Way	An assisted living center which has computers that its patients can use to receive help	Elderly
A Place for Us	Ministry/ programs for unwed mothers	Single mothers

Economic Opportunity (8 out of 10 Points Possible) – A community receives one point per basic use of broadband and two points per advanced use of broadband. Categories within economic opportunity include: economic development, business development, tourism, and agriculture. Identified uses of broadband in the area of economic opportunity are listed below and identified as basic or advanced.

Application Provider	Description	Basic / Advanced
Abbeville County GIS	GIS site	advanced
SC Works	Program to provide virtual employment assistance programs and individualized job training	advanced
Chamber of Commerce	Chamber of Commerce info/events	basic
Various banks Online Banking	Online Banking	basic
Clemson Extension	Agriculture services	basic
USDA NRCS	Agriculture services	basic

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

Application Provider	Description	Basic/ Advanced
Google Apps for Education	District Communications	basic
Excent	Special Services	basic
eTrition	Food Services Point of Sale and Reporting	basic
Maintenance Direct	Maintenance Work Request System	basic
Project Lead the Way	(STEM) Pre-Engineering	advanced
Renaissance Place Accelerated Reader	Online Reading Program	advanced
Follett Destiny	Library Catalog System	advanced
Study Island	Online Standards Based Activities	advanced
United Streaming from Discovery Education	Online Standards Aligned Video Library	advanced
SmartFusion	Web-based Accounting Software	basic

OTRS	Web-based Technology Work Request System	basic
Enrich	Web-based Data Analysis Program	basic
Brainpop	Online Standards Based Activities	basic
100% of classrooms connected to internet	All classrooms in Abbeville County School District	basic
100% of libraries are connected to internet	Abbeville County Library System	basic

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

Application Provider	Description	Basic/ Advanced
Abbeville County GIS	GIS	advanced
Abbeville County Website	Lookup minutes, agenda, online forms	basic
Abbeville County Public Safety	Answering Point with dual feed fiber optic transport	advanced
Public Safety	Mobile applications	advanced
911	911 System	advanced
Abbevillecountysc.com	Departments of Abbeville County Government	basic
Little River Electric Cooperative	Electric Cooperative Website	basic
City of Abbeville	Municipal Website	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
AAMC website	Hospital website, doctor's contact info.	basic
SCDHEC	Restaurant health scores	basic
Senior Center	Abbeville Senior (Citizens) Center	basic
E Scribe	E prescriptions	advanced
Electronic Charts	Electronic Patient Charts	advanced
Telemedicine	Telemedicine for Alzheimers Patients	advanced
The Renaissance, LLC	Assisted Living, with WI-FI and computer availability	basic

ACTION PLAN

Community Priority Projects

This exercise has culminated in the outlining of projects to allow the community to continue its recognized excellence in technology and broadband planning across the community. Below are three priority projects, each describing a project plan with suggested steps. This is followed by a complete list of all action items.

Complete a Vertical Assets Inventory

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

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

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

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

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

Improve Education through Digital Learning

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

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

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

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

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. Furthermore, the technology summit should highlight success stories as evidence of the impact of technology.

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

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.

Complete List of Action Items

Below is a complete list of 8 action items proposed by the Abbeville County Broadband Team to accelerate broadband access, adoption, and use.

ACCESS

Broadband Availability

1. Complete a Vertical Assets Inventory

Wireless communications equipment can be placed in a wide variety of locations, but ideally, wireless providers look for locations or structures in stable conditions, with reasonably easy access to electricity and wired telecommunications, and with a significant height relative to the surrounding area. "Vertical assets" are defined as structures on which wireless broadband

equipment can be mounted and positioned to broadcast a signal over as much terrain as possible. These assets include structures such as cell towers, water tanks, grain silos, and multi-story buildings.

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

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

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

Broadband Speeds– No Action Items.

Broadband Competition– No Action Items.

Middle Mile Access– No Action Items.

Mobile Broadband Availability– No Action Items.

ADOPTION

Digital Literacy– No Action Items.

Public Computer Access

2. Establish a "Community Technology Academy"

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

Goal

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

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

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

3. 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.

Goal

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 demanufacturing. 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
   - o Determination of minimum computer specifications
   - o Acquisition and storage of donated computers
   - o Determination and installation of appropriate computer operating system
   - o Calculation of costs needed to carry out the program

   Step 2: Inventory Management
   - o Examine how equipment and software will be sorted and managed. Manage your inventory by identifying computers that are ready to be refurbished from those that are non-functioning.

   Step 3: Volunteer Training
   - o Review established residential refurbishment and recycling programs that your community can take advantage of:
   - o **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 is free, and participants receive a receipt for tax purposes. To view a full list of acceptable products and locations, visit the **Dell Reconnect** website.

    o   **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.

2. **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.

Broadband Awareness

4. 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. Additionally, the technology summit should highlight success stories as evidence of the impact of technology.

Goal

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

Benefits

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

Action Items

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

Vulnerable Population Focus– No Action Items.

Use

Economic Opportunity

5. Host Website and Social Media Classes for Local Businesses

For small businesses, an online presence and the use of social media are vital to stay competitive in the twenty-first century. A website and social media use are not just for companies that have the experience, staff, or budget; any small business can tap into these resources. Training should be provided to small businesses regarding the use of websites and social media within that small business. Website topics should range from starting a basic website to more advanced topics such as e-Commerce. Social media topics should include a variety of social media outlets including Facebook, Twitter, YouTube, Pinterest, and LinkedIn.

Goal
To encourage small local businesses to develop websites and to use social media and e-Commerce.

Action Items
1. Work with the local chamber and/or the libraries to expand on existing programs that promote e-Commerce, such as free websites and social media development within the small businesses of the community including those involved in agriculture.
2. Partner with providers to sponsor workshops. (Providers may be willing to sponsor events since small business workshops will likely lead to increased broadband adoption and use.)
3. Identify regional and community partners with resources and expertise to assist the community in producing "free" website and social media workshops.
4. Schedule workshops and advertise classes via local media.

6. 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 minimal or no cost to them.

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

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

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

Goal

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 the 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

7. Improve Education through Digital Learning

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

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

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

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

Government– No Action Items.

Healthcare

8. Promote Telemedicine in Remote Areas

Promote the delivery of healthcare services from a distance using video-based technologies. Telemedicine can help to address challenges associated with living in sparsely

populated areas and having to travel long distances to seek medical care - particularly for patients with chronic illnesses. It also addresses the issue of the lack of medical specialists in remote areas by awarding access to specialists in major hospitals situated in other cities, states, or countries. While telemedicine can be delivered to patient homes, it can also be implemented in partnership with local clinics, libraries, churches, schools or businesses that have the appropriate equipment and staff to manage it. The most critical steps in promoting telemedicine are ensuring that patients and medical professionals have access to broadband service, understand the main features of telemedicine, are aware of the technologies required for telemedicine, and understand how to develop, deliver, use, and evaluate telemedicine services.

One relevant funding opportunity includes Distance Learning and Telemedicine Loans and Grants Program. The USDA provides loans and grants to rural community facilities (e.g. schools, libraries, hospitals, and tribal organizations) for advanced telecommunications systems that can provide healthcare and educational benefits to rural areas. Three kinds of financial assistance are available: a full grant, grant-loan combination, and a full loan.

Goal
Deliver improved healthcare services to rural residents.

APPENDIX 1: STATEWIDE PERSPECTIVE OF BROADBAND

Statewide Infrastructure

As part of the South Carolina State Broadband Initiative (SBI), and in partnership and at the direction of the Office of the Governor, Connect South Carolina 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 map's initial release, Connect South Carolina has collected and released new data every six months, with updates in October and April annually.

The most current Statewide and County Specific Broadband Inventory Maps released in the spring of 2014 depict a geographic representation of provider-based broadband data represented by cable, DSL, wireless, fiber, fixed wireless and mobile wireless. These maps also incorporate data such as political boundaries and major transportation networks in the state. Vertical assets that can be utilized for broadband network facilitation or transmission have also added to the interactive mapping application. A statewide map is found at http://www.connectsc.org/mapping/state . The county maps are found at http://www.connectsc.org/community_profile/find_your_county/south%20carolina/abbeville.

Table 1: Estimate of Broadband Service Availability in the State of South Carolina By Speed Tier Among Fixed Platforms			
SBI Download Speed Tiers	Unserved Households ('000)	Served Households ('000)	Percent Households by Speed Tier
At Least 768 Kbps/200 Kbps	54	1,747	96.98
At Least 1.5 Mbps/200 Kbps	58	1,743	96.79
At Least 3 Mbps/768 Kbps	107	1,695	94.08
At Least 6 Mbps/1.5 Mbps	208	1,593	88.45
At Least 10 Mbps/1.5 Mbps	212	1,589	88.24
At Least 25 Mbps/1.5 Mbps	328	1,474	81.81
At Least 50 Mbps/1.5 mbps	349	1,453	80.64
At Least 100 Mbps/1.5 Mbps	1,116	685	38.02
At Least 1 Gbps/1.5 Mbps	1,801	0	0.00

Source: Connect South Carolina, April 2014

Table 1 reports updated summary statistics of the estimated fixed, terrestrial broadband service inventory (excluding mobile wireless and satellite service) across the state of South Carolina; it presents the number and percentage of unserved and served households by speed tiers. The total number of households in South Carolina in 2010 was 1,801,181, for a total population of approximately 4 million people. Table 1 indicates that 96.98% of households are able to connect to broadband at download speeds of at least 768 Kbps. This implies that the number of households originally estimated by Connect South Carolina to be unserved has dropped from 81,313 households in the fall of 2010 to 54,395 households in the spring of 2014. Further, approximately 1,694,551 households across South Carolina have broadband speeds available of at least 3 Mbps download and 768 Kbps upload. The percentage of South Carolina households having fixed broadband speeds available of at least 6 Mbps download is estimated at 88.45%.

Taking into account both fixed and mobile broadband service platforms, an estimated 96.98% of South Carolina households have broadband available from at least one provider at download speeds of 768 Kbps or higher. This implies that .05% of households remain unserved by a terrestrial broadband connection (including mobile wireless, but excluding satellite services).

As differences in broadband availability estimates between the fall of 2010 and the spring of 2014 show, additional participating broadband providers can have a large impact upon South Carolina 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 South Carolina 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 South Carolina has been sent on a semi-annual basis to the NTIA to be used in the National Broadband Map, and comprises the source of South Carolina's broadband availability estimates reported by the NTIA and the FCC in the national map's data. The National Broadband Map can be found here: http://www.broadbandmap.gov and the Map's specific page for South Carolina can be found here: http://www.broadbandmap.gov/summarize/state/south-carolina .

Interactive Map
Connect South Carolina provides My ConnectView,[TM] 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 South Carolina'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.connectsc.org/interactive-map

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

Business and Residential Technology Assessments

To complement the broadband inventory and mapping data, Connect South Carolina periodically conducts statewide residential and business technology assessments to understand broadband demand trends and 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 South Carolina. Key questions the data address are: who, where, and how are households in South Carolina using broadband technology? How is this technology impacting South Carolina households and residents? And, who is not adopting broadband service and why? What are the barriers that prevent citizens from embracing this empowering technology?

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

- Statewide, 76% of households in the state subscribe to home broadband service, leaving more than 424,000 households not connected. Among these households, the main barrier to home broadband adoption is the belief that broadband is not relevant or beneficial to them.
- Approximately 967,000 working-age adults in South Carolina would need assistance with tasks that are often required by employers, such as creating a spreadsheet, going online from a mobile device, using a word processor, or sending an e-mail.
- More than three out of four non-adopters in South Carolina (78%) say that it would be easier for them to shop, seek out healthcare information, or interact with government offices if they had Internet access at home.

Additionally, an assessment on technology in businesses released in September of 2014 in a report titled *Technology Adoption Among South Carolina Businesses* revealed the following key findings:

- Across South Carolina, 78% of businesses subscribe to broadband service, representing approximately 22,000 South Carolina businesses that still do not use or benefit from broadband.
- 16,000 Internet-connected businesses want more bandwidth; of those, nearly two out of five (37%) report that they can't get faster service where they are located.

- Over two-fifths of South Carolina businesses (43%) earn revenues online. These represent approximately $30.3 billion in annual revenues from online sales.

For more information on the statewide information described, visit the Connect South Carolina website at http://www.connectsc.org/.

APPENDIX 2: PARTNER AND SPONSORS

Connect South Carolina, in partnership with the State of South Carolina Office of the Governor, supports the state's reinvention and technological transformation through innovation, job creation, and entrepreneurship via the expansion of broadband technology and increased usage by South Carolina residents. In 2009, Connect South Carolina partnered with the state of South Carolina 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.connectsc.org

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

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

NTIA has awarded a total of $293 million for the SBI program to 56 grantees, one each from the 50 states, 5 territories, and the District of Columbia, or their designees. Grantees such as Connect South Carolina are using this funding to support the efficient and creative use of

broadband technology to better compete in the digital economy. These state-created efforts vary depending on local needs but include programs to assist small businesses and community institutions in using technology more effectively, developing research to investigate barriers to broadband adoption, searching out and creating innovative applications that increase access to government services and information, and developing state and local task forces to expand broadband access and adoption.

Since accurate data is critical for broadband planning, another purpose of the SBI program is to assist states in gathering data twice a year on the availability, speed, and location of broadband services, as well as the broadband services used by community institutions such as schools, libraries, and hospitals. This data is used by NTIA to update the National Broadband Map, the first public, searchable nationwide map of broadband availability launched February 17, 2011.

APPENDIX 3: THE NATIONAL BROADBAND PLAN

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

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

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

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

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

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

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

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

To learn more, visit: www.broadband.gov

APPENDIX 4: WHAT IS CONNECTED?

The goal of Connect South Carolina's "Connected" program is to empower locally informed and collaborative technology planning that addresses each community's need for improved access, adoption, and use of technology:

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

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

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

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

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

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

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

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

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

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

APPENDIX 5: GLOSSARY OF TERMS

#

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

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

A

ARRA - American Recovery and Reinvestment Act.

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

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

B

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

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

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

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

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

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

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

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

C

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

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

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

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

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

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

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

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

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

D

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

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

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

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

DSLAM - Digital Subscriber Line Access Multiplier - A piece of technology installed at a telephone company's CO that connects the carrier to the subscriber loop (and ultimately the customer's PC).

DWDM - Dense Wavelength Division Multiplexing - A SONET term which is the means of increasing the capacity of SONET fiber-optic transmission systems.

E

E-rate - A federal program that provides subsidy for voice and data lines to qualified schools, hospitals, Community-Based Organization (CBOs), and other qualified institutions. The subsidy is based on a percentage designated by the FCC.

Ethernet - A local area network (LAN) standard developed for the exchange data with a single network. It allows for speeds from 10 Mbps to 10 Gbps.

EON - Ethernet Optical Network - The use of Ethernet LAN packets running over a fiber network.

EvDO - Evolution Data Only - A new wireless technology that provides data connections that are 10 times faster than a regular modem.

F

FCC - Federal Communications Commission - A federal regulatory agency that is responsible for, among other things, regulating VoIP.

Fixed Wireless Broadband - The operation of wireless devices or systems for broadband use at fixed locations such as homes or offices.

Franchise Agreement - An agreement between a cable provider and a government entity that grants the provider the right to serve cable and broadband services to a particular area - typically a city, county, or state.

FTTH - Fiber To The Home - Another name for fiber to the premises, where fiber optic cable is pulled directly to an individual's residence or building allowing for extremely high broadband speeds.

FTTN - Fiber To The Neighborhood - A hybrid network architecture involving optical fiber from the carrier network, terminating in a neighborhood cabinet that converts the signal from optical to electrical.

FTTP - Fiber To The Premise (Or FTTB – Fiber To The Building) - A fiber optic system that connects directly from the carrier network to the user premises.

G

Gbps - Gigabits per second - 1,000,000,000 bits per second or 1,000 Mbps. A measure of how fast data can be transmitted.

GPON - Gigabyte-Capable Passive Optical Network - Uses a different, faster approach (up to 2.5 Gbps in current products) than BPON.

GPS - Global Positioning System - A system using satellite technology that allows an equipped user to know exactly where he is anywhere on earth.

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

H

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

Hotspot - See *Wireless Hotspot*.

I

IEEE - Institute of Electrical and Electronics Engineers (pronounced "Eye-triple-E.").

ILEC - Incumbent Local Exchange Carrier - The traditional wireline telephone service providers within defined geographic areas. They typically provide broadband Internet service via DSL technology in their area. Prior to 1996, ILECs operated as monopolies having the exclusive right and responsibility for providing local and local toll telephone service within LATAs.

IP-VPN - Internet Protocol - Virtual Private Network - A software-defined network offering the appearance, functionality, and usefulness of a dedicated private network.

ISDN - Integrated Services Digital Network - An alternative method to simultaneously carry voice, data, and other traffic, using the switched telephone network.

ISP - Internet Service Provider - A company providing Internet access to consumers and businesses, acting as a bridge between customer (end-user) and infrastructure owners for dial-up, cable modem, and DSL services.

K

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

L

LAN - Local Area Network - A geographically localized network consisting of both hardware and software. The network can link workstations within a building or multiple computers with a single wireless Internet connection.

LATA - Local Access and Transport Areas - A geographic area within a divested Regional Bell Operating Company is permitted to offer exchange telecommunications and exchange access service. Calls between LATAs are often thought of as long-distance service. Calls within a LATA (IntraLATA) typically include local and local toll telephone services.

Local Loop - A generic term for the connection between the customer's premises (home, office, etc.) and the provider's serving central office. Historically, this has been a wire connection; however, wireless options are increasingly available for local loop capacity.

Low Income - Low income is defined by using the poverty level as defined by the U.S. Census Bureau. A community's low-income percentage can be found at www.census.gov.

M

MAN - Metropolitan Area Network - A high-speed date intra-city network that links multiple locations with a campus, city, or LATA. A MAN typically extends as far as 50 kilometers (or 31 miles).

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

Metro Ethernet - An Ethernet technology-based network in a metropolitan area that is used for connectivity to the Internet.

Multiplexing - Sending multiple signals (or streams) of information on a carrier (wireless frequency, twisted pair copper lines, fiber optic cables, coaxial, etc.) at the same time. Mutiplexing, in technical terms, means transmitting in the form of a single, complex signal and then recovering the separate (individual) signals at the receiving end.

N

NTIA - National Telecommunications and Information Administration, which is housed within the United State Department of Commerce.

NIST - National Institute of Standards and Technology.

O

Overbuilders - Building excess capacity. In this context, it involves investment in additional infrastructure projects to provide competition.

OVS - Open Video Systems - A new option for those looking to offer cable television service outside the current framework of traditional regulation. It would allow more flexibility in providing service by reducing the build-out requirements of new carriers.

P

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

R

Right-of-Way - A legal right of passage over land owned by another. Carriers and service providers must obtain right-of-way to dig trenches or plant poles for cable and telephone systems and to place wireless antennae.

RPR - Resilient Packet Ring - Uses Ethernet switching and a dual counter-rotating ring topology to provide SONET-like network resiliency and optimized bandwidth usage, while delivering multi-point Ethernet/IP services.

RUS - Rural Utility Service - A division of the United States Department of Agriculture that promotes universal service in unserved and underserved areas of the country through grants, loans, and financing.

S

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

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

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

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

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

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

T

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

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

U

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

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

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

V

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

Video On Demand - A service that allows users to remotely choose a movie from a digital library and be able to pause, fast-forward, or even rewind their selection.

VLAN - Virtual Local Area Network - A network of computers that behave as if they were connected to the same wire even though they may be physically located on different segments of a LAN.

VoIP - Voice over Internet Protocol - A new technology that employs a data network (such as a broadband connection) to transmit voice conversations.

VPN - Virtual Private Network - A network that is constructed by using public wires to connect nodes. For example, there are a number of systems that enable one to create networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

Vulnerable Groups - Vulnerable groups will vary by community, but typically include low-income, minority, senior, children, etc.

W

WAN - Wide Area Network - A communications system that utilizes cable systems, telephone lines, wireless, and other means to connect multiple locations together for the exchange of data, voice, and video.

Wi-Fi - Wireless Fidelity - A term for certain types of wireless local networks (WLANs) that uses specifications in the IEEE 802.11 family.

WiMax - A wireless technology that provides high-throughput broadband connections over long distances. WiMax can be used for a number of applications, including last mile broadband connections, hotspots, and cellular backhaul and high-speed enterprise connectivity for businesses.

Wireless Hotspot - A public location where Wi-Fi Internet access is available for free or for a small fee. These could include airports, restaurants, hotels, coffee shops, parks, and more.

Wireless Internet - 1) Internet applications and access using mobile devices such as cell phones and palm devices. 2) Broadband Internet service provided via wireless connection, such as satellite or tower transmitters.

Wireline - Service based on infrastructure on or near the ground, such as copper telephone wires or coaxial cable underground, or on telephone poles.