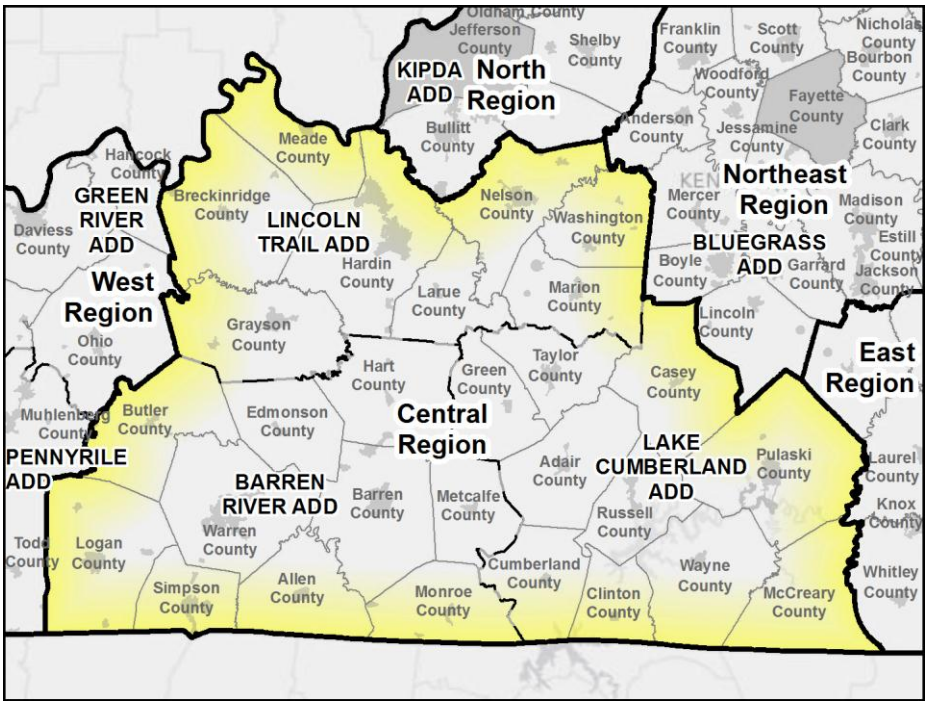
Broadband *KY*

Expanding Broadband and Teleworking Opportunities in the Central Region

(Barren River, Lincoln Trail and Lake Cumberland Area Development Districts)



This report is based on input received from Barren River, Lincoln Trail, and Lake Cumberland Area Development Districts and regional stakeholders, and prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

March 29th, 2013 R2

Prepared for:

Commonwealth Office
of Broadband Outreach and Development
&
Central Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

Table of Contents

INTRODUCTION **3**

1. EXECUTIVE SUMMARY **5**

2. THE PURPOSE AND FOCUS **7**

3. CORE PRINCIPLES **8**

4. WHY BROADBAND MATTERS: *BENEFITS OF BROADBAND INVESTMENTS* **8**

5. CURRENT STATUS: *HOW IS CENTRAL KENTUCKY DOING?* **10**

5.1 BROADBAND ACCESS 10

5.2 INTERNET UTILIZATION AND TELEWORKING 14

6. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS **19**

7. OBJECTIVES AND RECOMMENDATIONS **22**

7.1 RECOMMENDATIONS FOR BUILDING LOCAL AND REGIONAL LEADERSHIP AND CAPACITY 24

7.2 RECOMMENDATIONS FOR ENABLING BROADBAND AVAILABILITY 27

7.2.1 STAGES AND TASKS FOR INTERNET ACCESS INITIATIVE 28

7.3 RECOMMENDATIONS FOR ENABLING TELEWORK OPPORTUNITIES 30

8. ACTION PLAN FOR BROADBAND IN CENTRAL KENTUCKY **33**

9. METRICS FOR TRACKING PROGRESS AND IMPACTS **37**

APPENDIX I - STEPS FOR LOCAL PLANNING FOR BROADBAND AVAILABILITY 41

APPENDIX II: LIST OF RESOURCES 49

APPENDIX III: CONTRIBUTORS TO THIS PLAN 51

APPENDIX IV - IPA WORKSHOP MEETING NOTES: CENTRAL REGION 52

APPENDIX V - PROJECT AREA SCOPE OF WORK 56

APPENDIX VI - PROJECT AREA PROFILE: CENTRAL KENTUCKY 58

APPENDIX VII: GLOSSARY 68

Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability in rural residential areas as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - Kentucky -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been a strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide[1] at a local level are paramount.

In the Central Region project area (Lincoln Trail, Lake Cumberland and Barren River Area Development Districts); this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. The planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

As a result of the planning process, three objectives were established:

- Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional **level**
- Enable **Broadband Availability in Rural Residential Areas**
- Enable teleworking[2] within the region through co-workspaces and entrepreneurial outreach initiatives

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in unserved and underserved communities*, especially those with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible

[1] "The **Digital divide in the United States** refers to actual or perceived inequalities between individuals, households, and other groups of different demographic and socioeconomic levels in access to information and communication technologies (ICTs) and inequalities in the knowledge and skills needed to effectively use the information gained from connecting." Wikipedia.

[2] For this Broadband plan, Teleworking is considered to be working as an employee from home during normal working hours as part of an ongoing arrangement with your employer or as a self-employed or contract worker. Teleworking may be part time (one or more days per week) or full time. Occasional access to work or doing work from home after normal working hours is not considered teleworking.

approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and also provides information on how to build momentum around broadband initiatives in the project area. Recommendations are scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the timeline in the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholders focus is on activities that are within the resources available, while providing for a more ambitious set actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic plan can be found in sections 7.1, 7.2, and 7.3.

Section 8 of the plan provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, time lines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of components (Section 8) within the plan, and the degree to which each component has produced tangible results.

2. The Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters;
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI[3] Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the Central Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level -- driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are unserved and underserved[4] by broadband services, as well as in populations that are underutilizing the Internet.

[3] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[4] NTIA definition of ***unserved*** and ***underserved:*** "***Unserved***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***underserved*** for Last Mile Projects: " an area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

This Broadband Planning document has the following purpose:

a) Defining a Strategic Framework for Planning
b) Assessing the current state of broadband access, adoption and awareness in the Central Region
c) Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Unserved" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

For government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of governments moving services to the Internet, those who don't use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, broadband (see Section 5.1for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community to compete for skilled labor that will not move to an area without broadband. The implication is that those areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[5] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the reports underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** The Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** The Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased business use of the Internet results in growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization are not equally present across Kentucky, as explored in the next section of this report. The relatively low levels of broadband availability, adoption and use in Kentucky (as documented in the two reports referenced above) have a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[6]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it is access to the Internet, adoption of the Internet or productive use of the Internet. The following sections provide information and strategies to help local and regional leaders in addressing these challenges.

[5] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: Central Kentucky,*** *(Appendix VI)***.**

[6] The 2012 eStrategy Report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

5. Current Status: *How is Central Kentucky Doing?*

Given the importance of broadband to the current and future health of Central Kentucky, its communities, residents and businesses, it is important to assess the Central Region project area regarding broadband availability, adoption and utilization. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in the project area is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households, and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at Central Kentucky in terms to access to the Internet relative to both national and Kentucky targets. This assessment will need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "Broadband" comes from the National Broadband Map of the National Telecommunication and Information Administration (NTIA) web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the 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) down-stream and at least 200 Kbps upstream to end users." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second***[7]. For the sake of consistent use of terminology, the FCC has defined the following "Internet speed tiers".

FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

[7] http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf (page 3). "Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

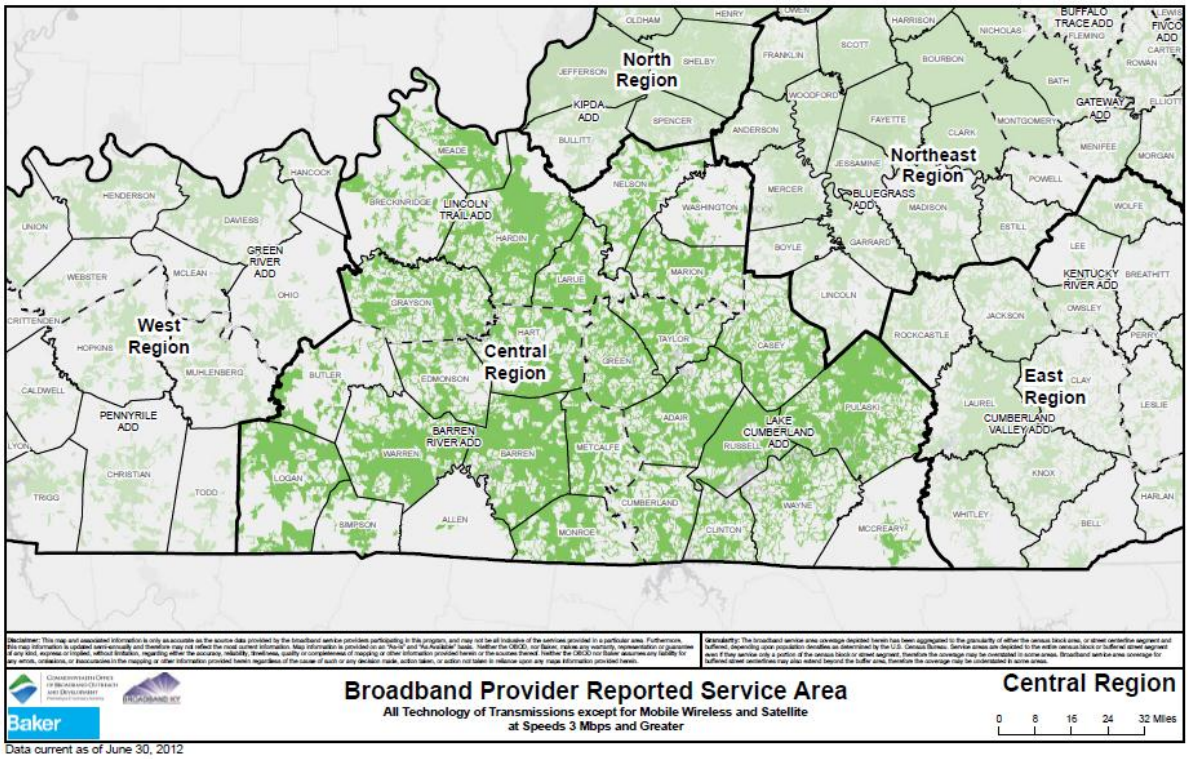
FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and telelearning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

In its National Broadband Plan of 2010, the FCC identifies 4 MBPS as the short-term target for download speed in communities nationwide. Since current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

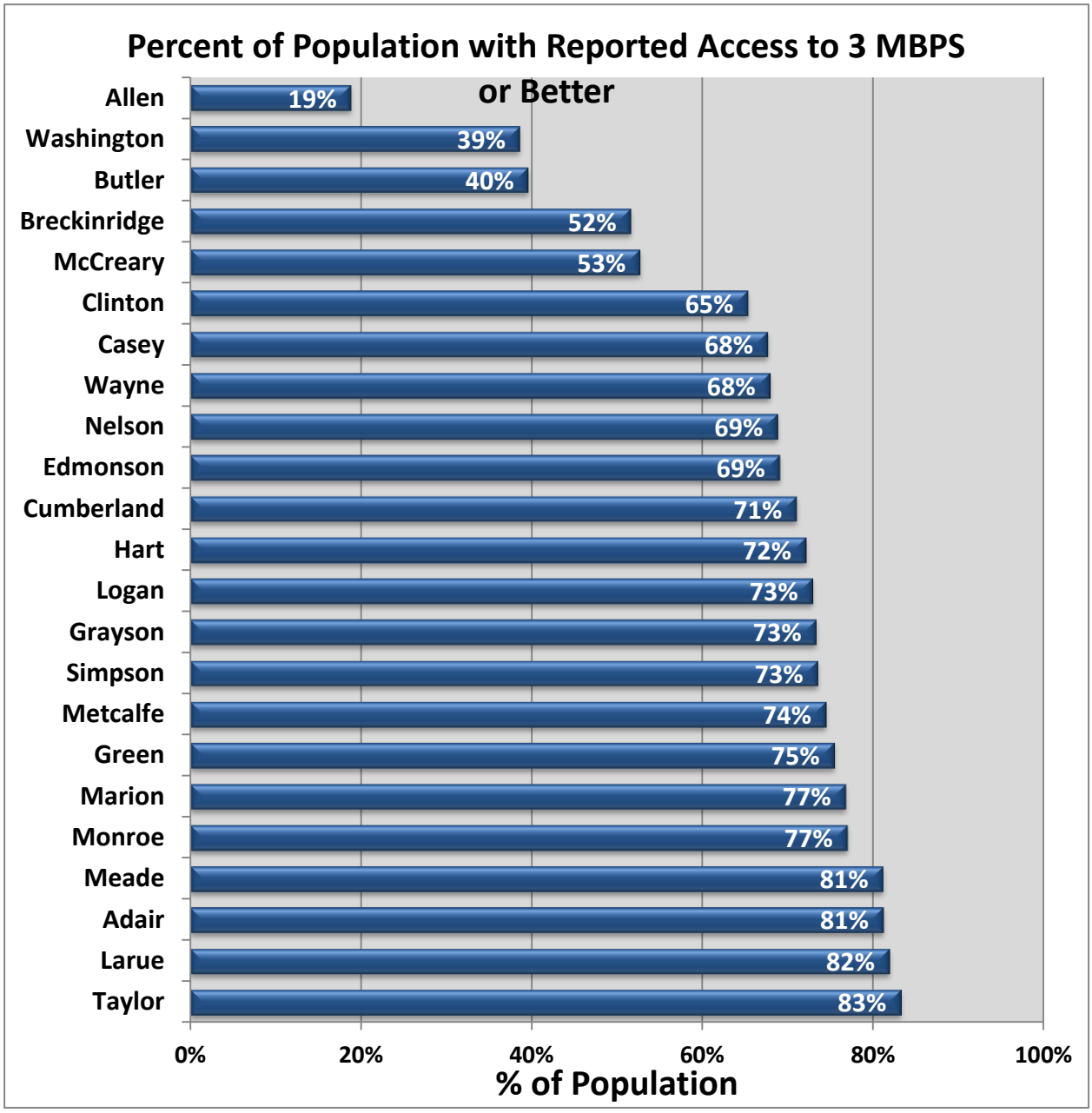
The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online:
http://www.bakerbb.com/kybroadbandmapping/

During the broadband planning workshops, participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

According to Internet Service Provider data, all counties in the Central Region are well below the target of 4 MBPS. As seen in the table below, out of twenty-three counties in the project area, all had less than 90 percent coverage at 3 MBPS. Ten counties had less than 70 percent coverage at 3 MBPS. The information provided is current as of January 1, 2013.



Data current as of June 30, 2012



Broadband coverage is becoming more complex with the rapid growth of mobile wireless coverage and the increasing use of smartphones to access the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual.

For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access (redundancy) to the Internet becomes a major consideration in locational decisions. Lastly, there are many organizations (and households) whose demands on their Internet access require more speed than "just basic broadband".

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

5.2 Internet Utilization and Teleworking

Providing access to Internet services is only the first step in achieving a digitally active and engaged community. Turning potential into reality requires skills, training, and both formal and informal support, in addition to access to broadband connectivity. Both the Pew and Department of Commerce studies show that approximately one in five (20 percent) Americans do not use the Internet[8]. While the non-adoption rate dropped steadily throughout the decade from 2000 to 2010, recent data suggests that the rate has not changed over the last two years. Looking at availability of broadband in the home in 2010, 58 percent of Kentucky households had adopted broadband, which is significantly lower than the national average of 68 percent. Sixty-five percent of Kentucky households in urban areas had broadband compared to only 49 percent of households in rural areas.[9] Whether by choice or economic circumstance, these residents do not access services that provide a broad range of benefits to most residents of Kentucky.

[8] See: *Digital Differences,* Pew Internet & American Life Project*,* April 2012; and*, Exploring the Digital Nation - Computer and Internet Use at Home*, US Department of Commerce (Economics and Statistics Administration and National Telecommunications and Information Administration), November 2011. (Based on Current Population Survey - U.S. Census Bureau)

[9] ***Digital Nation: Expanding Internet Usage***: **U.S. Department of Commerce:** National Telecommunications and Information Administration; 2011; http://www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home.

Looking at businesses, the issue of adoption is less clear. An FCC study in 2010 found that 95 percent of businesses with five or more employees had a *broadband connection* and consequently can be considered adopters of the Internet. For businesses with four or less employees, there are mixed estimates from different studies. To the extent that low adoption is an issue among micro businesses, adoption efforts targeted at individuals and households will have a secondary benefit as these people will also be the owners of many of Central Kentucky's micro businesses.

As seen in Table 2, smaller organizations have significantly lower utilization than larger organizations. Utilization of the Internet by households in the Central Region is slightly lower than the state average. The overall Digital Economy Index (DEi[10]) for households in the Central Region is 5.95 compared to the statewide DEi of 6.1. This is particularly relevant since organizations with 1 to 49 employees represent over 95 percent of organizations in the Central Region. Notably, the Central Region has the highest incidence of small businesses among Kentucky's five regions.

Figure 1: Share of Labor Force by Size of Organizations

Number of Employees	Central Region
1 to 19	87.2%
20 to 49	8.3%
50 to 99	2.3%
100 to 499	1.9%
500 or more	0.3%

Figure 2: Internet Utilization (DEi) by Employment Size: Central Region

Organizations by Number of Employees	Kentucky DEi	Central Region DEi	Sample Size Central Region
1 to 4	5.83	5.92	121
5 to 49	6.41	6.99	195
50 to 99	6.80	6.99	36
100 or more	7.38	6.8	32
All Size Ranges	6.41	6.6	384

There are a number of factors that contribute to lower household utilization in the Central Region. With a slightly older and less affluent population, it is no surprise that the Central Region has households with

[10] The Digital Economy index (DEi) reflects an organization's utilization of 17 Internet applications and process. Based on the number of applications currently being used by an organization or household, a composite score is calculated. An organization's score (from 0 to 10) captures their Internet utilization, with 10 being the highest possible use. **The Color Coding for DEi Scores:** To better show how sectors perform, the DEi tables in this report are color coded from the highest (**green**) to lowest (**red**) to highlight how DEi scores compare. **The color coding** (**green to red**) allows one to quickly compare groups based on how utilization varies.

lower than average computer skills and lower than average utilization. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups.

Figure 3: Impact of Age and Income on Internet Utilization

Central Region	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**5.90**	**5.85**	**7.20**	**7.18**
35 to 54	**5.81**	**5.96**	**6.78**	**6.92**
55 to 64	**4.39**	**5.89**	**6.14**	**5.96**
65 years and over	**4.79**	**4.25**	**5.91**	**6.46**

Figure 4: Computer Skill Levels

	Expert user	Use computers with confidence	Know the basics
Central Region	22.3%	60.6%	16.6%
Statewide	25.6%	59.9%	14.1%

For the Central Region, 16.6 percent of households only "know the basics" in computer skills. Central Region households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband training initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services. In terms of productivity, households in the Central Region show above average utilization for activities such as training, accessing their work place from home and home based businesses, but not for teleworking. These findings and other regional data are included in the Central Region Project Area Profile found in Appendix IV.

Figure 5: Percentage of Households Using the Internet for Productivity

Central Region	% Currently Engaged In	Statewide Average	Variance from State Average
Accessing workplace	51.2%	55.6%	-4.4%
Home business	21.5%	20.8%	+0.7%
Teleworking	18.6%	20.8%	-2.2%
Education or training	48.9%	45.9%	+4.0%

The Central Region has identified teleworking as its priority focus. Consequently, it is important to assess current telework levels among households in the region. The state benchmarking survey collected data on teleworking through two sets of questions. The first question asked how households used the

Internet for "productivity" purposes: telework, home business, and accessing a workplace from home. Based on this broad categorization, 21.4 percent of households in the Central Region stated that they use the Internet to telework – roughly the same as the Kentucky average. These households were then asked if one or more members of the household telework under the provided definition[11].

Based on this narrower definition, of the original households that identified themselves as teleworking, less than 50 percent confirmed that they telework. The level of teleworking in Central Kentucky is similar to East and West Kentucky, but markedly lower than North and Northeast Kentucky.

To the extent that the Central Region Working Group has prioritized teleworking as an economic development strategy, it is useful to understand the motivations of teleworkers. Of the 66 teleworking households in the Central Region, the dominant motivations include quality of life (family, life/work balance, and health) and finances (cost savings, productivity, and more employment options).

Figure 6: Motivations for Teleworking

Teleworking Benefits	% of households saying important or very important
More family time	96.6%
Cost savings	94.9%
Life-work balance	93.2%
More productive	89.8%
Reduce commuting time	86.4%
Health and well-being	86.4%
More community time	84.7%
More employment options	72.9%
Environmental benefits	67.8%

Conclusion: The Central Region is typical of non-metropolitan areas in terms of the percentage of households that telework or have home-based businesses. Its skills levels are similar to state-wide averages. This still leaves a large number of households that have weak computer and Internet skills who have not availed themselves of these telework options. For some, telework may not be an appropriate option. But for many, there is a real possibility that is being underutilized.

With historically high unemployment levels and weaker prospects for manufacturing (the region's largest employer), the possibilities for telework and home-based businesses are worth pursuit. This assessment supports the region's decision to emphasize opportunities to increase remote work in its various forms,

[11] Teleworking is considered to be working from home during normal working hours as part of an ongoing arrangement with your employer. Teleworking may be part time (one or more days per week) or full time. Teleworkers typically have access to company resources online (e.g., company Intranet) with the ability to work from home in the same manner that they would in their company location. Occasional access to work or doing work from home after normal working hours is not considered teleworking.

ranging from telework to home based businesses. Section 7 identifies the recommendations and supporting strategies for pursuing this approach.

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals for the Commonwealth of Kentucky:

a) Communicating the value of internet access to improve the lives of all citizens;
b) Accelerating the expansion of sustainable Broadband access, participation, and adoption by citizens and businesses in the digital economy and society;
c) Promoting Broadband use to be globally competitive and to enable a better economy;

The preceding section has shown that the current situation in Central Kentucky falls short of meeting these goals. If Central Kentucky is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	Weaknesses
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Improved potential for wireless services (fixed and mobile)	Low density population in unserved rural areas Poor business case for conventional solutions Lower interest among some incumbent ISPs Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Opportunities for Collaboration with Providers Public-private partnerships Fixed and mobile wireless technology Renewed interest from incumbent Providers	Economic uncertainty Global competition eroding local economic base Fiscal constraints on all levels of government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.

- The increased technical capacity of both fixed and mobile wireless has provided some previously unserved or underserved areas with cost effective Internet access.

Weaknesses

- Many unserved rural areas in the Central Region project area have low population densities and challenging topography.
- Unserved or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.
- The dynamics described in preceding points may mean incumbent ISPs are less motivated to expand their landline services in unserved and underserved areas.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing “vertical assets”, fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently unserved or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds. Kentucky SBI data also show fixed wireless as having the fastest growth in 2012.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently unserved or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.
- Provider interest and participation during the Central Region IPA and FPA workshops, and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.

Threats

- Residents in unserved communities may lose access to public and private services that increasingly will be available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, the Commonwealth of Kentucky has the following high level goals in relation to broadband:

a) Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
b) Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals for the Central Kentucky project area.

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to guide community and regional initiatives on broadband access, adoption and improved utilization.

In pursuing change, this broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and:
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to "Unserved" and "Underserved" areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1) The development of the ***leadership and institutional capacity*** needed to initiate and sustain broadband efforts at the local and regional level;
2) Enabling availability of broadband in rural residential areas;
3) Enabling efforts that support citizens in taking advantage of opportunities for employment or business income through ***remote work*** (teleworking and entrepreneurial) facilitated by the Internet.

The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.***

Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- Initial: Related to project initiation and intended to be completed over the first 1 to 2 months.
- Short-term: Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- Medium-Term: These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, subject to obtaining the required resources, which may require additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Example of Implementation Timeline for Recommendations in Section 7

Approximate Recommendations Timeline						
Recommendations	Month 1	Month 2	Month 3	Month 4	Month 5	Project Duration
Objective 1:						
Initial	Commence at 45-60 Days or Less		Some Require Ongoing Effort			
Short Term			Commence at 2-4 Months or Less		Some Require Ongoing Effort	
Medium Term					Commence at 4 Months or Less	
Objective 2:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less
Objective 3:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less

The detailed recommendations are found below in sub-sections: 7.1, 7.2, and 7.3

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the Central Region project area, the Area Development Districts have identified themselves as leaders with organizational capacity to manage the broadband initiative in their region. The ADDs bring the following to the broadband initiative:

- An organizational structure and network of elected officials and regional stakeholders
- Local knowledge of the area and its priorities
- Ability to work with communities to identify unserved and underserved households at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In additional to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the planning area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.
- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.

- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is often the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Establish a regional body to promote and recruit community leadership for broadband availability. Confirm the willingness of the Cumberland Workforce Investment Board (CWIB) to provide leadership on the objective of developing an environment supportive of teleworking in the project area.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to learn about broadband, the available resources and how they can improve broadband availability and/or enhance Broadband opportunities in their community.
e) Develop tactics that fully leverage State Broadband initiatives.
f) Establish a sub-committee of Broadband Providers to regularly meet and discuss availability issues in the project area, to solicit on-going input from the group and to begin broadband-specific collaboration among project leadership and Providers to improve communication and find ways to collectively improve availability.

Medium to Long-term Recommendations: (In addition to the above)

g) Work with Kentucky Teleworks and the Kentucky Workforce Cabinet through EKCEP to identify goals for increasing teleworking opportunities in the region, connecting broadband availability with co-work space goals.
h) Identify specific local projects in part by organizing a series of webinars or face-to-face workshops to assist local community leaders in the project area in developing local broadband initiatives.
i) Facilitate a peer-to-peer support group among community leadership.
j) Provide technical assistance on issues related to improving broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in their broadband initiatives, they will encounter issues requiring

expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potential groups to be targeted.***

Checklist for Developing Community Leadership

Individual Leadership

- Community leaders and elected officials, and private sector representatives understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational Leadership and Capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community Support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support

7.2 Recommendations for Enabling Broadband Availability

Communities in the Central Region with inadequate Internet service face significant barriers in overcoming this digital divide. Nonetheless, communities in the project area have the potential to develop the leadership and commitment necessary to achieve the broadband they need for their residents, businesses, and community anchor institutions.

In the Central Region project area, a priority is to enable broadband availability to rural residential areas without any form of high-speed Internet service.

The issue of poor or no Internet services in rural residential areas can be highly fragmented in the Central Region. A regional approach to this issue in the project area will enable local leaders to address this need. ***This plan recommends a process whereby communities in the project area take responsibility for proactively identifying, finding, and compiling detailed information about unserved and underserved areas at the street level that addresses their community's needs. These local efforts should be supported by the regional body with outreach, education and support.***

Appendix I includes a detailed outline of the key opportunities and requirements facing local communities. It is recommended that communities adapt this process to fit their own circumstances. The result should be process where the values and priorities of a community determine subsequent tasks and choices. As communities move down the road to implementing specific strategies, they may find that initial choices need to be re-assessed. Improving broadband availability requires persistence and the ability to work over a long-term period.

If the overall strategy is based on local responsibility and leadership, there remains significant scope for the regional Working Group and stakeholder efforts to expand broadband availability. ***The recommendations below can be combined with or in addition to the steps outlined in the section on leadership.***

Initial Recommendations:

a) Develop and circulate an information package among local communities that identifies the resources and opportunities available for improving broadband availability at the local level;
b) Circulate, promote and leverage the "eLearning Module" on community approaches to improving broadband developed by the Office of Broadband Outreach and Development.
c) Use regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website.
d) Leverage the Broadband Provider sub-committee and regularly meet to discuss availability issues in the project area, soliciting input from the group on the information package (Recommendation a), and to begin on-going collaboration with project leadership and Providers to improve communication and find ways to collectively improve availability.

Medium-Term Recommendations:

e) Building on the efforts identified above, develop and expand regional approaches to Local Internet Expansion, bringing together communities that undertake local broadband availability initiatives. This would be a collaborative effort based on a shared process, in tandem with community work on local project initiatives and would include additional regional or Statewide Providers. The expanded regional approach would also include a process for communities to share information and resources, as well as active mutual aid or peer support, as noted in the section on leadership.

In Appendix 1 detailed information is provided about the process and tasks for local communities to use for expanding broadband services in rural residential areas. This includes basic starting points for consideration prior to commencing a community effort.

7.2.1 Stages and Tasks for Internet Access Initiative

The diagram on the following page is a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified are explored in greater detail in Appendix I. The Office of Broadband Outreach and Development (OBOD) has also created an online "eLearning" module that addresses local broadband availability. The module is available on the website noted below and includes a case study of the GRADD project: http://finance.ky.gov/initiatives/broadband/pages/default.aspx .

1: Preparation

- Develop Leadership
- Establish preliminary objectives and priorities
- Identify assets and key data

2: Engaging Internet Services Providers (ISPs)

a) Identify ISPs
   - Existing ISP(s): as backhaul or last mile
   - Adjacent ISP(s)
   - Regional ISPs

b) Determine Level of ISP Interest
   - Informal approaches
   - Request for expressions of interest (RFI)
   - Qualify Interested ISPs: Due diligence (capacity, references)

3: Refine Objectives and Relationships

a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
   - Support ISP as sole provider
   - Outline Public Private Partnership as solution
   - Local government or NP entity as provider

4: Make Commitments

a) Secure funding
b) Commit funding
   - Request For Proposals (unless direct award)
   - Contract Negotiations

7.3 Recommendations for Enabling Telework Opportunities

The Central Kentucky Working Group identified telework opportunities as one of two priority broadband planning issues for the region. The Area Development Districts within the Central Region have taken on responsibility for bringing their ongoing discussion with Kentucky Teleworks to a fruitful conclusion. *For the purposes of this plan,* the broadband planning workshops established the following goal related to teleworking:

Leverage existing structures tasked with workforce development to develop specific workforce counseling, training, and promotion initiatives related to teleworking and entrepreneurship.

As a starting point, this plan defines the scope of the initiative by defining the target group:

1) **People looking for remote employment with a single employer;**
2) **People seeking contract-work from one or more organizations; and,**
3) **Self-employed individuals running a home based businesses or those who may have this interest in the future.**

This broadly defined group shares the common goal of generating income from working at a remote location. Workers in this group may over time transition from one category (e.g. remote employee) to another (such as remote contract worker), as skills develop, opportunities change, or when better/affordable Broadband service becomes available.

Looking at remote work beyond being that of being an employee for a single employer provides additional opportunities for growth, while limiting dependence on a single employer who can shift work at a moment's notice. It is also worth noting that some of the fast growing areas of work lie outside the traditional employer – employee relationship.[12]

This section provides additional recommendations for a process that identifies opportunities and priorities in the area of telework. The following are basic strategies for developing an environment in the Central Region that is conducive to teleworking:

Leadership: A collective group formed from the Barren River, Cumberland, and Lincoln Trail **Workforce Investment Boards** (WIB) will play a leading role in this telework initiative (pending confirmation at their February 21st meeting). However, for those activities related to facilitating development of co-work facilities, the Central Region Leadership Group will provide leadership. In recognition of the broad responsibilities of the WIB's, consideration should be given to forming a working group with the specific

[12] "More and more people are choosing a contingent work style — that is, temporary work that may be project-based or time-based — over full-time or part-time work. Temporary placement service provider Adecco predicts that the rate of growth in contingent workers will be three to four times the growth rate among traditional workforces, and that they eventually will make up about 25% of the global workforce." ***The Rise of the New Contract Worker***, Tammy Erickson, Harvard Business Review, September 7, 2012.

mandate to address telework issues. Membership of the group should consider which individuals and organizations have the interest to provide the leadership to drive the telework initiative.

Adopt a Contingent Work Plan: A detailed work plan should provide tactics and actions, with existing or available resources, as well as additional actions that could be undertaken as additional resources become available, such as grants. Because the pursuit of financial resources for the project can take time, identifying less onerous tasks to be achieved within existing resources enables the group to achieve incremental progress and independence, while also conveying a high level and sustainable commitment by the region. Developing a work plan with contingencies built in will provide both flexibility and advanced planning for growth.

Co-work Facilities: Many rural residents do not have good quality Internet, while others lack the home environment needed to support remote work. A strategy for addressing these issues is development of co-work facilities for remote workers. This innovative strategy is already being implemented in East Kentucky. An objective of this plan is to proactively promote this approach to Central Region communities and engage with those with a high level of interest in co-work facilities for their areas. In identifying and assessing potential "host" communities, important information to be collected will include current levels of broadband connectivity and the availability of appropriate buildings for such a facility.

Initial Recommendations:

a) Create an "inventory" of ongoing activities and resources related to remote work that may already exist within the project area. This will not only prevent duplication, but will identify existing resources that can be built on or more widely utilized.
b) Actively communicate with communities and organizations in the project area and identify those interested in participating in the initiative.
c) Develop a detailed work plan that identifies specific activities and responsibilities.

Short-Term Recommendations

d) Identify areas of opportunity for co-work facilities. Once interest has been identified, opportunities should be assessed. This assessment should include a site description and an estimate of any capital and operating costs associated with bringing the space up to standards needed for a healthy remote work site. Cost estimates will help determine any rents to be charged to remote workers using the site, as well as required grants and operating subsidies.

Medium-Term Recommendations:

e) In instances where communities wish to develop co-work facilities and/or individual telework opportunities but have insufficient connectivity, facilitate discussions with regional Providers or the Provider subcommittee to identify last-mile service options for prospective facilities and teleworkers.

f) Provide assistance to rural communities interested in telework by identifying street level areas in localities that currently do not support remote work, as well as areas that already have broadband in-place to support remote work activities. The identification of areas with "sufficient broadband in-place" should include information on Providers currently serving the area, and those in the region who may have an interest in expanding service.

8. Action Plan for Broadband in Central Kentucky

The action plan components included in this section are a preliminary outline of tasks, timelines, and responsibilities that reflect the recommendations in Section 7. It is expected that this preliminary outline will be adjusted as the plan is implemented, reflecting availability of resources and a more detailed agreement on the work plan required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Regional Lead Bodies	Recruit & Confirm involvement and level of commitment	LTADD, BRADD, LCADD, WIBs	Univ. of Western Kentucky, local business, other members outside of gov.	1	Establish leadership groups for both broadband availability and teleworking.
1b	Secure Funding	Approach potential funders	LTADD, BRADD, LCADD, WIBs		2 *(ongoing)*	Submit funding applications, research others.
1c	Expand leadership (community Level)	Recruit new community leaders & stakeholders	Regional entity	K12 Superintendents, principals, local business, other members outside of gov.	1,2	Leaders with focus on rural residential Internet availability and telework issues.
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	Regional entity	K12 Superintendents, principals, local business, other members outside of gov.	2	At least two webinar or face-to-face orientation session.
1e	Tactical development to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives.	Regional entity	Local gov. or business contacts w/PR skills and project interest	2	*e-Link to appropriate state web sites. *Connect/coordinate with state on PR progress reporting.
1f	Establish Provider Sub-Committee	Build partner relationships and collaborative problem solving approach	Regional entity Representative to Sub-Committee	Providers serving the project area, utilities, regional and statewide providers	1,2	Committee becomes an input source on availability gaps, and the group collaborates on solutions

1g	Identify goals for increasing telework opportunities	Work with Kentucky Teleworks and Kentucky Workforce Cabinet	LTADD, BRADD, LCADD, WIBs	Kentucky Teleworks and Kentucky Workforce Cabinet	Subject to resources	Statement of goals.
1h	Identify local projects through a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband planning and outreach.	Regional entity		Subject to resources	Community oriented workshops and webinars. Communities interested in initiatives are identified.
1i	Establish peer support	Facilitate peer support for community leadership	Regional entity	Commercial businesses, local Gov., tech service providers , BB Providers,	Subject to resources	Functioning community leadership peer group.
1j	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	Regional entity	Commercial businesses, local Gov., tech service providers , BB Providers	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders.

Objective 2: Enabling Broadband Availability

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders & Local Leadership	Begin (Month)	Outcome
2a	Develop and circulate information package	Agree on design and approach to information package	Regional entity	Providers, Local Govt.	2-3	Agreement on content, packaging, and points of distribution at communities in project area
		Produce and distribute package	Regional entity	Local media, education sector.	2 & ongoing	Package sent to local governments, officials, and stakeholders
2b	Promote & leverage eLearning modules	Promote eLearning & outreach activities: Webinars; presentations;	Regional entity	Local media, education sector.	3 - 4 & ongoing	Participation of interested individuals and stakeholders; identification of local projects
2c	Regularly planned events	Promote/support local broadband availability initiatives, ideas, materials (see tech assistance 1i: Leadership)	Regional entity	Muni and county gov; utilities and Providers	3 - 4 & ongoing	Better Broadband info on services to unserved or underserved households the project area
2d	Leverage the Broadband	Leverage sub-committee:	Regional entity	Providers with	2 &	*Discuss availability issues *Solicit input

	Provider sub-committee	*regularly meet *discuss availability issues *solicit on-going input *input on information package		service in project area and others from region	ongoing Frequency TBD	on information package * Begin collaboration on avail. Gaps *Review and share SBI coverage data and trends in State/Nationwide
2e	Expand participation of local internet initiatives to more communities	Build on initial project work, grow the number of participating communities, info sharing/collaboration, peer support, technical assistance	Regional entity	Local Gov, K–12 Superintendents & principals, local business and others outside of gov.	3 - 4 & ongoing Subject to resources	More community participation with interested individuals and stakeholders; identify more/new local projects

Objective 3: Enabling Telework Opportunities

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders & Local Leadership	Begin (Month)	Outcome
3a	Inventory activities and resources on remote work	Develop inventory for assessment and outreach.	Regional entity WIB/WIA Directors	Local media, education sector.	2	Document with list of resources, activities and contact information
3b	Outreach to communities and organizations	Identify potential partners and projects. Coordinate with Objectives 1 & 2	Regional entity WIB/WIA Directors	Local media, education sector. Municipal and county gov'ts.	2	Participation of interested individuals and stakeholders in events; ***Identification of potential local projects.***
3c	Develop Work Plan	Agree on design and approach to information package	Regional entity WIB/WIA Directors	Univ of Western Kentucky	2	Approved work plan
3d	Identify potential co-work facilities	Identify candidate communities and related information	Regional entity		3	List of potential communities, with description of opportunity and leadership.
3e	Facilitate discussions with Provider subcommittee to identify last-mile service options for prospective facilities and teleworkers	Educate local stakeholders on process and tools for documenting broadband availability	Regional entity	Providers	Subject to resources	Proposed solutions to last-mile challenges related to specific telework opportunities.

3f	Assist rural communities in identifying street level areas that do not support remote work, as well as areas that do support remote work activities		Regional entity	Local schools	Subject to resources	Documentation at street level of broadband service for target areas in participating communities.

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Enabling Broadband Availability**
3. **Enabling teleworking** through co-workspaces and entrepreneurial outreach initiatives

Building local and regional leadership & capacity		
Metric		***Data***
1a	Lead regional body is established and involvement of WIBs on telework issues is operationalized	• Creation of organizational parameters that define structure, mandate, accountability and membership • Endorsement of group parameters is affirmed by key stakeholders
1b	Secure Funding Sources	• Document names, contacts status of funders approached • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State broadband Initiatives	• Submitted & approved tactical plan
1f	Established Provider sub-Committee	• Document participants, meeting frequency & issues addressed • Over time, document solution collaboration, opportunities to fill availability gaps through partnership
1g	Identified goals for increasing telework	• Documentation of agreed goals

Building local and regional leadership & capacity		
Metric		***Data***
1h	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*
1i & j	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact.

Enabling Broadband Availability		
Metric		***Data***
2a (1)	Completed broadband availability information kit	• Finished kit content and subsequent updated kit at periodic intervals.
2a (2)	Distribution of information kit on broadband availability and public Internet access sites to local governments and stakeholders	• Points of distribution, activity log related to community use and engagement • Number of kits distributed, plus online tracking of access to kits (if online) *(# TBD)* • Plan/prepare for v2 updates, timing, team contributors, data sources
2b	Circulation, promotion and leveraging the "eLearning Module" on community approaches to improving broadband developed by OBOD	• Number of presentations • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
2c	Use of regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
2d	Leveraging Broadband Provider sub-committee and regularly meet and discuss availability issues in project area, solicit on-going input from the group on their information package (Recommendation **a**), begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability	• Document meetings, attendees, provider attendees, info exchanged, etc. • Document provider inputs on info package/overall use of package • # of availability gaps at the community level (areas w/community-based projects) • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for areas w/community-based projects) and collective provider "work plan" for problem solving.

Enabling Broadband Availability		
Metric		***Data***
2e	Development and expansion of regional approaches – growth of base of participating communities, info sharing/collaboration, peer support, technical assistance	• # of new community initiatives launched • # and type of groups involved, total team involved • # of info "bulletins" and communication activity *(#TBD)* • # of tech assistance events or responses "logged" by lead group *(#TBD)*

Enabling Telework Initiative		
Metric		***Data***
3a	Inventory of activities and resources on remote work	• Production of inventory
3b	Outreach to communities and organizations potentially interested in telework	Documentation of outreach efforts Number of communities and organizations interested in participating in a telework initiative
3c	Detailed action plan	Production of work plan with specific objectives, tasks, responsibilities and time lines.
3d	Identification of potential sites for co-telework facilities in Central Region	Production of list; number of communities and local leaders.
3e	Facilitated discussions with Provider subcommittee to identify last-mile service options for prospective facilities and teleworkers	Establishment of process between providers and communities. Number of communities taking this step.
3f	Assistance to rural communities in identifying street level areas that do and do not support remote work	Number of communities starting and completing this task.

Impact Metrics

Impact Metrics measure overall benefit on Internet access and utilization in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improved Access to Broadband Infrastructure - Rural**
- **New Teleworking Opportunities and Increased Levels of Teleworking within the Region**

Improved Access to Broadband Infrastructure – Rural		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# households served (service available)	Stats on broadband service coverage (e.g. households passed or within serv. area)
5	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Increased teleworking		Data
1	Establishment of new co-telework facilities	• Number of new sites and work spaces *(# TBD)*
2	Number of new teleworkers	• New participants in Kentucky Teleworks from the project area *(# TBD)*
3	Increase in the number of areas that have the connectivity required to telework	• Number of households and sites (impacted by project activities) *(# TBD)*

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I - Steps for Local Planning for Broadband Availability

The next few pages provide a detailed review of the process and tasks for local communities that want to expand broadband services in rural residential areas. It is useful to begin with some basic starting points.

- ✓ ***Begin with needs and goals, rather than solutions --*** Local and regional initiatives should not begin by assuming what the eventual Internet solution will look like, the appropriate scale of "build out", type of technology, type of ISP, or what the appropriate role of the local government should be. Instead, initiatives should address specific needs and the goals in the project area that ultimately lead to better solutions.

- ✓ ***Identify the specific needs and locations of the fragmented areas.*** Local needs and goals need to be supported with actual information on-the-ground that identifies problem areas and certain local asset information on a map, as well as aggregating the "demand potential" for underserved and unserved populations. This can become powerful information to empower and inform local leaders, and help facilitate ISP partnerships.

- ✓ ***Include, inform, and attract local leadership***. Local elected officials, economic development organizations, small business, and other active energetic leaders in the community. The educational sector has often played an important role in providing leadership and a clear rationale for making local broadband initiatives a priority. The educational sector has particular value with access to students who could be involved in documenting current and potential Internet service and demand.

- ✓ ***Consider Internet Service Providers (ISPs) as partners.*** A major point of feedback from Providers is that communities and local governments often see them as an "outsider" or only as a potential source of revenues, rather than as a partner in achieving community goals. Providers are a lot more willing to spend time exploring options with friendly communities than with those who place obstacles in their path. While a community may or may not find an attractive ISP to partner with, they should start by considering potential ISP partners. Facilitating a consultative relationship with ISP's as partners opens up an essential communication channel for the longer term of this project and enables the Broadband team to tap into a valuable resource of information on technology, equipment, and network maintenance & expertise – *the business of broadband.*

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were unserved or underserved. However, in many cases unserved or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [13]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:

- **Target population or organization(s):** location (including topography), number and age of households (rural residential), density, and income/budget.
- **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
- **Pole access**: pole owner, pole type, attachment capacity, cost.
- **Rights of Way** – can be used to expedite/reduce cost of conduit placement
- **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
- **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
- **Land** – that can be used for tower construction/locating points of presence, etc.
- **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.

[13] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.
- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government to cultivate a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in it community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[14]

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:
   - By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
   - By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

   In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

[14] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer. Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, are market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable: will projected revenues cover expenses? Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.

- A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
- Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
- Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.
- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:
    - Aggregating existing demand and purchasing power in the form of guaranteed contracts can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

    - ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html) continue to provide federal grant opportunities. The Connect America Fund is still in its

early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

- ***Funding mechanisms of Kentucky*:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

- ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require the skills to enter into complex contract negotiations with an ISP.

Appendix II: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Local Government Economic Development Program (LGEDP) --
http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) --
Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency – Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY **...**,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280
NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center (TATRC)**, located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)
School Turnaround AmeriCorps FY13
http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity
The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix III: Contributors to this Plan

This Plan for ***Expanding Broadband and Teleworking Opportunities in the Central Region*** was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for Central Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the Central Kentucky region's project area, this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the two ADD regions were contacted about the Broadband planning initiative. Many were invited to provide input and participate in the two workshops. A list of organizations that were consulted as part of the development of this plan is available through the KC-ADD office.

Appendix IV - IPA Workshop Meeting Notes: Central Region

October 24th, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the Central Region of Kentucky, comprising the three Area Development Districts of Lincoln Trail, Lake Cumberland and Barren River. The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This documents draws on notes taken by KCADD, Baker and SNG staff.

Brian Kiser convened the meetings and introduced the project team members and working group members before asking attendees to introduce themselves around the room. Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies.

Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine what goals and objectives for the region.

Darryl McGaha presented the Central Region Working Group's Scope of Work (SOW) document. McGaha explained that when the OBOD asked the ADDs to write the SOW, they were asked to choose a project area based upon an area where there was a measurable broadband need that could be addressed with the involvement of committed stakeholders. Based upon the survey data, all three ADDs in the area had an opportunity to tap into teleworking initiatives to assist their communities. The Central Region Working Group, working with Kentucky Teleworks, began to identify that there are training needs for increased digital literacy and availability needs for teleworkers who need a reliable broadband connection. At this point, the Working Group has enlisted the help of the stakeholders present to assist in designing an initiative that addresses both needs.

Bill Bates then provided some information relating to the project goals, including regional availability, changes in provider participation over the past two years, and data on users, usage, and uses.

Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy then informed the group that the goals for the day's workshop would be creating a vision statement, goals, strategies for achieving those goals, action items, and other strategies for implementing the action plan.

Various stakeholders noted that Internet availability and reliability are priorities for the region. Josh Ball from Kentucky Teleworks spoke on their experience with current teleworkers across the state. Ball agreed that availability has been an issue for some teleworkers, particularly in terms of reliability. Ball said unreliable connections jeopardize teleworkers' jobs. As a temporary solution in eastern Kentucky,

Ball said his agency is opening co-workspaces for low-cost rent to teleworkers who need access to a place to telework with a reliable connection if they cannot get that connection in the home. In his experience, satellite is unacceptable for teleworking. The minimum needed is 5 Mbps or faster download speed. Ball also identified that there is a need for training on best practices for teleworking to assist regular office workers transition to becoming effective teleworkers.

The plenary session identified two main objectives for this planning process:

1. Create access to reliable broadband connections in currently unserved and underserved rural areas, especially for teleworkers / potential teleworkers;
2. Work with stakeholders to address digital literacy gaps and opportunities related to telework;

The session then convened for lunch and reconvened at 1 p.m., breaking into two groups to address the two identified issues: Availability of broadband in rural areas, especially for teleworkers; and, promotion of telework and related digital literacy initiatives to prepare a strong digital workforce capable of taking advantage of telework opportunities.

Telework and Digital Literacy Group

The group articulated the following objectives

1. Maximize employment/income opportunities.
2. Take advantage of skills within region.
3. Bring income back to counties – Working at home will keep folks in rural communities.

The group was very supportive of bringing Kentucky Teleworks to the region. With this as an agreed objective, the group discussed how to maximize opportunities for opportunities for telework. The following suggestions were discussed and received support from participants:

a. Targeted training in digital literacy, as well as skills related to teleworking. One possibility is a certification program endorsed by Kentucky Teleworks and delivered by regional post-secondary training organizations.

b. Changing the regional business culture in support of both part-time and full-time teleworking is critical to attracting and retaining skilled employees. There was support for an education and outreach targeted at existing businesses focusing on the benefits and best practices of telework.

c. There was support for the suggestion that rural connectivity and workforce training initiatives should include entrepreneurship and best practices for home-based businesses.

d. One specific suggestion was identification of possible co-work space facilities in the areas most likely to face Internet service issues related to either reliability or availability.

e. Teleworking consists not only of "employment" opportunities, but also contract work by independent entrepreneurs. oDesk is as an example of this type of telecommuting opportunity.

Availability Group

Participation in the breakout session included Internet Service Providers, ADD business contacts and Stakeholder/citizens. Those who participated had interest in broadband access and availability for the focus area, to gain a better understanding of the business of broadband: how the Providers operate their business, the limitations of technology types, and criteria for residential, teleworking and business services and how decisions are made.

Criteria and attributes for considering service or new service expansion:

- Broadband subscriber **density** in area -- *Institutional, *CAI's, *Residential, *Business, *Gov.
- Geography / Topology
- *Middle-mile Info, *Head-end/Hub Location Points
- Providers presently operating in the area
- Specific business locations: *Commercial(Larger), *Teleworker, *Small Business, *At-Home Business
- Network considerations for Providers / Criteria for Households(H) & Business(B):
    - Capacity / Speed / Latency / Symmetric Service
    - Service Redundancy (B) / Service Quality
    - Entry Cost (For HH's and the ROI for Teleworkers)
    - Demand for "Enterprise Class" Service (B)
- Technology options in the area
    - Cost/timing of fiber network expansion (a limiting factor)
    - Fixed-Wireless may likely provide a faster way to bring service in underserved areas
- Understanding the "partnership potential" of an area
- Land ownership, parcel boundary, business zoning or districts, ROW access -- location
- Data/information
- Public / Private Structures
    - Pole access -- *Pole owner, *Pole Type, *Attachment capacity, *Cost, *Permitting/Licensing process, *Speed-of-attachment (bureaucracy)
    - "Vertical Assets" – Existing towers or buildings where wireless or fixed-wireless equipment may be deployed to reach new customers; Including private-sector tower assets in the region --*Co-location towers expensive,*Interference with cell antenna
- Fostering a competitive environment can bring down user costs and encourage continued investment in upgrading broadband infrastructure
- Costs of customer acquisition – equipment, maintenance, installation
- Government rules/requirements/reg's/constraints –
    - Muni/County/Regional: Established department(s)? Points-of-Contact?

- Business "guidelines" or processes: documented? In place?
- RFI / RFP: Value-based? Cost-based? Criteria defined? Is the decision/evaluation process defined, open and fair (People/Committee/Processes)?

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the Central Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the Central Region will be presented to a stakeholder workshop in February or March for discussion, amendment and adoption. The draft plan will begin to develop an implementation plan that includes specific tasks, timelines and responsibilities. To the extent that these areas are not addressed in the draft plan, they will be addressed at the stakeholder workshop.

Teleworking

I. Bring Kentucky Teleworks to the Region. The ADDs are already working on this issue and will provide leadership on this specific objective.
II. Consult with Kentucky teleworks to define with connectivity and skills required by teleworkers.
III. Use existing structures (committees) tasked with workforce development to explore and develop specific workforce counseling, training and promotion initiatives related to teleworking and entrepreneurship.
IV. Explore the possibility of developing co-work facilities, especially in rural areas with poor connectivity.

Broadband Availability

I. Developing more, detailed, and targeted information is a recommended strategy for defining business strategies for broadband access and availability, while also engaging Providers in identifying and developing solutions. A specific objective for local governments and stakeholders is to define and develop a "kit" of information with resources specific to broadband, with defined technical service levels and requirements to make it easier for Providers to understand the business needs.
II. Complementary efforts to these regional efforts should include:
    - Demand Aggregation
    - Business Surveys
    - CAI identification & inventory,
    - Wi-Fi Hot-Spot strategies
III. Connected to the above, define leadership and owners to build capacity for sustaining ongoing efforts over time.

Appendix V - Project Area Scope of Work

Name of Region Central **Name of Project Area** Regional Teleworking Opportunities

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Digital literacy growth→ creation of qualified digital workforce 2. Availability and Reliability, focusing on rural areas
Project Area Boundaries	Boundaries for this Project Area: Lincoln Trail ADD Barren River ADD Lake Cumberland ADD
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Creation of a qualified workforce for teleworking jobs 2. Availability and Reliability in rural areas 3. Focus region wide
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: • Digital literacy gaps • Reliability and Availability gaps
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. Donna Diaz, Lake Cumberland ADD 2. Darryl McGaha, Lake Cumberland ADD 3. Rodney Kirtley, Barren River ADD 4. Wendell Lawrence, Lincoln Trail ADD 5. Mike Burress, Lincoln Trail ADD 6. Donna Diaz, Lake Cumberland ADD
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: Darryl McGaha
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Teleconference call in 2-4 weeks 2. ADD to confirm rep on committee 3. ADDs to validate

** If additional space is required, please attach additional pages to this template. **

Approved: May 31, 2012 - KY Broadband Central Planning Session

1) Project Area Focus

- The three ADDS, with priority to rural areas
- Focus: Telecommuting opportunities, barriers, and strategies.

2) Project Area Profile: (Baker/SNG Team responsibility)

The task will be to develop a project area profile, drawing on data in recent reports. Special attention will be provided to the following areas:

a) Identify patterns of telecommuting in Kentucky and specifically in the project area.
b) Identify main barriers to telecommuting, as well as preferred means of acquiring Internet skills.

3) Identify, contact and recruit stakeholders for Initial Planning Session

Stakeholders Recruitment

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be Recruited

A. SME Internet utilization in rural areas
   - Post-secondary education agencies, both private and public
   - Kentucky Teleworks Program representatives
   - Local WIA Directors statewide
   - Other government, nonprofit, or for-profit agencies supporting telework efforts

4) Logistics

a) Identify and confirm Initial Planning Area (IPA) Workshop date and location
b) Identify how invitations will be sent out, including follow-up and registration process.
c) Other logistics: refreshments, audio-visual aids, etc.

5) Purpose of Initial Planning Area (IPA) Workshop in September

a) General awareness and education around broadband adoption and utilization
b) Presentation of Project Area Profile
c) Discussion and issue identification within the focus area: telecommunications (both "near-shoring" and within local businesses and their existing employees).
d) Priority setting
e) Identification of general strategies for dealing with priority issues

Appendix VI - Project Area Profile: Central Kentucky

This section provides a profile of Internet utilization in the Central Region, consisting of the Lincoln Trail, Lake Cumberland and Barren River Area Development Districts. To provide context in regional planning it is important to consider the overall profile of the population and economy of Central Kentucky.

Figure 1: Demographic and Economic Profile

Households	Central Kentucky	Kentucky
Population	760,568	4,339,367
Median Household Income	$36,941	$40,061
% in Poverty	20.7%	18.4%
% of Population 65+	13.9%	13.3%
Organizations		
Establishments	14,362	90,511
Employment	206,895	1,480,658
Annual Payroll (in billions)	$5.95	$51.44
Average Size of Employer	14.4 employees	16.4 employees
USCB County Business Patterns 2009		

Central Kentucky has below average (median) income and has an age profile similar to the state. At 20.6% of employment and 25.5% of payroll, manufacturing plays a large role, compared to statewide levels of 15.1% and 18.6% respectively. The manufacturing sector consists primarily of larger than average establishments, with only 4.3% of all businesses classified as manufacturing. The eight largest industries, ranked by annual payroll, that collectively represent over 75 percent of the economy in Central Kentucky are:

Figure 2: Largest Economic Sectors in Central Kentucky

Rank	Industry Sector	Percent Employment
1	Manufacturing / Processing	20.6%
2	Retail Trade	16.2%
3	Health Care & Social Assistance	16.1%
4	Accommodation & food services	10.2%
5	Construction	4.6%
6	Administrative & Support Services	4.0%
7	Other services (exc. public admin)	3.4%
8	Professional & Technical Services	3.0%
% Employment	78.1%	
% of Payroll	75.2%	
% of Establishments	76.3%	

Figure 3: Age Profile of Central Kentucky

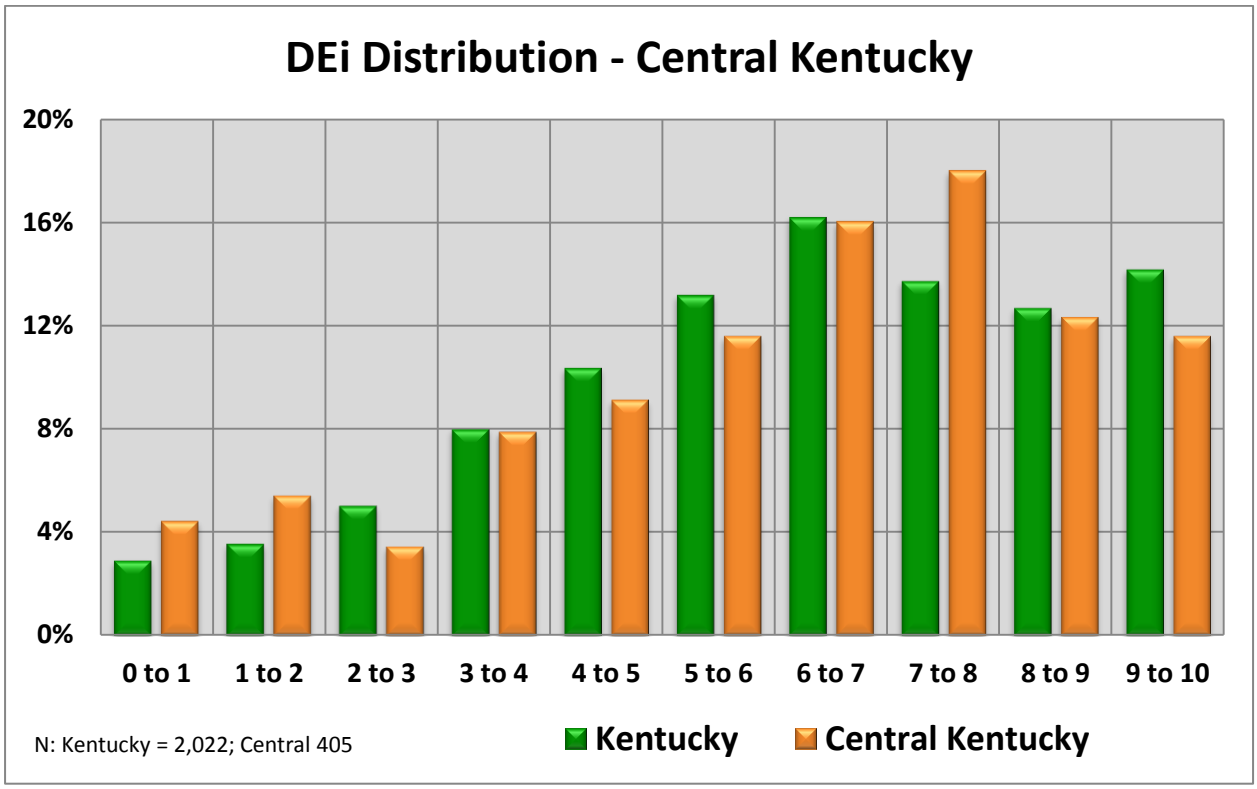
Age Distribution of Adults	Central	Statewide
18 to 34 years	22.2%	22.6%
35 to 49 years	20.4%	20.7%
50 to 64 years	19.5%	19.8%
65 years and over	13.9%	13.3%

Utilization by Organizations in Central Kentucky

Internet utilization by organizations in Central Kentucky is moderately higher than the state average. The overall Digital Economy Index (DEi) for Central Kentucky is 6.6 compared to the statewide DEi of 6.41. This ranks Central Kentucky second out of the five regions. The profile of utilization levels from low (1) to high (10), mimics statewide patterns, though Central Kentucky has a noticeably higher number of organizations with slightly higher than average utilization usage (DEi).

Median DEi Score		
Kentucky	Central Kentucky	Ranking by Region
6.41	6.60	2

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following table:

Figure 5: Internet Utilization by Employment Size: Central Kentucky

Organizations by Number of Employees	Kentucky DEi	Central Kentucky DEi	Sample Size Central Kentucky
1 to 4	5.83	5.92	121
5 to 49	6.41	6.99	195
50 to 99	6.80	6.99	36
100 or more	7.38	6.8	32
All Size Ranges	6.41	6.6	384

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent over 95 percent of organizations in Central Kentucky. Notably, Central Kentucky has the highest incidence of small businesses among Kentucky's five regions.

Figure 6: Share of Labor Force by Size of Organizations

Number of Employees	Central Kentucky
1 to 19	87.2%
20 to 49	8.3%
50 to 99	2.3%
100 to 499	1.9%
500 or more	0.3%

It is very informative to look at which industry sectors in Central Kentucky vary in their Internet utilization levels from state-wide averages and how they compare to the other four regions. The following industries show relative **strength or weakness within Central Kentucky** in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
Central Kentucky	• Wholesale Trade	• ***Manufacturing*** • ***Health Care & Social Assistance*** • Professional & Technical Services

The following table summarizes utilization for major industries within Central Kentucky (according to DEi scores) and compared to the state average, as well as the region's ranking among the five regions.

Figure 8: Summary of Utilization Levels by Industry Sector

Major Industry Category	Statewide	Central Kentucky	Rank Compared to Other Regions
Finance & Insurance	7.5	7.5	**3**
Information	6.9	7.0	**2**
Educational Services	6.7	6.6	**4**
Manufacturing / Processing	6.6	6.1	**3**
Retail Trade	6.4	6.2	**3**
Other services (exc. public admin)	6.3	6.0	**4**
Professional & Technical	6.2	5.8	**3**
Wholesale Trade	6.2	6.9	**1**
Construction	5.8	5.7	**4**
Health Care & Social Assistance	5.7	5.3	**5**
Public Administration	5.2	5.4	**2**

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for Central Kentucky, grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential. In Central Kentucky areas that have the greats gaps in utilization, while also being growth sectors, are: Manufacturing, Health Care and Social Assistance and Professional and Technical Services.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	Central	Sector Size - Rank	Growth Expectation
Manufacturing / Processing	**-0.45**	**1**	↑
Retail Trade	**-0.12**	**2**	↑
Health Care & Social Assistance	**-0.47**	**3**	↑
Construction	**-0.2**	**5**	↑ ↑
Professional & Technical Services	**-0.47**	**8**	↑ ↑
Wholesale Trade	**0.67**	**9**	↑
Finance & Insurance	**0.06**	**10**	
Information	**0.1**	**13**	↓
Public Administration	**0.18**	**n/a**	
Gap 1 (0.6 or more below the state DEi)	**0**		
Gap 2 (0.6 to 0.3 below statewide DEi)	**3**		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate areas with significantly higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in Central Kentucky are similar to the rest of Kentucky, with privacy, slow Internet and lack of internal expertise the most frequently cited.

Figure 10: Barriers to Adopting Internet Applications and Processes

Barriers to e-Solutions - % Saying Important	Central Kentucky	Statewide
Privacy concerns	**71.3%**	71.4%
Available Internet is too slow	**59.9%**	59.2%
Lack of internal expertise and knowledge	**46.2%**	45.8%
High cost of development/maintenance	**45.1%**	45.8%
Loss of personal contact with clients	**44.8%**	45.1%
Suppliers not ready	**37.9%**	41.5%
Security concerns	**28.4%**	28.7%
Products not suited to Internet sales	**28.1%**	24.9%
Uncertain about benefits	**27.0%**	28.7%
Internal organization resistance	**24.8%**	24.6%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in Central Kentucky were more modest, but still impressive at 27.3 percent.

Figure 11: Job Creation and Internet Use in Commercial Enterprises

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
Central Kentucky	2,130	194	53	27.3%	73
Kentucky	15,657	1,731	593	34.3%	401

Households in Central Kentucky

Utilization of the Internet by households in the Central Kentucky is slightly lower than the state average. The overall Digital Economy Index (DEi) for households in Central Kentucky is 5.95 compared to the statewide DEi of 6.1.

Figure 12: Utilization by Households: DEi Score and Regional Ranking

	Average DEi Score	Rank	Difference from Average	Households in Sample
Central Kentucky	5.95	**3**	-0.15	455
Statewide	6.1			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to lower household utilization in Central Kentucky. With a slightly older and less affluent population, it is no surprise that Central Kentucky has households with lower than average computer skills and lower than average utilization. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups.

Figure 13: Impact of Age and Income on Internet Utilization

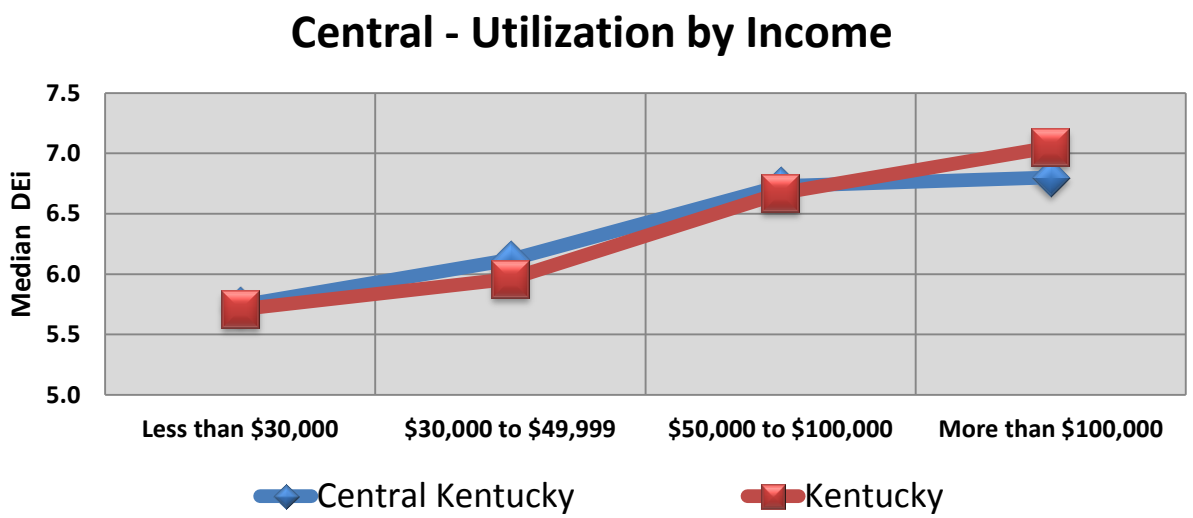
Central Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**5.90**	**5.85**	**7.20**	**7.18**
35 to 54	**5.81**	**5.96**	**6.78**	**6.92**
55 to 64	**4.39**	**5.89**	**6.14**	**5.96**
65 years and over	**4.79**	**4.25**	**5.91**	**6.46**

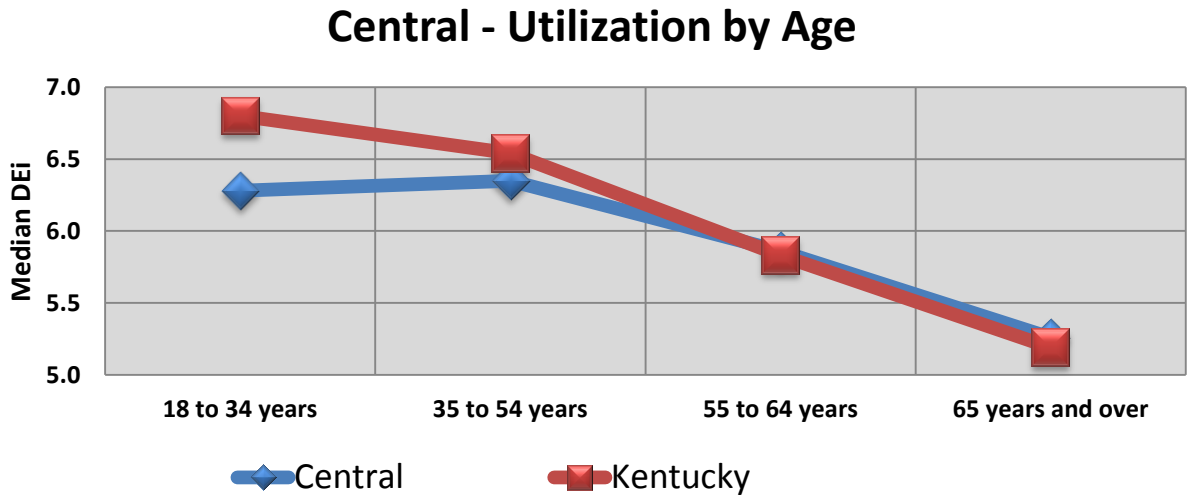
Figure 14: Computer Skill Levels

	Expert user	Use computers with confidence	Know the basics
Central Kentucky	22.3%	60.6%	16.6%
Statewide	25.6%	59.9%	14.1%

For Central Kentucky, 16.6 percent of households only "know the basics" in computer skill. Central Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: Internet utilization Levels by Age and Income





Use of Internet for Productivity

In terms of productivity, households in the Central Region show above average utilization for activities such as training, accessing their work place from home and home based businesses, but not for teleworking.

Figure 16: Percentage of Households Using the Internet for Productivity

Central Kentucky	% Currently Engaged In	Statewide Average	Variance from State Average
Accessing workplace	51.2%	55.6%	-4.4%
Home business	21.5%	20.8%	+0.7%
Teleworking	18.6%	20.8%	-2.2%
Education or training	48.9%	45.9%	+4.0%

Focus on Project Area Priorities

The Central Region has identified teleworking as its priority focus. This profile provides some insights into the characteristics of telework households in the region. The state benchmarking survey collected data on teleworking through two sets of questions. The first question asked how households used the Internet for "productivity" purposes: telework, home business, and accessing one workplace from home. Based on this broad categorization, 21.4 percent of households in the central Region stated that they use the Internet to telework – roughly the same as the Kentucky average. These households were then asked if one or more members of the household telework under the following definition:

"Teleworking is considered to be working from home during normal working hours as part of an ongoing arrangement with your employer. Teleworking may be part of the time (one or more days per week) or all of the time. Teleworkers typically have access to company resources online (e.g., company Intranet) with the ability to work from home in the same manner that they would in their company location. Occasional access to work or doing work from home after normal working hours is not considered teleworking."

Based on this narrower definition, of the original households that identified themselves as teleworking, less than 50 percent confirmed that they telework. This profile examines the 66 households (9.9%) in the Central Region that telework. The level of teleworking in the Central Region is similar to the East and West Regions, but markedly lower than the North and Northeast Regions.

Figure 17: Telework Levels by Region

Region	Percent of Households in Region that Telework	Sample Size
Central	9.9%	66
East	9.3%	38
North	17.0%	109
Northeast	14.1%	156
West	9.0%	84

Within the Central Region, teleworkers come from both large and small communities, with metropolitan areas have the least amount of teleworkers as a proportion of their population.[15]

Figure 18: Telework Levels by Type of Level of Urbanization

Rural-Urban Dimensions of Teleworking	% of Households Teleworking in the Area
Metropolitan (50,000 +)	7.8%
Micropolitan (10,000 to 49,999)	11.3%
Small Town (2,500 to 9,999)	11.7%
Isolated Small Town (remainder)	10.6%

To the extent that the region has prioritized teleworking as an economic development strategy, it is useful to understand the motivations of teleworkers. Of the 66 telework households in the Central Region, the dominant motivations include quality of life (family, life/work balance, and health) and finances (cost savings, productivity, and more employment options). See Figure 20 for a detailed breakdown.

Figure 19: Motivations for Teleworking

Teleworking Benefits	% of households saying important or very important
More family time	96.6%
Cost savings	94.9%
Life-work balance	93.2%
More productive	89.8%
Reduce commuting time	86.4%
Health and well-being	86.4%
More community time	84.7%
More employment options	72.9%
Environmental benefits	67.8%

[15] The levels of urbanization are defined by the Census Bureau as: A metropolitan area has a core urban area of over 50,000 with a population density greater than 1,000 people per square mile; a micropolitan area has a population of 10,000 to 49,999; a small town has a population of 2,500 to 9,999; the category of "isolated small town" includes the remainder.

To further understand teleworking, it is instructive to identify the types of sectors that teleworkers belong to. Figure 20 identifies Government, Professional & Technical Workers, and Educational Services as the sectors most likely to have teleworkers in the Central Region.

Figure 20: Teleworking by Industry

Teleworker Industry	Distribution of Teleworking Households	# Households
Government	15.2%	10
Professional & Technical Services	13.6%	9
Educational Services	10.6%	7
Unidentified	9.1%	6
Health Care & Social Assistance	7.6%	5
Information	7.6%	5
Other services	6.1%	4
Real Estate	6.1%	4
Finance & Insurance	4.5%	3
Retail Trade	4.5%	3
Administrative & Support Services	3.0%	2
Agriculture / Forestry / Fishing	3.0%	2
Manufacturing / Processing	3.0%	2
Other	6.0%	4

Appendix VII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of

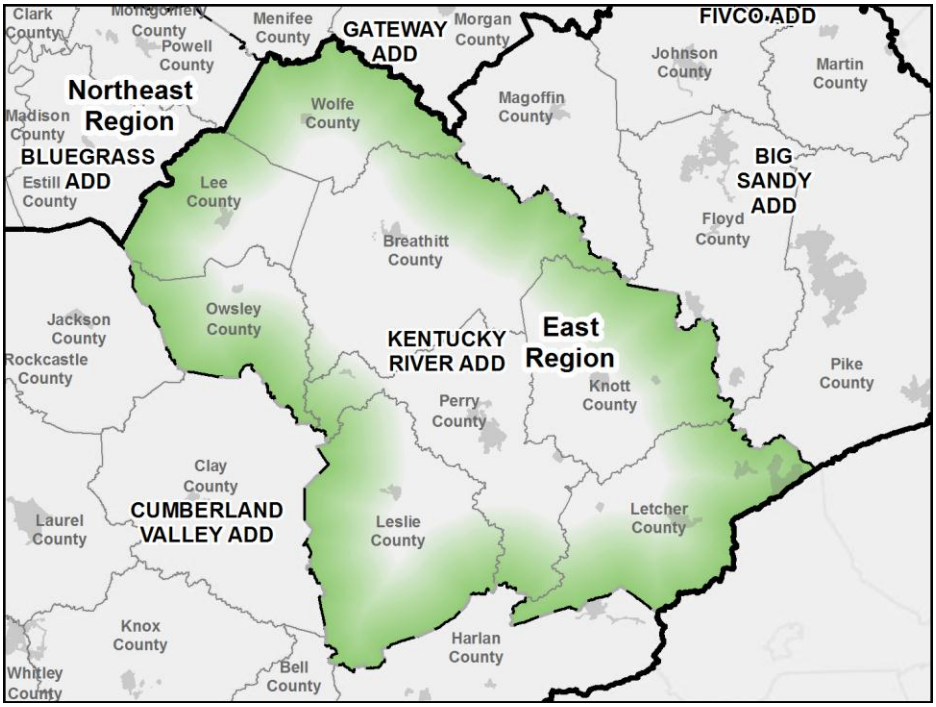
applications currently being used by an organization or household, a composite score is calculated that summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.

Broadband *KY*

Local *e*Government, Broadband Access and Utilization in East Kentucky

(Breathitt, Knott, Leslie, Lee, Letcher, Perry, Owsley, and Wolfe Counties)



This report is based on input received from Kentucky River, Big Sandy, and Cumberland Valley Area Development Districts, and regional stakeholders and prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

March 21th, 2013

Prepared for:

Commonwealth Office
of Broadband Outreach and Development
&
East Kentucky Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

Table of Contents

INTRODUCTION **3**

1. EXECUTIVE SUMMARY **5**

2. PURPOSE AND FOCUS **7**

3. CORE PRINCIPLES **8**

4. WHY BROADBAND MATTERS: *BENEFITS OF BROADBAND INVESTMENTS* **8**

5. CURRENT STATUS: *HOW IS EAST KENTUCKY DOING?* **10**

5.1 BROADBAND ACCESS 10
5.2 INTERNET ADOPTION 14
5.3 INTERNET UTILIZATION 16

6. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS **19**

7. STRATEGIES AND RECOMMENDATIONS **22**

7.1 RECOMMENDATIONS FOR BUILDING LOCAL AND REGIONAL LEADERSHIP AND CAPACITY 24
7.2 EXPANDING LOCAL GOVERNMENT ONLINE SERVICES 27
7.3 STRATEGIES AND PLANS FOR EXPANDING BROADBAND AVAILABILITY 29
7.3.1 STAGES AND TASKS FOR INTERNET ACCESS INITIATIVE 30

8. ACTION PLAN FOR BROADBAND IN EAST KENTUCKY PROJECT AREA **32**

9. METRICS FOR TRACKING PROGRESS AND IMPACTS **36**

APPENDIX I – STEPS FOR LOCAL PLANNING FOR BROADBAND AVAILABILITY 41
APPENDIX II: LIST OF RESOURCES 48
APPENDIX III: CONTRIBUTORS TO THIS PLAN 50
APPENDIX IV - IPA WORKSHOP MEETING NOTES: EAST REGION 51
APPENDIX V - PROJECT AREA SCOPE OF WORK 56
APPENDIX VI - PROJECT AREA PROFILE: EAST KENTUCKY 58
APPENDIX VII: GLOSSARY 68

Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - KY -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky has made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been this strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide at a local level are paramount.

In the East Kentucky Region's project area (Kentucky River Area Development District) a regional broadband planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. Since then, the planning process has been progressing through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

As a result of the planning process noted above, to address the priorities identified by the Regional Work Group and the Stakeholders, three objectives have been established and documented in this plan:

- Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level.
- Enable **Broadband Availability in Rural Residential Areas**
- Facilitate public adoption and use of broadband by improving **online local government**

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in unserved and underserved communities*, especially areas with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and

also provides information on how to build momentum around Broadband initiatives in the project area. Recommendations will be scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholder focus is on activities that are within the resources available, while providing for more ambitious actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic planning report can be found in sections 7.1, 7.2, and 7.3.

Section 8 provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, timelines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of components within the plan (from Section 8), and the degree to which each component has produced tangible results.

2. Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses, and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters;
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI[1] Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the East Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level -- driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are unserved and underserved[2] by broadband services, as well as in populations that are underutilizing the Internet.

[1] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[2] NTIA definition - *Unserved* and *Underserved:* "***Unserved***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***Underserved*** for Last Mile Projects: "An area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

This Broadband Planning document has the following purpose:

- Defining a Strategic Framework for Planning
- Assessing the current state of broadband access, adoption and awareness in East Kentucky
- Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Unserved" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

In the case of government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of government moving services to the Internet, those who do not use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, Broadband (see page 10 for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community to compete for skilled labor that will not move to an area without broadband. The implication is that those

areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[3] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the report underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** the Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** the Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased use of the Internet results in a growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization is not equally present across Kentucky, as explored in the next section of this report. The relatively low level of broadband availability, adoption and use in Kentucky[1] has a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[4]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it is access to the Internet, adoption of the Internet or productive use of the Internet. The following

[3] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: East Kentucky,*** *(Appendix VI)***.**

[4] The 2012 SNG report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

sections provide information and strategies to help local and regional leaders in addressing these challenges.

5. Current Status: *How is East Kentucky Doing?*

Given the importance of broadband to the current and future health of East Kentucky, its communities, residents and businesses, it is important to assess East Kentucky's situation regarding broadband availability, adoption and utilization. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in East Kentucky is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at East Kentucky performs in terms to access to the Internet relative to both national and Kentucky targets. This assessment will need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "broadband" comes from the National Broadband Map on the National Telecommunication and Information Administration web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the 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." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second***[5].

For the sake of consistent use of terminology, the FCC has defined "Internet speed tiers", shown on the following page in Figure 1.

[5] http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf (page 3). "Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

Figure 1: FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

Figure 2: FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and telelearning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

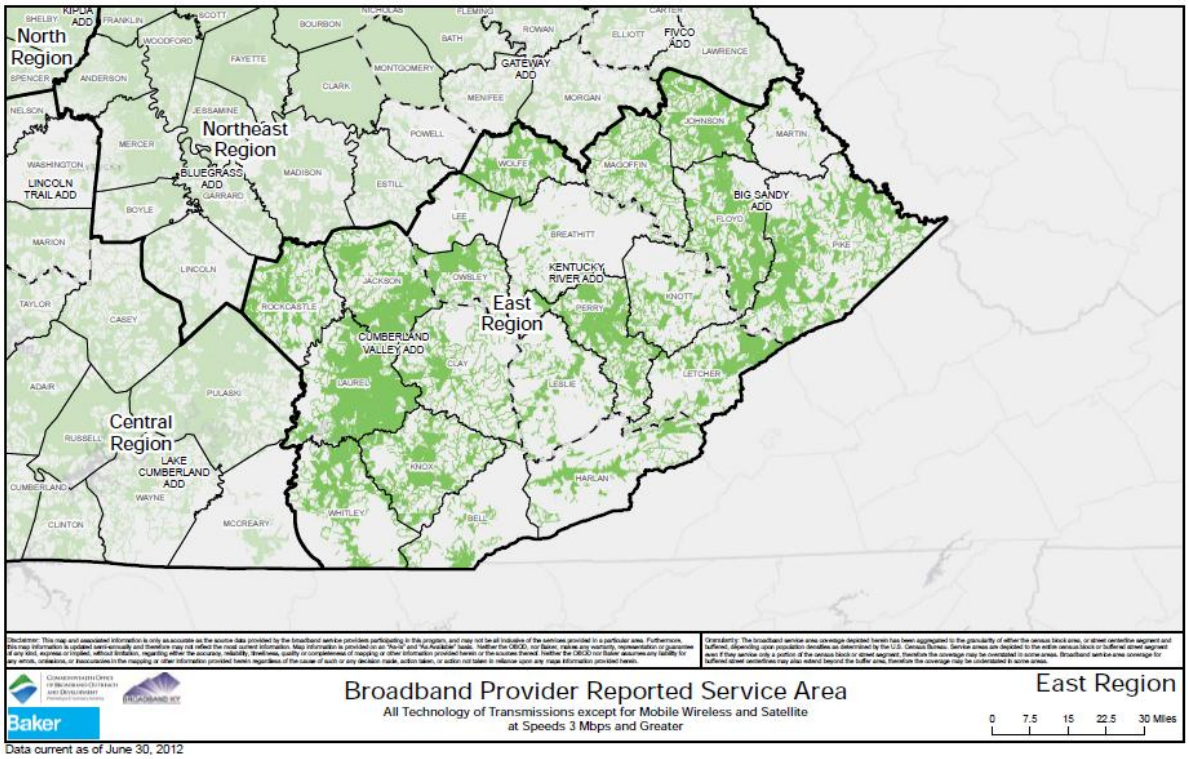
The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online:

http://www.bakerbb.com/kybroadbandmapping/

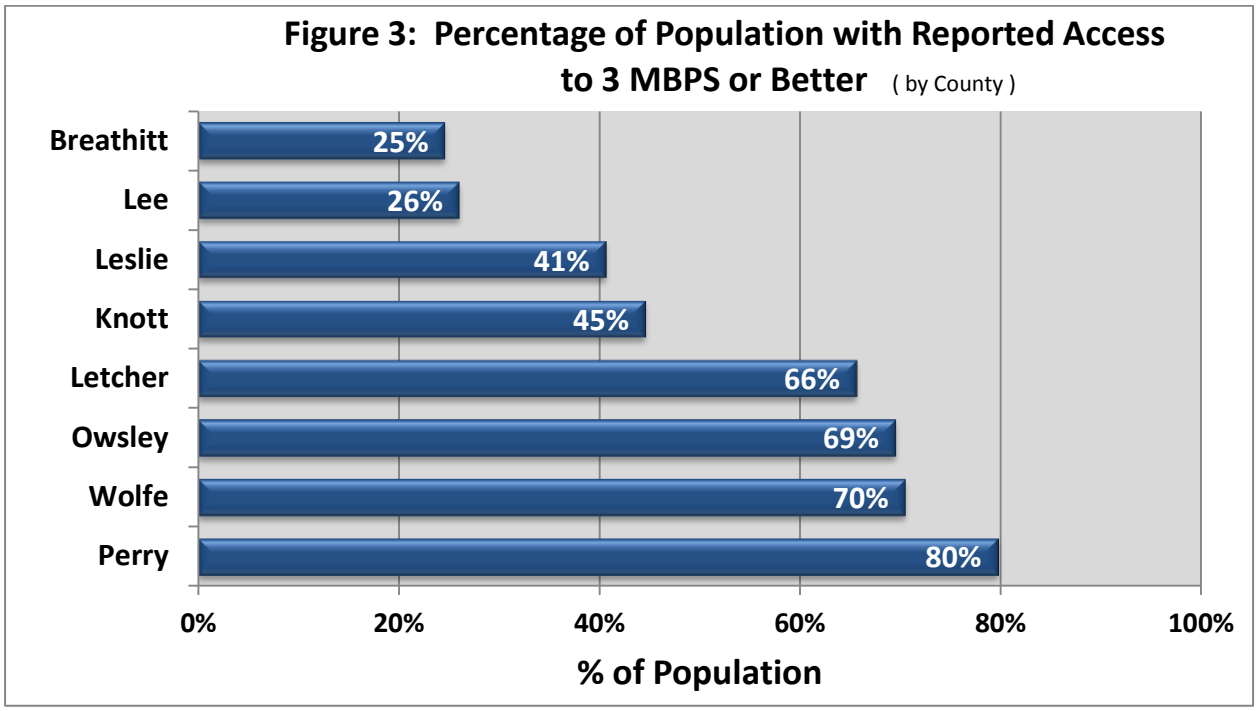
During the broadband planning workshops, participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

In its National Broadband Plan of 2010, the FCC identifies 4 MBPS as a short-term target for download speed in communities nationwide. Since current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

According to Kentucky SBI provider data, ***all counties in the East region are well below the target of 4 MBPS.*** As seen in the table below, of the eight counties in the planning area, four had less than 50 percent coverage at 3 MBPS. The information shown below is current as of January 1, 2013:



Data current as of June 30, 2012



Broadband coverage is becoming more complex with the growth of mobile wireless coverage and the increasing use of smartphones accessing the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual. For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access (redundancy) to the Internet becomes a major consideration in locational decisions. Lastly, there are many organizations (and households) whose demands on their Internet access require more speed than "just basic broadband".

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as a competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

5.2 Internet Adoption

Providing access to Internet services is only the first step in achieving a digitally active and engaged community. National studies are consistent in their findings on which demographic groups have the lowest adoptions rates. Both the Pew and Department of Commerce studies show that approximately one in five (20 percent) Americans do not use the Internet[6]. While the non-adoption rate dropped steadily throughout the decade from 2000 to 2010, recent data suggests that the rate has not changed over the last two years. Looking at availability of broadband in the home in 2010, 58 percent of Kentucky households had adopted broadband, which is significantly lower than the national average of 68 percent. Sixty-five percent of Kentucky households in urban areas had broadband compared to only 49 percent of households in rural areas.[7] Whether by choice or economic circumstance, these residents do not access services that provide a broad range of benefits to most residents of Kentucky.

Looking at businesses, the issue of adoption is less clear. A FCC study in 2010 found that 95 percent of businesses with five or more employees had a *broadband connection* and consequently can be considered adopters of the Internet. For businesses with four or less employees, the situation is less clear, with mixed estimates from different studies. To the extent that low adoption is an issue among micro businesses, adoption efforts targeted at individuals and households will have a secondary benefit as these people will also be the owners of many of East Kentucky's micro businesses.

Recognizing the benefits of increasing levels of Internet adoption is a first step on the road to developing a Broadband adoption strategy. A key consideration in designing a strategy is understanding who the "non-adopters" are and what are the barriers or motivations that keep them from using the Internet. Results across different national and state studies are very consistent in their findings. Non-adopting individuals have disproportionately one or more of the following characteristics: lower income, over 65 years old, residents of non-metropolitan areas, physical or mental disability and less than a college education. Race and ethnicity have a noticeable correlation to adoption levels, with African Americans

[6] See: *Digital Differences,* Pew Internet & American Life Project*,* April 2012; and*, Exploring the Digital Nation - Computer and Internet Use at Home*, US Department of Commerce (Economics and Statistics Administration and National Telecommunications and Information Administration), November 2011. Based on Current Population Survey of the Census Bureau.

[7] ***Digital Nation: Expanding Internet Usage***: **U.S. Department of Commerce:** National Telecommunications and Information Administration; 2011; http://www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home.

and Hispanics having significantly lower adoption levels. However, most of the variance in adoption levels between whites and African Americans or Hispanics is explained by differences in incomes and education. Rural residents also have noticeably lower levels of adoption, compared to residents of metropolitan areas.[8]

Numerous research efforts have been carried out to determine the main barriers to Internet adoption. The results have shown that non-adoption is usually a result of a combination of factors, rather than any one factor. The three most critical factors include: costs of broadband service and owning a computer; digital literacy; and, lack of interest or perceived relevance of the Internet to the non-adopting individual or household. Other relevant but less frequently cited factors include concern over privacy and security and lack of broadband availability.

Additional characteristics of non-adoption include the following:

- In a survey of non-adopters in Kentucky in 2012[9], seniors were far more likely to cite lack of interest (46%) and non-use of computers (26%) as their primary barriers (with cost cited by 21%). In contrast, 59 percent of low income households with children cited cost as the primary barrier, with lack of interest cite by only 11 percent and non-use of computers cited by 13 percent.
- According to a 2012 Illinois study[10], "Some one-quarter (24%) of non-broadband users in Illinois say they would be interested in getting broadband service at home. Three-quarters (76%) of non-adopters exhibit little interest in home **broadband** service and they typically cite a range of reasons for not having high-speed Internet at home – such as not seeing the relevance of broadband, digital literacy, and cost barriers."

In recent years, the popularity and power of smartphones has added a dimension to Internet adoption. With people increasingly using smartphones to access the Internet[11], it is important to understand the implications of smartphones and mobile wireless connectivity. In the previously cited Illinois study, 46 percent of Illinois residents were found to have a smartphone that provided wireless online access (similar to the national smartphone adoption rate). This study had found that "for the most part, those with smartphones also have broadband at home – 85% of smartphone users have home high-speed service. This translates into just 7% of those surveyed having "smartphones only" as their sole means of online access." These findings reflect the situation in East Kentucky, as Pew Research Center surveys show smartphone trends to be consistent nation-wide, with some regional variation.

---

[8] ***Broadband KY* e-Strategy Report 2012**.

[9] ***Broadband KY* e-Strategy Report 2012** Page 42;

[10] ***Broadband Adoption in Illinois***, 2012; http://www.broadbandillinois.org/news/203. Additional findings on smartphone use from this report include: Smartphone adoption is particularly strong for African Americans (52%) and Hispanics (60%). Some 15% of African Americans and 18% of Hispanics are "Smartphone only" users (i.e., they have a Smartphone but no home broadband). ***However, those with Smartphone-only access do substantially fewer online activities than those with both broadband and Smartphones, or broadband-at home alone.***

[11] **Pew Research Center - Internet & American Life Project:** "Among cell phone users, smartphone ownership has increased from 33% in May of 2011 to 46% in April 2012." Survey of 3,014 adults between August 7 and September 6, 2012. http://pewinternet.org/Reports/2012/Smartphone-Update-Sept-2012.aspx

Based on the above evidence, the following conclusions can be made:

a. Based on Broadband adoption rates in Kentucky, which are consistently below national averages, it can be reasonably extrapolated that this condition is the same for East Kentucky counties, given their low population density and demographics;
b. Based on coverage data from the East Region and national adoption trends, between a third and a quarter of households do not have broadband access in their homes;
c. Based on both national trends and Kentucky data on non-adoption from the Broadband KY *e*-Strategy Report in 2012, it is evident that non-adopters come disproportionately from the following groups: lower income, elderly, rural, African American, and Hispanic.
d. Both Broadband KY and national surveys show that the major barriers to Internet adoption consist of a combination of cost, interest, relevance, and digital literacy. The type of household has a major impact on the relative importance of the main barriers to Internet adoption, with cost being the greatest barrier for younger households and interest and relevance being most important for older households.

5.3 Internet Utilization

Organizations differ in their utilization of broadband and Internet infrastructure. Turning potential into reality requires skills, training, and both formal and informal support, in addition to access to broadband connectivity. The data and analysis contained in the Broadband KY e-Strategy Report show that productive use of the Internet is related to the size and density of a community or region, the types of industry sectors that make up its economy, the level of diversification of its economy, and the income, age and education of its citizens.

While there are no national data sets that allow for regional comparisons of Internet utilization, several in-state research efforts have been carried out, including one in 2012 in Kentucky. Results from these various states show a relatively consistent picture of how the digital divide continues to manifest itself once adoption has happened. The benchmarking of Internet utilization in 2012 identified where the digital divide manifested itself in Kentucky.

The key findings were:

- Internet utilization by organizations in East Kentucky is moderately lower than the state average.
- There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations in the East Region have lower levels of Internet utilization as can be seen in Figure 4.

- Organizations outside of metropolitan areas[12] have, on average, significantly lower utilization levels than those in a metro region. Organizations outside of a metropolitan area usually do not benefit from the dense network of supports and a large skilled labor pool.
- Smaller organizations represent a key opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in the East Region.
- For households, the dynamics of the digital divide in Internet utilization are very similar to those with Internet adoption. Lower Internet utilization is typically associated with households that are lower income, older, less educated and non-metropolitan. While there is a consistent increase in utilization that tracks increased income, the most dramatic drop in utilization occurs among the oldest age group (those over 65), especially seniors with household incomes under $30,000.
- The 2012 benchmarking survey in Kentucky indicated that local governments in the East Region have significantly lower utilization of e-solutions than local governments elsewhere. Figure 6 on the next page compares the East Region to Kentucky overall, as well as to the Central Region, which has socio-economic similarities to the East, thereby making a good basis for comparison.

Figure 4: Internet Utilization (DEi[13]) by Employment Size: East Region

Organizations by Number of Employees	Kentucky DEi (Median)	East Region DEi (Median	Sample Size East Region
1 to 4	5.83	5.73	112
5 to 49	6.41	6.07	110
50 to 99	6.8	6.41	18
100 or more	7.38	8.06	36
All Size Ranges	**6.41**	**6.21**	**276**

[12] The Census Bureau defines a metropolitan area as having a core urban area of over 50,000 with a population density greater than 1,000 people per square mile. A Micropolitan area has a population of 10,000 to 49,999. A small town has a population of 2,500 to 9,999. The category of "isolated small town" includes the remainder.

[13] The Digital Economy index (DEi) reflects an organization's utilization of 17 Internet applications and process. Based on the number of applications currently being used by an organization or household, a composite score is calculated. An organization's score (from 0 to 10) captures their Internet utilization, with 10 being the highest possible use. **The Color Coding for DEi Scores:** To better show how sectors perform, the DEi tables in this report are color coded from the highest (**green**) to lowest (**red**) to highlight how DEi scores compare. **The color coding** (**green to red**) allows one to quickly compare groups based on how utilization varies.

Figure 5: Share of Labor Force by Size of Organizations

Number of Employees	East Region
1 to 19	86.4%
20 to 49	9.2%
50 to 99	2.1%
100 to 499	2.1%
500 or more	0.2%

Figure 6: County and Municipal Government - Utilization by Region

Utilization by Region by Type of e-Solutions		
	Generic e-Solutions	Local Government Specific
	DEi	**DEi-G**
Central Region	5.22	5.10
Kentucky	5.19	4.55
East Region	4.51	3.08

Lower utilization levels have been shown to have important impacts on the benefits from Internet access received by the users (household or business) and their communities. Households with higher utilization levels demonstrate the higher use of activities that produce household income through both teleworking and home-based businesses. Businesses with high levels of utilization report noticeably higher levels of revenue generation from the Internet.

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals of all regions in the Commonwealth of Kentucky:

a) Broadband access for all citizens;
b) High levels of participation by citizens and businesses in the digital dimensions of the economy and society;
c) A globally competitive and sustainable economy;
d) Community anchor institutions have Internet connectivity that supports high end applications.

The preceding section has shown that the current situation in the East Region falls short of meeting these goals. If the East Region is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	**Weaknesses**
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Opportunities for Collaboration with Providers Improved potential for wireless services (fixed and mobile)	Low density population in unserved rural areas Poor business case for conventional solutions Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Greater provider collaboration Interest from incumbent Providers Improved potential from wireless services (fixed and mobile) Public-Private Partnerships	Economic uncertainty Global competition eroding local economic base Fiscal constraints on local government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- Existing providers have shown interest in collaboration with communities.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.

- Improved technical capacity of both fixed and mobile wireless may provide unserved or underserved areas with cost effective Internet access.

Weaknesses

- Many of the unserved rural areas in the East Region have low population densities and challenging topography.
- Unserved or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Provider interest in the East Region and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.
- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing “vertical assets”, fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently unserved or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds. Kentucky SBI data also shows fixed wireless technology as having the fastest statewide growth in 2012.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently unserved or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.

Threats

- Residents in unserved communities may lose access to public and private services that increasingly are available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, this planning document is designed to assist the Commonwealth with the implementation of the following two goals:

- Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
- Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals for the project area in the East Region.

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to inform communities and regions of initiatives on broadband access, adoption and improved utilization.

In pursuing change, this Broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and,
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to “Unserved” and “Underserved” areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level;
2. Facilitate public adoption and use of broadband by improving **online local government**
3. Enabling **Broadband Availability in Rural Residential Areas**

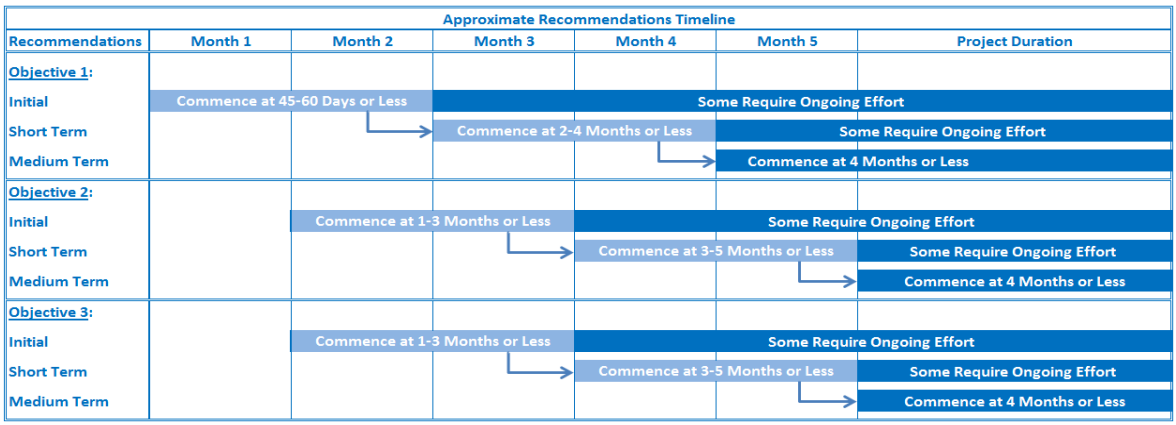
The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of financial and non-financial resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction set out in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.***

Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- **Initial:** Related to project initiation and intended to be completed over the first 1 to 2 months.
- **Short-term:** Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- **Medium-Term:** These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, some may be subject to obtaining the required resources, which may need additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Figure 8: Example of Implementation Timeline for Recommendations in Section 7



The detailed recommendations are found below in sub-sections: 7.1, 7.2, and 7.3

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the East Region project area, the Area Development Districts have identified themselves as leaders with the organizational capacity to manage the broadband initiative in their region. The ADDs bring the following abilities to the broadband initiative:

- An organizational structure and network of elected officials and stakeholders
- Local knowledge of the area and its priorities
- Ability to work with communities to identify unserved and underserved households at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In addition to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the project area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.
- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.

- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is often the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Confirm KRADD as the lead regional body for the project area promoting community leadership for expansion of both local e-government and rural residential availability. Establish working groups to support KRADD on specific broadband initiatives or objectives.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to introduce them to available resources and on how local communities can improve broadband availability and/or enhance local e-Government.
e) Develop tactics that fully leverage State Broadband initiatives.
f) Establish a sub-committee of Broadband Providers

Medium Term Recommendations:

<u>In addition to the above:</u>

g) Organize and implement webinars or face-to-face workshops to assist local community leaders in the project area in developing their local broadband initiative on either local e-government or broadband availability.
h) Facilitate an ongoing peer-to-peer support group among community leadership.
i) Provide technical assistance on issues related to improving broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in broadband initiatives, they will encounter issues requiring expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potential groups to be targeted.***

Checklist for Developing Community Leadership

Individual leadership

- Community leaders and elected officials understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational leadership and capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support for a broadband initiative.

7.2 Recommendations for Improving Local Government Online Services

As seen in the assessment of broadband in the East Kentucky Region (Section 5), low adoption and utilization are present among the general public, while low utilization is evident among local businesses and local governments in East Kentucky.

The East Kentucky Working Group has identified low adoption and utilization as a priority. At planning sessions in May and November 2012, the working group decided on a strategy to improve local government online services in the project area *as a means of motivating and attracting the public to the Internet*. This strategy included the following elements.

- The Kentucky River Area Development District (KRADD) area will be the project area of focus for improving local e-government. Other Area Development Districts in East Kentucky will actively monitor the project to determine how they can learn from the KRADD experience.
- The KRADD will provide leadership for the local e-government project. They will recruit additional stakeholders to working committees.
- The primary component in improving local e-government will consist of online payment for local government services, especially utilities.
- A secondary component, dependent on level of interest and resources available, will explore a larger vision for online e-government in the project area. This component will consider a stronger local e-government presence or portal that provides local residents with a single gateway or coordinated gateways to online information and services.

To implement the above strategy, the following ***recommendations*** are set forward:

7.2.1 Online Payment Component

Initial Recommendation:

a) KRADD will convene a meeting of representatives from utilities serving the project area to determine level of interest and solicit participation in process of identifying and assessing options. This meeting will develop a framework that specifies the requirements of the utilities related to functionality, software and process compatibility issues, and capital and operating cost impacts (positive and negative);

Short-term Recommendations:

b) Once a framework has been agreed to and level of interest determined, the working group will collect relevant information. Once information from potential participants in the online payments system has been collected, the working group will identify and assess possible options for implementing a collaborative online payment system for local governments and utilities;

c) If the preceding process identifies a solution that meets the operational and financial requirements of participating stakeholders, one or more meetings with local government officials in the project area will be arranged to inform them and determine willingness to participate in a shared or coordinated online local e-government payment service.

7.2.2 Regional Online Portal for e-Government

Initial Recommendations*:*

a) KRADD will convene a meeting of organizations and individuals in the project area interested in exploring the possibilities for a broader and coordinated online presence for local governments. Subject to sufficient interest, the meeting will establish a working group to pursue a regional online portal for local e-Government.

Short-term Recommendation:

b) The working group will Identify and assess current online resources in the project area (KRADD), as well as identify issues, gaps, and opportunities for a stronger local e-government presence.

Medium-Term Recommendations:

c) Solicit community input and interest regarding online services. Identify possible barriers and approaches to ensure broad community use of any enhanced online presence supported or managed by local government.
d) The working group will make recommendations to regional broadband body regarding the desirability and direction of an Online Portal for e-Government in the project area.

Note: In carrying out the tasks listed above, the leadership teams for ***e*Gov** and **availability** will both have access to a new website specifically focusing on opportunities and challenges for local e-government in Kentucky. This site has been commissioned by the Office of Broadband Outreach and Development.

7.3 Recommendations for Enabling Broadband Availability

Communities in the East Kentucky project area that have less than adequate Internet services face significant barriers in overcoming this digital divide. Nonetheless, communities in the project area have the potential to develop the leadership and commitment necessary to achieve the broadband they need for their residents, businesses, and community anchor institutions.

The issue of poor or no Internet service in rural residential areas can be highly fragmented in East Kentucky. A regional approach to this issue in the project area will enable local leaders to directly address the need. ***This plan recommends a process whereby communities in the project area take responsibility for proactively identifying, finding, and compiling detailed information about unserved and underserved areas at the street level to address their community's needs. These local efforts should be supported by the regional body with outreach, education and support.***

Later in Appendix I is a detailed outline of the key opportunities and requirements facing local communities. It is recommended that communities adapt this process to fit their own circumstances and culture. The result should be process where the values and priorities of a community determine subsequent tasks and choices. As communities move down the road to implementing specific strategies, they may find that initial choices need to be re-assessed. Improving broadband availability usually requires persistence and the ability to work over an extended period.

While the overall strategy is based on local responsibility and leadership, there is significant scope for regional Work Group and stakeholder efforts to support local initiatives to enable broadband availability. ***The recommendations below can be combined with or in addition to the steps outlined in the section on leadership.***

Initial Recommendations:

a) Develop and circulate an information package among local communities that identifies the resources and opportunities available for improving broadband availability at the local level;
b) Circulate, promote and leverage the "eLearning Module" on community approaches to improving broadband developed by the Office of Broadband Outreach and Development.
c) Use regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website.
d) Leverage the Broadband Provider sub-committee and regularly meet to discuss availability issues in the project area, to solicit input from the group on the information package (Recommendation a), and to begin ongoing collaboration among Providers to improve communication and find ways to improve availability.

Medium Term Recommendations:

e) Building on the efforts identified above, develop and expand regional approaches to local internet expansion, bringing together more communities for local broadband availability initiatives. This

would be a collaborative effort based on a shared process, and would include additional regional or Statewide Providers. Include a process for communities to share information and resources, active mutual aid or peer support, and technical assistance as noted in the section on leadership.

Appendix 1 includes detailed information about the process and tasks for local communities to use for expanding broadband services in rural residential areas. It also includes basic starting points for consideration prior to commencing a community effort.

Stages and Tasks for Internet Access Initiative

The diagram on the following page is a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified are explored in greater detail in Appendix I. The Office of Broadband Outreach and Development (OBOD) has also created an online "eLearning" module that addresses local broadband availability. The module is available on the website noted below and includes a case study of the GRADD project: http://finance.ky.gov/initiatives/broadband/pages/default.aspx .

1: Preparation

- Develop Leadership
- Establish preliminary objectives and priorities
- Identify assets and key data

2: Engaging Internet Services Providers (ISPs)

a) Identify ISPs
   - Existing ISP(s): as backhaul or last mile
   - Adjacent ISP(s)
   - Regional ISPs

b) Determine Level of ISP Interest
   - Informal approaches
   - Request for expressions of interest (RFI)
   - Qualify Interested ISPs: Due diligence (capacity, references)

3: Refine Objectives and Relationships

a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
   - Support ISP as sole provider
   - Outline Public Private Partnership as solution
   - Local government or NP entity as provider

4: Make Commitments

a) Secure funding
b) Commit funding
   - Request For Proposals (unless direct award)
   - Contract Negotiations

8. Action Plan for Broadband in East Kentucky Project Area

The action plan components included in this section are preliminary. They begin to outline the tasks, timelines, and responsibilities reflected in the recommendations in Section 7. It is expected that this outline will be adjusted with more additional detail as the plan is implemented, to reflect the availability of resources and with more information being developed for the work required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Regional Lead Body	Recruit & Confirm involvement and level of commitment	KRADD		1	Establish working groups
1b	Secure Funding	Approach potential funders	KRADD & Work Group		2 (ongoing)	Submit funding applications, research others
1c	Expand leadership (community Level)	Recruit new community leaders & stakeholders	KRADD & Work Group	K – 12 Superintendents & principals; members outside of gov.	1,2	Leaders with focus on priority areas
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	KRADD & Work Group	K–12 Superintendents & principals; members outside of gov.	2	At least two webinar or face-to-face orientation session.
1e	Tactical develop. to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives.	KRADD & Work Group	Local gov. or business contact with PR skills and project interest	2	*e-Link to appropriate state web sites *Connect/coordinate with state on PR progress reporting
1f	Establish Provider sub-Committee	Build partner relationships and problem solving approach	KRADD Representative	Project area providers, utilities.	1,2	Group becomes an input source on availability gaps in the project area.

1g	Organize a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband planning and outreach.	KRADD & Community Leaders		Subject to resources	Community oriented workshops and webinars.
1h	Establish peer support and	Facilitate peer support for community leadership	KRADD & Community Leaders	Commercial businesses, local Gov., tech service providers , BB Providers,	Subject to resources	Functioning community leadership peer group.
1i	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	KRADD & Community Leaders	Commercial businesses, local Gov., tech service providers , BB Providers	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders.

Objective 2.1: Improving Local e-Government Services – Online Payment

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
2.1a	Convene meeting of agencies; Determine interest and requirements	Identify requirements and framework for assessing option	KRADD	Local utilities, local governments	2 & 3 (Ongoing)	Agreement to proceed; process for collecting data on agency requirements
2.1b	Assess options for a collaborative online payment system	Collect and analyze information Develop options and recommendations	KRADD	Local utilities, local governments	3 & 4	Data collection. Identification of preferred option(s)
2.1c	Determine willingness to participate in coordinated online payment service	Meet with local government officials to determine willingness to implement	KRADD	Local utilities, local governments	5, 6	Establish agreement on whether to proceed

Objective 2b: Improving Local e-Government Services – Online Portal

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
2.2a	Identify and assess a coordinated approach to Local Government Community Portal(s)	Convene working group -- *explore broader/coordinated *e*Gov in project area *I.D. requirements& framework	KRADD	Community organizations, non-profits, local governments	2 &3	Decide approach, objectives, leadership, *e*Gov priorities, and timelines for moving forward to achieve incremental milestones
2.2b	Identify and assess current online resources in the KRADD Region	Identify issues, gaps, and opportunity for stronger local e-government presence	KRADD together with working group	Community organizations, non-profits, local governments	3 & 4	Description of current situation and options for enhanced presence
2.2c	Solicit community input and participation in online services	Identify barriers and approaches to ensure broad community use of online presence supported or managed by local government	KRADD together with working group	Community organizations, non-profits, local governments	Subject to resources	Assessment of public support for and participation in a broader local e-Gov't presence
2.2d	Recommendations to regional broadband body regarding the desirability and direction of a Regional Online Portal for e-Government		KRADD together with working group		Subject to resources	Recommendations for stronger local e-Gov't presence.

Objective 3: Enabling Broadband Availability

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders & Local Leadership	Begin (Month)	Outcome
3a	Develop and circulate information package	Agree on design and approach to information package	KRADD	Providers, Local Govt., GIS person, Chambers	2-3	Agreement on content, packaging, and points of distribution at communities in project area
		Produce and distribute package	KRADD	Local media, education sector.	2 & ongoing	Package sent to local governments, officials, and stakeholders
3b	Promote & leverage eLearning modules	Promote eLearning & outreach activities: Webinars; presentations;	KRADD & Community Leadership	Local media, education sector.	3 - 4 & ongoing	Participation of interested individuals and stakeholders; identification of local projects
3c	Regularly planned events	Promote/support local broadband availability initiatives, ideas, materials (see tech assistance 1i: Leadership)	KRADD & Community Leadership	Muni and county gov; utilities and Providers	Subject to resources	Better Broadband info on services to unserved or underserved households the project area
3d	Leverage the Broadband Provider sub-committee	Leverage sub-committee: *regularly meet *discuss availability issues *solicit on-going input *input on information package	*KRADD Representative *Provider-appointed Leader	Providers with service in project area and others from region	2 & ongoing Frequency TBD	*Discuss availability issues *Solicit input on information package * Begin collaboration on avail. Gaps *Review and share SBI coverage data and trends in State/Nationwide
3e	Expand participation of local internet initiatives to more communities	Build on initial project work, grow the number of participating communities, info sharing/collaboration, peer support, technical assistance	KRADD & Working Group	Local Govt; K–12 superintendents & principals	3 - 4 & ongoing Subject to resources	More community participation with interested individuals and stakeholders; identify more/new local projects

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Improving local *e*Government Services**
3. **Enabling Broadband Availability**

Building local and regional leadership & capacity		
Metric:		***Data:***
1a	Lead regional body is established and working groups defined	• Creation of organizational parameters that define structure, mandate, accountability and membership • Endorsement of group parameters is affirmed by key stakeholders
1b	Secure Funding Sources	• Document names, contacts status of funders approached • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State Broadband Initiatives	• Submitted & approved tactical plan
1f	Established Provider sub-Committee	• Document participants, meeting frequency & issues addressed • Over time, document solution collaboration, opportunities to fill availability gaps through partnership
1g	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*

Building local and regional leadership & capacity		
	Metric:	***Data:***
1h & i	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact.

Improving Local e-Gov't: *Online Payment*		
	Metrics:	**Data**
2.1a	Defined requirements and framework for assessing options	Document requirements and framework for assessing options
2.1b	Defined options for a collaborative online payment system	Production of written assessment, including options and recommendations
2.1c	Determination of commitment to proceed with ePayment system	Formal decision on proceeding with ePayment system

Improving Local e-Gov't: *Online Portal*		
	Metrics:	**Data**
2.2a	Establishment of working group with community participation	Document commitment and membership of working group
2.2b	Identification and assessment current online resources in the KRADD Region, as well as identification of issues, gaps, and opportunities for a stronger local e-government presence	Document current status and produce a written assessment
2.2c	Solicitation of community input and interest. Identification of possible barriers and approaches to ensure broad community use of any enhanced online presence supported or managed by local government	• Document process for soliciting public input • Document and summarize public input
2.2d	Recommendations to regional broadband body regarding the desirability and direction of a Regional Online Portal for e-Government.	Document recommendations and response by local and regional government entities

Enabling Broadband Availability		
Metric:		***Data:***
3a (1)	Completed broadband availability information kit	• Finished kit content and subsequent updated kit at periodic intervals.
3a (2)	Distribution of information kit on broadband availability and public Internet access sites to local governments and stakeholders	• Points of distribution, activity log related to community use and engagement • Number of kits distributed, plus online tracking of access to kits (if online) *(# TBD)* • Plan/prepare for v2 updates, timing, team contributors, data sources
3b	Circulation, promotion and leveraging the "eLearning Module" on community approaches to improving broadband developed by OBOD	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
3c	Use of regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
3d	Leveraging Broadband Provider sub-committee and regularly meet and discuss availability issues in project area, solicit on-going input from the group on their information package (Recommendation **a**), begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability	• Document meetings, attendees, provider attendees, info exchanged, etc. • Document provider inputs on info package/overall use of package • # of availability gaps at the community level (areas w/community-based projects) • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for areas w/community-based projects) and collective provider "work plan" for problem solving.
3e	Development and expansion of regional approaches – growth of base of participating communities, info sharing/collaboration, peer support, technical assistance	• # of new community initiatives launched • # and type of groups involved, total team involved • # of info "bulletins" and communication activity *(#TBD)* • # of tech assistance events or responses "logged" by lead group *(#TBD)*

Impact Metrics

Impact Metrics measure overall benefit on Internet access and utilization in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improved local e-Government**
- **Enabled broadband availability - Rural**

Improved local e-Government		Data
1	Establishment of local government ePayment system	• Number of new local government services utilizing system *(# TBD)*
2	Establishment of larger local government online presence	• Number of new online components on existing or new local government websites *(# TBD)*
3	Increased public use of local e-Gov services and online presence	• Number of financial transactions over time (1 to 5 year period) *(# TBD)* • Online analytics that document access of local e-Gov by public

Enabled Broadband Availability – Rural		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# households served (service available)	Stats on broadband service coverage (e.g. households passed or within serv. area)
5	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I – Steps for Local Planning for Broadband Availability

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were unserved or underserved. However, in many cases unserved or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

   Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [14]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:
   - **Target population or organization(s):** location (topography), number and age of households (rural residential), density, and income/budget.
   - **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
   - **Pole access**: pole owner, pole type, attachment capacity, cost.
   - **Rights of Way** – can be used to expedite/reduce cost of conduit placement

[14] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
- **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
- **Land** – that can be used for tower construction/locating points of presence, etc.
- **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.
- **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.
- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government to cultivate a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in it community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[15]

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:
   - By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
   - By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

   In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

[15] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer. Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, are market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable: will projected revenues cover expenses? Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.

- A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
- Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
- Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.
- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:
   - ***Aggregating existing demand and purchasing power in the form of guaranteed contracts*** can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

   - ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html)

continue to provide federal grant opportunities. The Connect America Fund is still in its early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

- ***Funding mechanisms of Kentucky*:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

- ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require the skills to enter into complex contract negotiations with an ISP.

Plan for Promoting Local Internet Expansion Efforts

The preceding pages lay out a process and strategies that local governments and stakeholders can undertake to improve broadband in their area. However, the question remains: who will lead the effort to package the information and reach out to local communities and their leadership? The following identifies key steps that will be needed to promote efforts to expand broadband access in the East Region:

a) Develop information package: the lead organization will need to identify the best way to package the information and promote it among local communities. The Office of Broadband Outreach and Development is developing an expanded online version of the materials in this section that will be made available to the ADDs and local governments. The lead organization may wish to supplement this with its own "packaging" of the materials.

b) Promote opportunity and resources: a plan should be developed to promote the opportunity and materials to local communities. Existing avenues for communication and discussion may be the most effective approach. However, other avenues may be pursued, such as a workshop for interested communities, a webinar introducing the initiative and materials, or another means typically used by local governments in the region.

Appendix II: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Local Government Economic Development Program (LGEDP) --
http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) --
Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency – Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY **...**,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280

NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center (TATRC)**, located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)
School Turnaround AmeriCorps FY13
http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity

The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix III: Contributors to this Plan

This Plan for was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for East Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the East Kentucky region's project area, the regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the three ADD regions were contacted about the Broadband planning initiative. Many people were invited to provide input and some participated in the two workshops held in the project area. A list of organizations that were consulted as part of the development of this plan is available through the KC-ADD office.

Appendix IV - IPA Workshop Meeting Notes: East Region

November 1st, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the East Region of Kentucky, focusing primarily on the Kentucky River Area Development District. The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This documents draws on notes taken by KCADD, Baker and SNG staff.
Brian Kiser convened the meetings and introduced the project team members and working group members before asking attendees to introduce themselves around the room.

Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies. Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine the goals and objectives for the region.

Mike Miller then presented the East Region Working Group's Scope of Work (SOW) document. Miller explained that in looking at the data for the area, it became clear that there was a great opportunity to address utilization among local governments. The group determined that by driving e-solutions in the governments, they will not only be catering to the younger population (which the region is losing, according to Baker's data), but they will also be increasing education to their communities on the benefits of broadband. There is a hope that this will drive demand and therefore availability that could result in reversal of the population loss in the areas. Some examples of e-processes that are not currently available include payment of water/utility bills, car taxes, applications for permits, etc.
Bill Bates then provided some information relating to the project goals, including regional availability, changes in provider participation over the past two years, and data on users, usage, and uses.

Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy then informed the group that the goals for the day's workshop would be creating a vision, goals, strategies for achieving those goals, action items, and other strategies for implementing the action plan.

Plenary discussions then began to define what local e-government services are currently available and what it would cost to administer training and software for those services. The group determined that a local government portal of some sort would be ideal. Other discussion included:

- An incentive must be identified for seniors if they are going to access online local government services.
- The area could be made more attractive to younger populations through solving Internet access problems.

- Public access is an issue for those who cannot get or cannot afford broadband in the home.
- Hot spots in downtown areas are a popular solution to public access problems and could be paired with the project in terms of a bank of computers at the local courthouses where the splash page took them to the e-services portal.

The plenary session identified two main objectives for this planning process:

1. Create access to reliable broadband connections in currently unserved and underserved rural areas by focusing on provider-centered partnership for potential build-out;
2. Work with local government entities in the Kentucky River Area Development District to develop an action plan for expanding local government online services in a manner that supports broader community adoption of the Internet.

The group broke for lunch and reconvened at 1 p.m., splitting into two breakout groups—one to address availability needs and one to address local e-government services.

Local e-Government Group

Key discussions points included:

- 1/3 of counties provide Cable TV; 10% of counties provide gas/electric
- All counties are taking care of property, franchise, occupational taxes
- The end goal is online bill pay, access to records and court docs online.
- The ADD(s) could serve as a clearinghouse/portal for this.
- Any system addressed must make it easy for users, particularly in terms of eliminating multiple usernames and passwords.
- Some municipalities (e.g. Pikeville) already have on-line service applications utilizing an e-Gov't cloud based service.

- The State Kentucky.Gov resources could probably be used to setup and operate local government website(s). Application development and implementation is typically free – Small transaction fee after implementation. Kentucky.Gov websites can be branded as preferred with County/Municipality look and feel.

The following objectives were identified:

- Inclusion of all Count Courthouses, Water/Sewer Districts, Sheriff's Offices and Court Clerks Offices in Kentucky River ADD.
- Development of an online system for provision of on-line bill payment, court documents, and other local government services to residents. This could consist of one web site or a number of coordinated and linked web sites.
- The approach is evolutionary, in that the process could start with some easier, less expensive or better defined services and evolve into something more ambitious.

- Part of the longer vision is possible development of a portal to a broader range of regional information and Internet sites and services.

The workshop identified the following as actions that should be carried out as part of this initiative:

1. Assess available online platforms for online payments and other local government services;
2. Establish key characteristics, design parameters and options for site(s)
3. Meet with utility providers to determine interest, requirements;
4. Meet with city councils, commissioners, courthouse officials; and
5. Put the program in place and determine interest of the CVADD and BSADD in participating or building on the lessons of the KRADD initiative.

Availability Group

Participation in the breakout session included Internet Service Providers, ADD business contacts and Stakeholder/citizens. Those who participated had interest in broadband access and availability for the focus area, to gain a better understanding of the business of broadband: how the Providers operate their business, the limitations of technology types, and criteria for household and business services and how decisions are made.

Valuable Criteria and Attributes for Providers Considering the Addition of New Service Expansion:

- Population information at the county and local level, including potential broadband subscriber **density** in area -- Institutional, CAI's, Residential, Business, Gov.
- Geography / Topology
- *Middle-mile Info, Head-end/Hub Location Points
- Providers presently operating in the area
- Network considerations for Providers / Criteria for Households(H) & Business(B):
    - Capacity / Speed / Latency / Symmetric Service
    - Service Redundancy (B) / Service Quality
    - Entry Cost (For HH's and the ROI for Teleworkers)
    - Demand for "Enterprise Class" Service (B)
- Technology options in the area
    - Cost/timing of fiber network expansion (a limiting factor)
    - Fixed-Wireless may likely provide a faster way to bring service in underserved areas
- Understanding the "partnership potential" of an area
- Land ownership, parcel boundary, business zoning or districts, ROW access -- location
- Public / Private Structures
    - Public/Muni towers or water tanks -- Does muni-owned infrastructure have specific business and contract terms? Document business processes and contract terms.
    - Pole access -- Pole owner, Pole Type, Attachment capacity, Cost, Permitting/Licensing process, Speed-of-attachment (bureaucracy)
    - Private-sector tower assets in the region

- Fostering a competitive environment can bring down user costs and encourage continued investment in upgrading broadband infrastructure
- Costs of customer acquisition – equipment, maintenance, installation
- Government rules/requirements/reg's/constraints –
    - Thinking more in a broadband-centric way…
    - Muni/County/Regional: Established department(s)? Points-of-Contact?
    - Business "guidelines" or processes: documented? In place?
    - RFI / RFP: Value-based? Cost-based? Criteria defined? Is the decision/evaluation process defined, open and fair (People/Committee/Processes)?
- Pole access -- Pole owner, Pole Type, Attachment capacity, Cost, Permitting/Licensing process, Speed-of-attachment (bureaucracy)
- Understanding the "partnership potential" of an area – Facilitating the partnering between local governments, institutions or Providers:
    - Connecting big Providers w/middle-mile to smaller providers to reach rural HH
    - Connecting one Provider w/technology to another Provider to extend service areas
    - Building off one Provider's connection to a State Park/Gov. Facility to reach a local community nearby with eager residential and Small Business customers
    - Leveraging access to government funding sources by ADD to incentivize local Provider build-out (Grants, FedGov Loan Guarantees, State or Regional $$$, Private Equity)
    - Acting as an "honest broker" or "matchmaker" between owners of "pipeline" and "access"
    - Identifying key businesses as "anchor" points as leverage points for surround HH availability
    - Brokering relationships between wireline and fixed-wireless providers for backhaul capacity and to reach unserved/under-served customer areas

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the East Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the East Region will be presented to a stakeholder workshop in February or March for discussion, amendment and adoption. The draft plan will begin to address the implementation of the final plan, and include specific tasks, timelines and responsibilities. If any area is not completely addressed in the draft plan, they will be finalized at the stakeholder workshop.

Local e-Government Group

KRADD will convene two groups to initiate the planning process:

I. The first group will examine paying for local government services online. Tasks include organizing and leading a meeting of utilities, collection of relevant data, and identification of possible options. This will be followed by a meeting with local government officials to inform them and determine willingness to participate in a shared or coordinated online local e-government service.

II. A second group will be convened by KRADD to identify a possible larger role for online e-government. This group will consider: developing an inventory of current online resources in the KRADD Region; identifying issues, gaps and opportunities for a stronger local e-government presence; soliciting community input regarding interest in online services, as well as possible barriers and approaches to ensure broad community use of such services.

Develop a Strategic Plan for Broadband Availability

I. A strategic plan will be developed for production of detailed and targeted information needed to initiate efforts that address broadband access and availability, while also engaging Providers in identifying and developing solutions. The plan will provide tools to assist local governments and stakeholders in developing a "kit" of information with resources specific to broadband, with defined technical service levels and requirements to make it easier for Providers to understand the business needs.

II. The Strategic plan will identify complementary efforts to these regional efforts :
   - Demand Aggregation
   - Business Surveys
   - CAI identification & inventory,
   - Wi-Fi Hot-Spot strategies

III. Connected to the above, the plan will provide strategies for developing the leadership needed to build capacity for sustaining ongoing efforts over time.

IV. More thorough information is needed to gain an understanding of different business and ownership models and the elements involved. The strategic plan will provide examples of successful Broadband business models for use in un-served or underserved areas, as well as sample legal documents such as RFIs, RFPs and water tower leases;

V. Funding is a critical component to the East Region Plan, regardless of the model involved. The Plan will identify possible funding sources to enable a sustainable effort over time.

Appendix V - Project Area Scope of Work

Name of Region East **Name of Project Area:** Kentucky River Government E-services

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Adoption 2. Utilization
Project Area Boundaries	Boundaries for this Project Area: • Kentucky River Area Development District
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Government Services online
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: 1. Broad adoption issues – all need more adoption (economics) 2. Lee, Owsly, Magoffin, Martin, Jackson need availability 3. Inconsistent offerings from local government e-services
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. Mike Miller, Kentucky River ADD 2. Eunice Holland, Kentucky River ADD 3. John Chester, Kentucky River ADD 4. Sandy Runyon, Big Sandy ADD 5. Joe Jacobs, Big Sandy ADD 6. Mike Patrick, Cumberland Valley ADD 7. Whitney Chestnut, Cumberland Valley ADD
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: Mike Miller, Kentucky River ADD
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Engage local service providers 2. Judges, mayors, chambers, econ developers, school admins 3. Local champions, the "doers" 4. Late summer – early fall 5. Continue "non-adopter" survey

** If additional space is required, please attach additional pages to this template. **

Approved: May 31, 2012 - KY Broadband Central Planning Session _____Michael D. Miller
Project Area Working Group Chair

1. Project Area Focus

- Kentucky River ADD
- Focus: strategies for local governments to enhance use of the Internet to deliver public services.

2. Project Area Profile: (Baker/SNG Team responsibility)

The task will be to develop a project area profile, drawing on data in recent reports. Special attention will be provided to the following areas:

a) Identify characteristics of leading and lagging utilization by local governments.
b) Identify main barriers to adoption and utilization by households and small businesses.

3. Identify, contact and recruit stakeholders for Initial Planning Session (Sept)

Stakeholders Recruitment

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be Recruited

A. Utilization by Local Governments
   - Local governments
   - Chambers of Commerce and similar organizations

4. Logistics

- Identify and confirm Initial Planning Area (IPA) Workshop date and location
- Identify how invitations will be sent out, including follow-up and registration process.
- Other logistics: refreshments, audio-visual aids, etc.

5. Purpose of Initial Planning Area (IPA) Workshop in September

- General awareness and education around broadband availability, adoption and utilization
- Presentation of Project Area Profile
- Discussion and issue identification within focus area: local government utilization
- Priority setting
- Identification of general strategies for dealing with priority issues

Appendix VI - Project Area Profile: East Kentucky

This section provides a profile of Internet utilization in the East Region, consisting of the Big Sandy, Kentucky River and Cumberland Valley Area Development Districts. For context in prioritizing regional planning activities it is important to consider the overall profile of the population and economy of East Kentucky.

Figure 1: Demographic and Economic Profile

Households	East	Kentucky
Population	505,473	4,339,367
Median Household Income	$28,721	$40,061
% in Poverty	30.4%	18.4%
% of Population 65+	13.8%	13.3%
Organizations		
Establishments	8,764	90,511
Employment	124,173	1,480,658
Annual Payroll (in billions)	$3.97	$51.44
Average Size of Employer	14.2 employees	16.4 employees
USCB County Business Patterns 2009		

The East region has significantly below average (median) income and a similar age profile compared to the State. Incidence of poverty in the East Region is 65 per cent higher than Kentucky as a whole. At 19 percent of employment and 22.2 per cent of payroll, the health care and social assistance sector plays a large role in the East region. The mining sector is a key differentiator in the East Region, providing 11 per cent of payroll, though only 4.3 per cent of establishments in the region belong to the mining sector. The eight largest industries, ranked by annual payroll, that collectively represent over 70 percent of the economy in East Kentucky are:

Figure 2: Largest Economic Sectors in East Kentucky

Rank	Industry Sector	Percent Employment
1	Health Care & Social Assistance	19.0%
2	Retail Trade	17.7%
3	Mining	11.1%
4	Accommodation & food services	9.3%
5	Manufacturing / Processing	5.9%
6	Professional & Technical Services	3.6%
7	Transportation & Warehousing	3.4%
8	Construction	3.1%
	% Employment	73.1%
% of Payroll	74.6%	% of Establishments 70%

Figure 3: Age Profile of East Kentucky

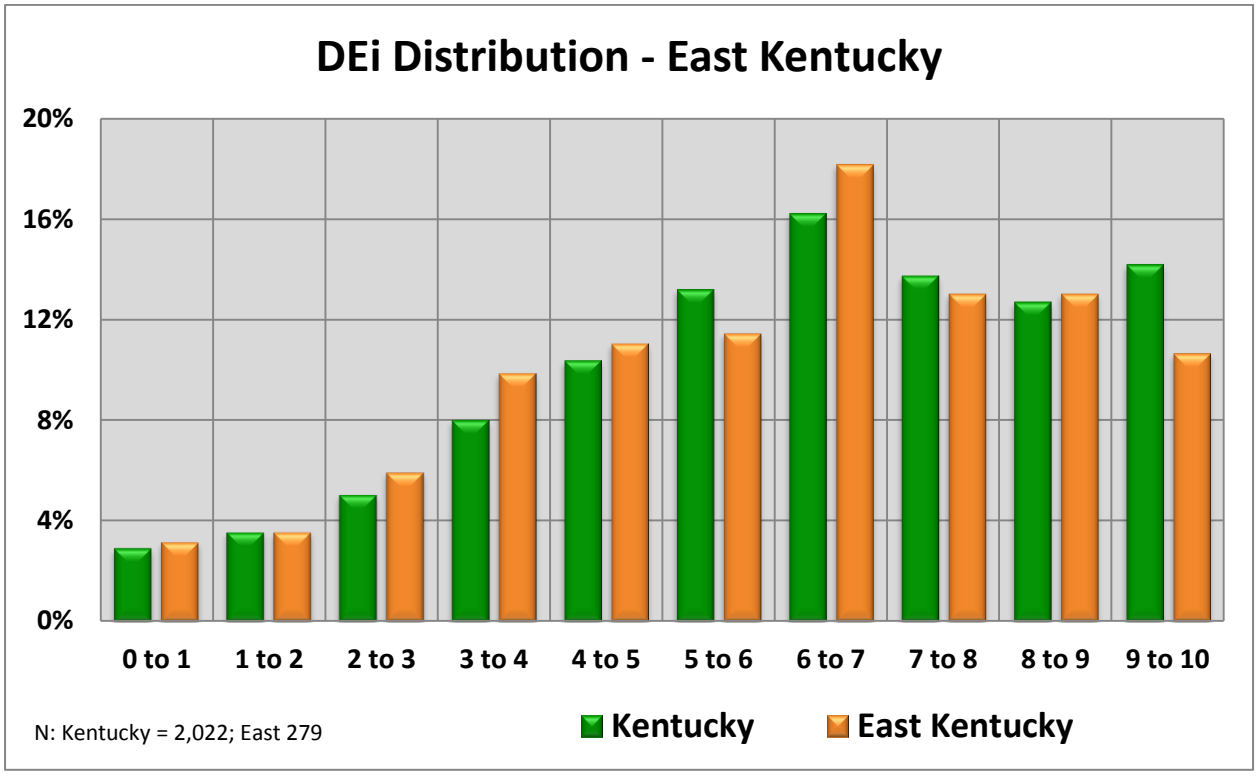
Age Distribution of Adults	East	Statewide
18 to 34 years	21.1%	22.6%
35 to 49 years	21.3%	20.7%
50 to 64 years	21.1%	19.8%
65 years and over	13.8%	13.3%

Utilization by Organizations in East Kentucky

Internet utilization by organizations in East Kentucky is moderately lower than the state average. The overall Digital Economy Index (DEi) for East Kentucky is 6.21 compared to the statewide DEi of 6.41. This ranks East Kentucky last out of the five regions. The profile of utilization levels from low (1) to high (10), mimics statewide patterns.

Median DEi Score		
Kentucky	East Kentucky	Ranking by Region
6.41	6.21	5

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following table:

Figure 5: Internet Utilization by Employment Size: East Kentucky

Organizations by Number of Employees	Kentucky DEi (Median)	East Kentucky DEi (Median	Sample Size East Kentucky
1 to 4	5.83	5.73	112
5 to 49	6.41	6.07	110
50 to 99	6.8	6.41	18
100 or more	7.38	8.06	36
All Size Ranges	**6.41**	**6.21**	**276**

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees comprise over 95 percent of all organizations in East Kentucky.

Figure 6: Share of Labor Force by Size of Organizations

Number of Employees	East Kentucky
1 to 19	86.4%
20 to 49	9.2%
50 to 99	2.1%
100 to 499	2.1%
500 or more	0.2%

It is very informative to look at which industry sectors in East Kentucky vary in their Internet utilization levels from state-wide averages and how they compare to the other four regions. The following industries show relative **strength or weakness within East Kentucky** in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
East Kentucky	• Finance and Insurance	• ***Public administration*** • ***Professional & Technical Services*** • ***Wholesale trade*** • Information Services

The following table summarizes utilization for major industries within East Kentucky (according to DEi scores) and compared to the state average, as well as the region's ranking among the five regions.

Figure 8: Summary of Utilization Levels by Industry Sector

Major Industry Category	Statewide	East Kentucky	Rank Compared to Other Regions
Finance & Insurance	7.5	7.77	**2**
Information	6.9	6.37	**4**
Educational Services	6.7	6.45	**5**
Manufacturing / Processing	6.6		
Retail Trade	6.4	6.02	**4**
Other services (exc. public admin)	6.3	6.51	**3**
Professional & Technical	6.2	5.67	**4**
Wholesale Trade	6.2	4.95	**5**
Construction	5.8		
Health Care & Social Assistance	5.7	5.87	**2**
Public Administration	5.2	4.47	**5**

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for East Kentucky, grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential. In East Kentucky areas that have the greats gaps in utilization, while also being growth sectors, are: Professional and Technical Services, Information Services and Wholesale Trade.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	East Region Variation from State Average	Sector Size - Rank	Growth Expectation
Health Care & Social Assistance	**0.14**	**1**	↑
Retail Trade	**-0.12**	**2**	↑
Mining		**3**	↓
Manufacturing / Processing		**5**	↑
Professional & Technical Services	**-0.57**	**6**	↑ ↑
Construction		**8**	↑ ↑
Wholesale Trade	**-1.27**	**9**	↑
Finance & Insurance	**0.3**	**10**	
Information	**-0.53**	**13**	↓
Public Administration	**-0.7**	**n/a**	
Gap 1 (0.6 or more below the state DEi)	**2**		
Gap 2 (0.6 to 0.3 below statewide DEi)	**2**		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate areas with significantly higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in East Kentucky are similar to the rest of Kentucky, with privacy, slow Internet, high cost of development and maintenance, and lack of internal expertise the most frequently cited.

Figure 10: Barriers to Adopting Internet Applications and Processes

Barriers to e-Solutions - % Saying Important	East	Statewide
Privacy concerns	**71.4%**	71.4%
Available Internet is too slow	**62.0%**	59.2%
High cost of development/maintenance	**48.3%**	45.8%
Lack of internal expertise and knowledge	**48.3%**	45.8%
Loss of personal contact with clients	**47.4%**	45.1%
Suppliers not ready	**43.2%**	41.5%
Uncertain about benefits	**28.2%**	28.7%
Security concerns	**27.4%**	28.7%
Internal organization resistance	**23.9%**	24.6%
Products not suited to Internet sales	**20.1%**	24.9%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in East Kentucky were more modest at 16.6 percent.

Figure 11: Job Creation and Internet Use in Commercial Enterprises

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
East Kentucky	1,576	145	24	16.6%	43
Kentucky	15,657	1,731	593	34.3%	401

Households in East Kentucky

Utilization of the Internet by households in the East Kentucky is slightly lower than the state average. The overall Digital Economy Index (DEi) for households in East Kentucky is 5.95 compared to the statewide DEi of 6.1.

Figure 12: Utilization by Households: DEi Score and Regional Ranking

	Average DEi Score	Rank	Difference from Average	Households in Sample
East Kentucky	5.92	**5**	-.18	455
Statewide	6.1			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to lower household utilization in East Kentucky. With a slightly older and less affluent population, it is no surprise that East Kentucky has households with lower than average computer skills and lower than average utilization. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups.

Figure 13: Impact of Age and Income on Internet Utilization

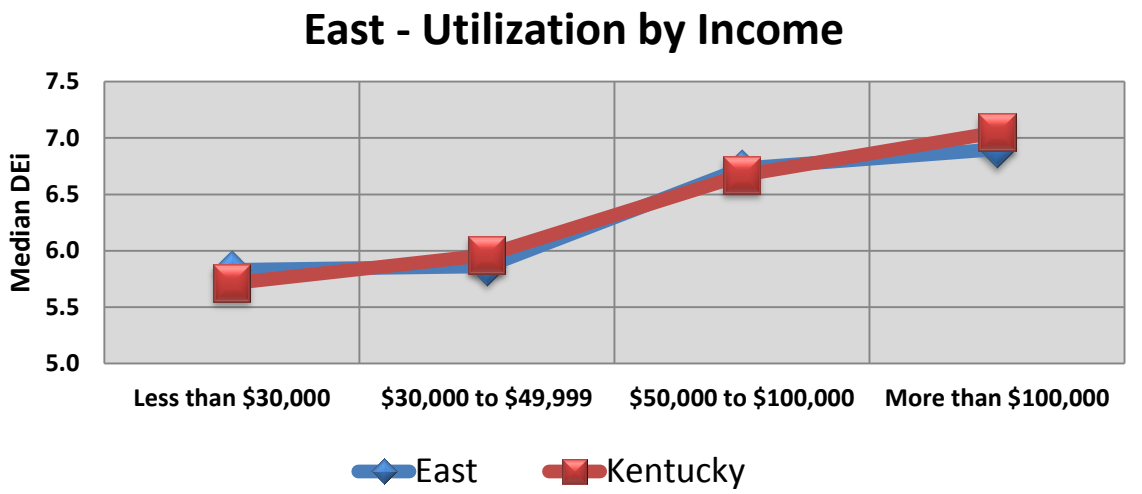
East Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**5.98**	**6.59**	**7.23**	**6.87**
35 to 54	**5.47**	**5.99**	**6.59**	**6.36**
55 to 64	**4.72**	**5.89**	**5.34**	**5.39**
65 years and over	**4.94**	**3.82**	**4.94**	**5.86**

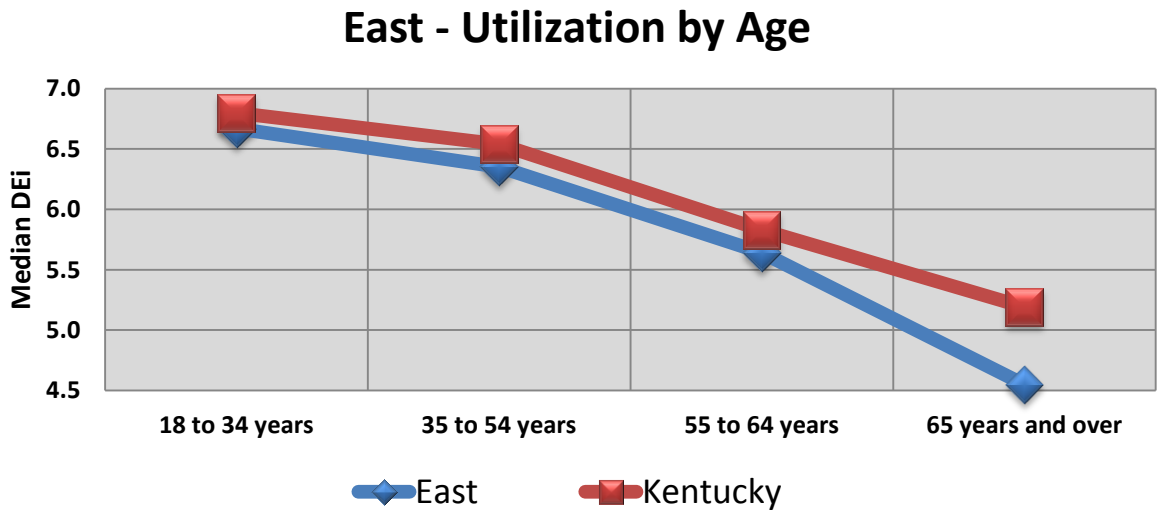
Figure 14: Computer Skill Levels

	Expert user	Use computers with confidence	Know the basics
East Kentucky	24.0%	60.4%	15.4%
Statewide	25.6%	59.9%	14.1%

For East Kentucky, 15.4 percent of households "know only the basics" in computer skill. East Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: Internet utilization Levels by Age and Income





Use of Internet for Productivity

In terms of productivity, households in the East region show below average utilization for home businesses and teleworking, but above average utilization for training and education.

Figure 16: Percentage of Households Using the Internet for Productivity

East Kentucky	% Currently Engaged In	Statewide Average	Variance from State Average
Accessing workplace	56.2%	55.6%	+0.6%
Home business	17.0%	20.8%	-3.8%
Teleworking	16.7%	20.8%	-4.1%
Education or training	50.5%	45.9%	+4.6%

Focus on Project Area Priorities

The East Region has identified local government utilization as its priority focus. Consequently, this profile provides some insights into the performance of municipal and county governments. Sixty nine municipal and 50 county entities participated in the survey across Kentucky. Fourteen local governments from the East Region participated. Readers should keep in mind that the sample sizes for municipal and county governments are relatively small and should be used with caution. Nonetheless, the data on this priority area are suggestive and worth consideration.

Comparative analysis of how local governments use the Internet includes both generic Internet uses and uses specific to local government. The generic uses are measured through the same DEi as for all other organizations and businesses in Kentucky. A separate measure labeled DEi-G was created to compare use of the twelve additional e-solutions with specific relevance to local governments. Performance on nine of these twelve e-solutions can be found in Figure 20 later in this section.

Generally local governments have low levels of utilization of generic Internet applications and processes, with an average DEi of 5.32 compared to 6.42 for K-12 schools and 6.22 for organizations in Kentucky overall. Local governments in metropolitan areas (populations in excess of 50,000) have noticeably higher utilization of both generic e-solutions and government specific e-solutions, when compared to entities outside metropolitan areas. Moreover municipal entities areas have higher utilization than county entities.

Figure 17: County and Municipal Government - Utilization Characteristics

Utilization by Location and Type of Local Government		
Type of e-Solutions	Generic	Local Government Specific
	DEi	**DEi-G**
Municipal	*5.54*	*4.60*
County	*4.79*	*4.48*
Metropolitan	5.81	5.03
Non-metropolitan	4.93	4.38

Comparing regions, local governments in the East Region stand out as having the lowest utilization of e-solutions. Figures 19 and 21 compare the East Region to Kentucky overall, as well as to the Central Region. Local governments in the Central Region have high use of e-solutions, while also having socio-economic similarities to the East, thereby making a good basis for comparison.

Figure 18: County and Municipal Government - Utilization by Region

Utilization by Region by Type of e-Solutions		
	Generic e-Solutions	Local Government Specific
	DEi	**DEi-G**
Central	5.22	5.10
KY	5.19	4.55
East	4.51	3.08

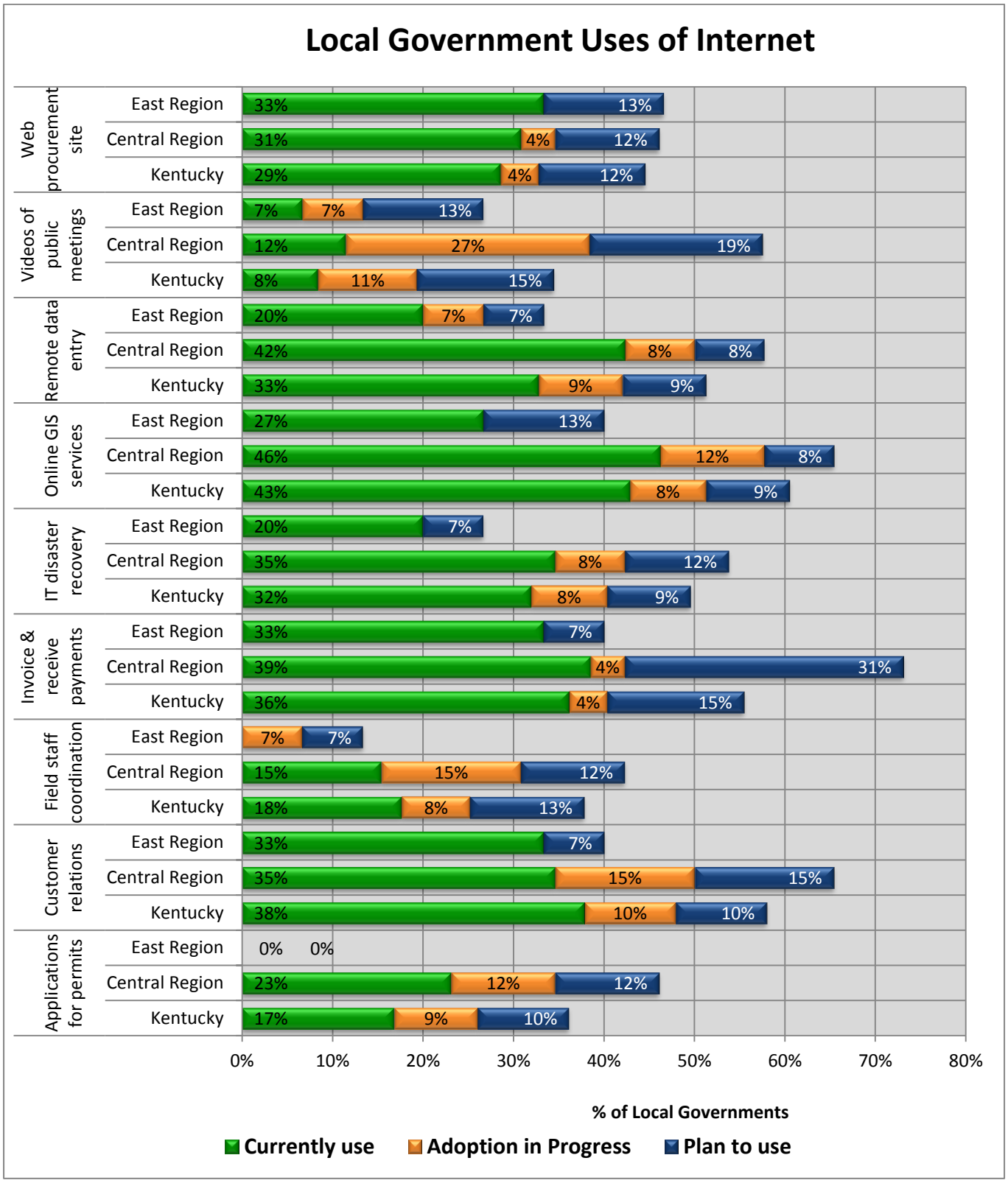
As seen in Figure 21, the East Region has a far lower level of utilization of a number of specific Internet enabled processes and applications. While caution is required due to the small sample size, the data does suggest that local government entities in the East Region should look closely at how other local government entities are utilizing and benefiting from the Internet.

One approach that may be of particular interest to the East Region is growing use of collaboration and shared services among jurisdictions. This approach can compensate for a lack of internet staff resources, as well as restricted development and operating budgets. The contrast between the Central Region and the East Region in terms of collaboration is striking, with a number of entities in the Central Regional having already collaborating on shared services, with more actively considering such a step. In contrast, none of the East Region local government entities that participated in the survey are using or even actively considering shared services.

Figure 20: County and Municipal Government - Utilization Characteristics

Plans for shared services with other jurisdictions					
	Already collaborating	Actively considering	Considered & chose not to	Have not considered	Don't know
East	0.0%	0.0%	13.3%	26.7%	60.0%
Central	24.0%	12.0%	12.0%	28.0%	24.0%
Kentucky	9.4%	6.8%	10.3%	35.0%	38.5%

Figure 191: Nine Local Government Uses of the Internet – Regional Comparison



Appendix VII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of

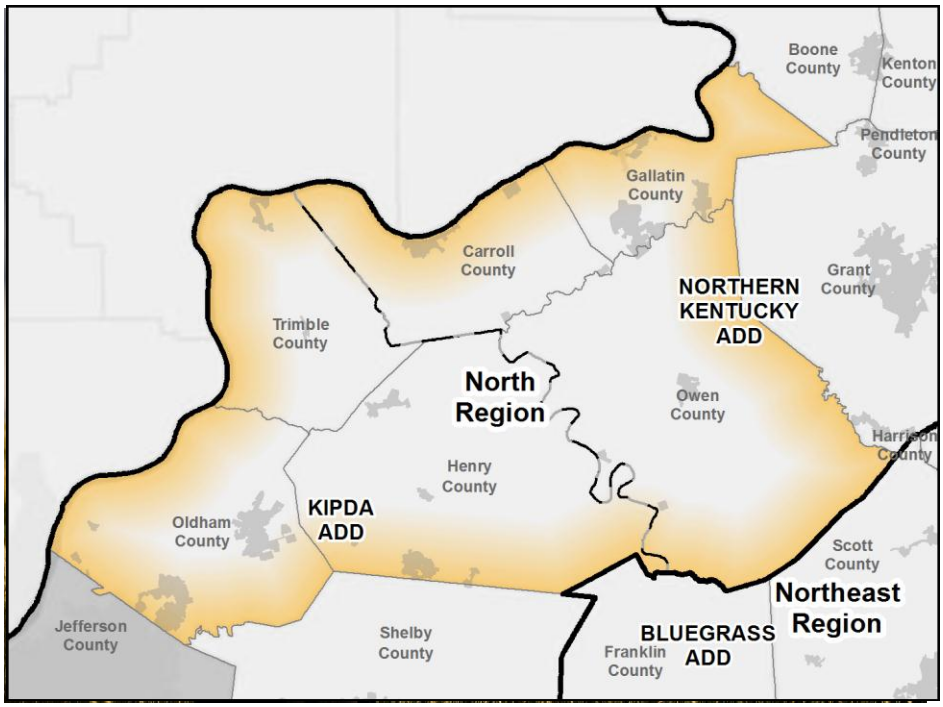
applications currently being used by an organization or household, a composite score is calculated that summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.

Broadband *KY*

Improving Bandwidth and Access for World Class Broadband in North Kentucky

(Carroll, Henry, Gallatin, Oldham, Owen, and Trimble Counties)



This report based on input received from KIPDA and Northern Kentucky Area Development Districts, and regional stakeholders, and prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

March 19th, 2013

Prepared for:

Commonwealth Office of Broadband Outreach and Development

&

Kentucky North Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

Table of Contents

INTRODUCTION **3**

1. EXECUTIVE SUMMARY **5**

2. PURPOSE AND FOCUS **7**

3. CORE PRINCIPLES **8**

4. WHY BROADBAND MATTERS: *BENEFITS OF BROADBAND INVESTMENTS* **8**

5. CURRENT STATUS: HOW IS NORTH KENTUCKY DOING? **10**

5.1 BROADBAND ACCESS 10

6. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS **15**

7. OBJECTIVES AND RECOMMENDATIONS **18**

7.1 RECOMMENDATIONS FOR BUILDING LOCAL AND REGIONAL LEADERSHIP AND CAPACITY 20

7.2 RECOMMENDATIONS FOR BROADBAND AVAILABILITY 23

7.2.1 Enabling Commercial Broadband in the I-71 Corridor *23*

7.2.2 Improving Rural Residential Broadband *24*

7.2.3 Stages and Tasks for Internet Access Initiative *26*

8. ACTION PLAN FOR BROADBAND IN NORTH KENTUCKY PROJECT AREA **28**

9. METRICS FOR TRACKING PROGRESS AND IMPACTS **31**

APPENDIX I - STEPS FOR LOCAL PLANNING FOR BROADBAND AVAILABILITY 35

APPENDIX II: LIST OF RESOURCES 43

APPENDIX III: CONTRIBUTORS TO THIS PLAN 45

APPENDIX IV - IPA WORKSHOP MEETING NOTES: NORTH REGION 46

APPENDIX V - PROJECT AREA SCOPE OF WORK 50

APPENDIX VI - PROJECT AREA PROFILE: NORTH KENTUCKY 52

APPENDIX VII: GLOSSARY 60

Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - KY -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been this strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide at a local level are paramount.

In the North Region project (Carroll, Henry, Gallatin, Oldham, Owen, and Trimble Counties), this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. Since then, the planning process has been progressing through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

After considering the many aspects of the digital divide within its communities, the North Region Working Group has adopted a vision statement to guide this plan:

"Initiate private-public partnerships and foster community leadership needed for the creation of broadband infrastructure that addresses the region's economic development and residential efforts."

As a result of the planning process noted above, to address the priorities identified by the Regional Work Group and the Stakeholders, three objectives have been established and documented in this plan:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level;
2. Enabling nationally competitive broadband for commercial enterprises along the I-71 Corridor
3. Improving availability of broadband in rural residential areas

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in unserved and underserved communities*, especially areas with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and also provides information on how to build momentum around Broadband initiatives in the project area. Recommendations will be scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the timeline in the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholder focus is on activities that are within the resources available, while providing for more ambitious actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic planning report can be found in sections 7.1 and 7.2.

Section 8 provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, timelines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of **components** (Section 8) within the plan, and the degree to which each component has produced tangible results.

2. Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses, and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters;
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI[1] Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the North Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level -- driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are unserved and underserved[2] by broadband services, as well as in populations that are underutilizing the Internet.

This Broadband Planning document has the following purpose:

---

[1] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[2] NTIA definition - *Unserved* and *Underserved:* "***Unserved***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***Underserved*** for Last Mile Projects: "An area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

a) Defining a Strategic Framework for Planning
b) Assessing the current state of broadband access in North Kentucky
C) Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Unserved" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

For government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of government moving services to the Internet, those who don't use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, broadband (see page 10 for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community to compete for skilled labor that will not move to an area without broadband. The implication is that those areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[3] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the report underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** the Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** the Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased use of the Internet results in a growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization is not equally present across Kentucky, as explored in the next section of this report. The relatively low level of broadband availability, adoption and use in Kentucky[1] has a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[4]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it is access to the Internet, adoption of the Internet or productive use of the Internet. The following sections provide information and strategies to help local and regional leaders in addressing these challenges.

---

[3] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: North Kentucky,*** *(Appendix III)***.**

[4] The 2012 SNG report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

5. Current Status: How is North Kentucky Doing?

Given the importance of broadband to the current and future health of the North Region, its communities, residents and businesses, it is important to assess the North Region's situation regarding broadband availability. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in the North Region is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households, and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at how North Kentucky performs in terms to access to the Internet relative to both national and Kentucky targets. The assessment may need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "Broadband" comes from the National Broadband Map of the National Telecommunication and Information Administration (NTIA) web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the 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." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second***[5].For the sake of consistent use of terminology, the FCC has defined the following "Internet speed tiers".

FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and tele-learning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online:

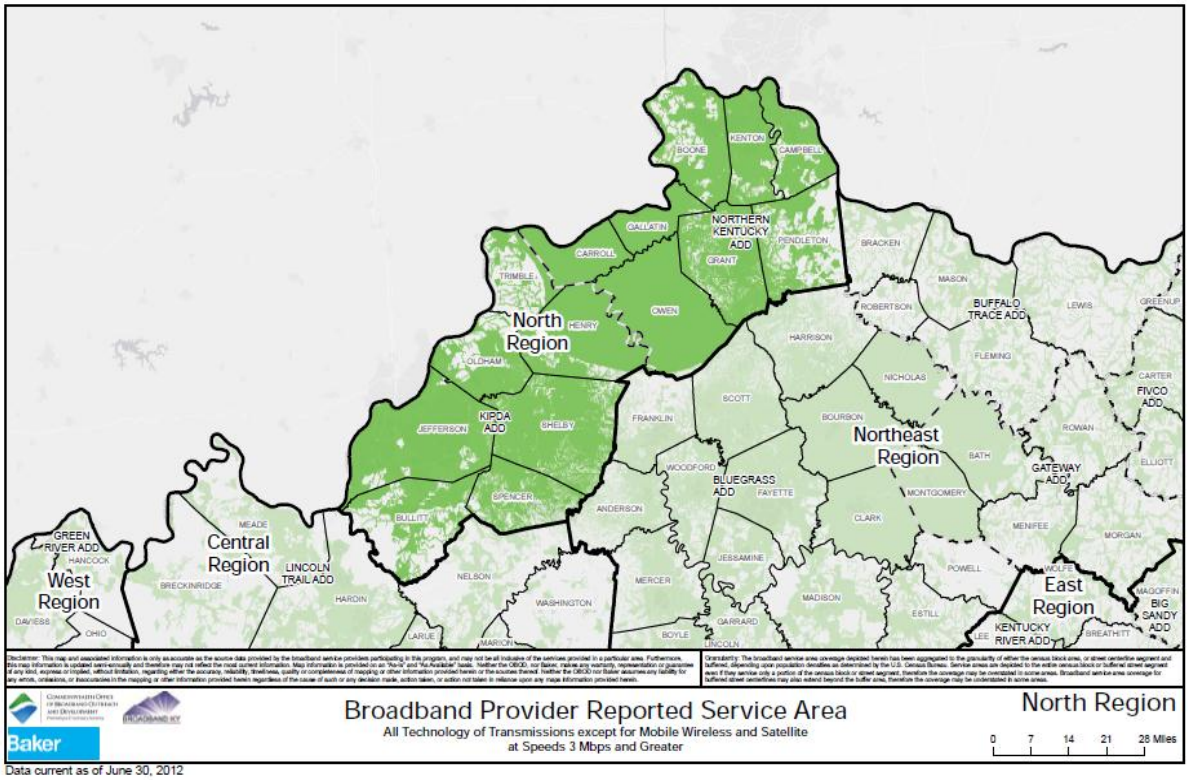
http://www.bakerbb.com/kybroadbandmapping/

During the broadband planning workshops, participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

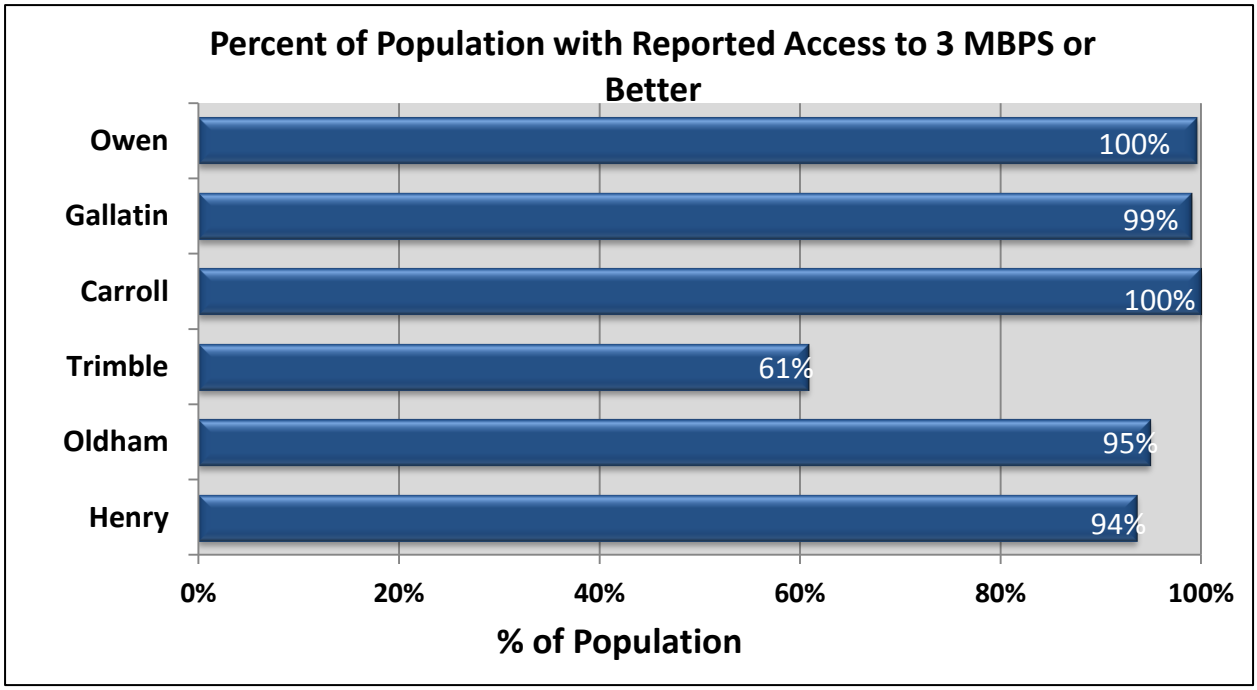
5 http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf (page 3). "Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

In its National Broadband Plan of 2010, the FCC identifies 4 MBPS as the short-term target for download speed in communities nationwide. While current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

According to Kentucky SBI provider data, Trimble County is the one county in the Project Area well below the target of 4 MBPS. The information provided is current as of January 1, 2013:



Data current as of June 30, 2012



Broadband coverage is becoming more complex with the growth of mobile wireless coverage and the increasing use of smartphones accessing the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual. For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access (redundancy) to the Internet becomes a major consideration in locational decisions. With the goal of achieving nationally competitive businesses along the I-71 Corridor, counties in the North Kentucky Broadband Planning Area need to consider the #1 Goal of the NTIA 2010 National Broadband Plan: *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.[6] Based on input from regional planners, available broadband falls far short of these levels. To keep the project area a competitive place for business in the future, the Regional Work Group has identified the importance of having "World Class" broadband. This makes developing and maintaining a more proactive posture is an important element for the region.

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as a competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

http://www.broadband.gov/plan/

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals for the Commonwealth of Kentucky:

a) Communicating the value of internet access to improve the lives of all citizens;
b) Accelerating the expansion of sustainable Broadband access, participation, and adoption by citizens and businesses in the digital economy and society;
c) Promoting Broadband use to be globally competitive and to enable a better economy;

The preceding section shows that the current situation in the North Region falls short of meeting these goals. If North Kentucky is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	**Weaknesses**
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Improved potential from wireless services (fixed and mobile) Regional high-tech business sector	Low density population in unserved rural areas Poor business case for conventional solutions Lower interest among some incumbent ISPs Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Fixed and mobile wireless technology Greater provider collaboration Public-private partnerships Renewed interest from incumbent Providers	Economic uncertainty Global competition eroding local economic base Fiscal constraints on all levels of government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.

- The increased technical capacity of both fixed and mobile wireless have provided some previously unserved or underserved areas with cost effective Internet access.
- North Kentucky has a growing high tech sector that has potential for growth and developing business clusters.

Weaknesses

- Many unserved rural areas in the North Region project area have low population density and challenging topography.
- Unserved or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.
- The dynamics described in preceding points may mean incumbent ISPs are less motivated to expand landline services in unserved and underserved areas.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing “vertical assets”, fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently unserved or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds. Kentucky SBI data also shows fixed wireless technology as having the fastest growth in 2012.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently unserved or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.
- Provider interest and participation during the North Region IPA and FPA workshops, and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.

Threats

- Residents in unserved communities may lose access to public and private services that increasingly are available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, the Commonwealth of Kentucky has the following high level goals in relation to broadband:

a) Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
b) Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals for the North Region (Carroll, Henry, Gallatin, Oldham, Owen, and Trimble Counties).

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to inform communities and regions of initiatives to improve broadband access.

In pursuing change, this Broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and,
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to "Unserved" and "Underserved" areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1) Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level
2) Enabling nationally competitive broadband for commercial enterprises along the I-71 Corridor
3) Improving availability of broadband in rural residential areas

The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of financial and non-financial resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction set out in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.***

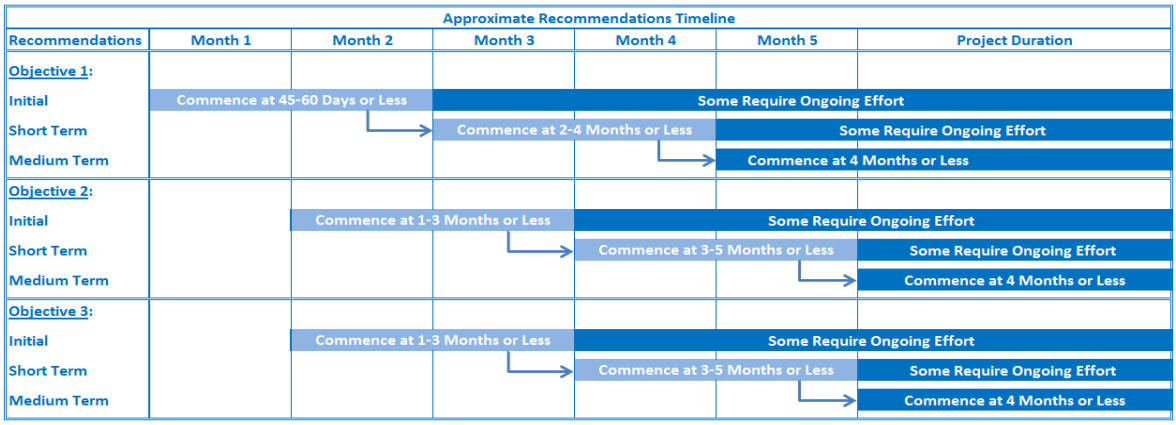
Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations

in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- **Initial:** Related to project initiation and intended to be completed over the first 1 to 2 months.
- **Short-term:** Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- **Medium-Term:** These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, some may be subject to obtaining the required resources, which may need additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Figure 1: Example of Implementation Timeline for Recommendations in Section 7



The detailed recommendations are found below in sub-sections: 7.1 and 7.2.

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the North Region project area, the Area Development Districts have identified themselves as leaders with the organizational capacity to manage the broadband initiative in their region. In addition, **Kentucky Connected** is a regional body that is willing to provide leadership on the issue of nationally competitive broadband along that section of the I-71 Corridor within the project area. The ADDs and Kentucky Connected bring the following abilities to the broadband initiative:

- Organizational structures and networks of elected officials and regional stakeholders
- Local knowledge of the area and its priorities
- Ability to work at the community level to identify unserved and underserved households and commercial areas at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In addition to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the project area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.

- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.
- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is often the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Establish a regional body to promote and recruit community leadership for broadband availability, while recognizing the role of Kentucky Connected in facilitating broadband infrastructure along the section of I-71 Corridor within the project area.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to learn about Broadband, the available resources and how they can improve broadband availability and/or enhance Broadband opportunities in their community.
e) Develop tactics that fully leverage State Broadband initiatives.
f) Establish a sub-committee of Broadband Providers.

Medium to Long-term Objectives: In addition to the above:

g) Organize a series of webinars or face-to-face workshops to assist local community leaders in the project area in developing local broadband planning and outreach priorities.
h) Facilitate a peer-to-peer support group among community leadership;
i) Provide technical assistance on issues related to improving broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in broadband initiatives, they will encounter issues requiring expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities***

through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potentially the groups to be targeted.

Checklist for Developing Community Leadership

Individual leadership

- Community leaders and elected officials understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational leadership and capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support for a broadband initiative.

7.2 Recommendations for Broadband Availability

Communities in the North Region project area that have less than adequate Internet services face significant barriers in overcoming this digital divide. Nonetheless, communities in the project area have the potential to develop the leadership and commitment necessary to achieve the broadband they need for their residents, businesses, and community anchor institutions.

In the North Kentucky project area, the priorities are: enabling broadband availability to rural residential areas without broadband; and, enabling nationally competitive broadband to commercial areas along the I-71 Corridor for community and economic development.

This plan divides the project area's recommendations into two distinct efforts: a regional initiative to improve broadband in commercial areas along that section of the I-71 Corridor within the project area; and, a separate initiative to encourage and support locally based efforts to expand rural residential broadband. As these two distinct initiatives evolve, there will need to be close coordination in order to develop synergies. Some of the objectives of one group may be enabled or facilitated by the other initiative. However, their respective objectives and processes should remain distinct for the time being. The issue of coordination and identifying synergies applies to all broadband infrastructure initiatives in the project area. Regional leadership should consider possibilities for combining separate initiatives into a larger regional effort for designing and managing networks and the purchasing of services.

7.2.1 Enabling Nationally Competitive Broadband for Commercial Enterprises along the I-71 Corridor

The desire to attain nationally competitive broadband services in commercial areas along the I-71 Corridor is a priority. ***The North Region Working Group has identified Kentucky Connected as a body that will be responsible for developing a leadership group on this initiative. This group may seek to recruit additional individuals, organizations or businesses to expand its leadership base, in a manner consistent with the recommendations for developing leadership (Section 7.1).***

Many of the strategies and activities needed to address the inadequacies of current broadband services to commercial areas are covered in Appendix I, which provide a detailed process for improving broadband at a local or regional level. ***It is recommended that the leadership group headed by Kentucky Connected develop its detailed work plan by drawing on this process.***

Prior to developing a detailed work plan, the group should determine the level of fragmentation or concentration of existing and potential demand for advanced Internet services along the I-71 corridor. This task is critical in understanding the level of "effective demand", which forms a critical part of any business plan for enhancing broadband services to these areas. Understanding the geographic footprint of effective demand, as well as the disparity between effective demand and current broadband services, are key steps in the preparation phase described in Appendix I. Completion of this

task will also help identify the potential for aggregating demand by geographic area and initiating discussions with Internet Service Providers that can potentially serve that area.

The following are the recommendations for addressing availability to achieve nationally competitive broadband in commercial areas:

Initial Recommendation:

a) Determine standards for nationally competitive broadband, as they would apply to the I-71 Corridor. An initial step in defining these standards should include identifying the characteristics of existing and projected broadband services in the areas in and around Louisville and Cincinnati. This would include communication to regional Broadband providers to research their plans to expand their Broadband infrastructure over the next 2/4/6 years, as well as contacts within certain institutions or academia who may have national and regional knowledge to assist in developing targets for broadband services along the I-71 Corridor.
b) Leverage the Broadband Provider sub-committee and regularly meet to discuss availability issues in the project area, to solicit on-going input from the group (Recommendations **c** and **d** below), and to begin broadband-specific collaboration with project leadership to improve communication and find ways to collectively improve availability.

Short-Term Recommendations:

c) Identify areas of fragmentation and concentration of existing and potential demand for advanced Internet services along the I-71 Corridor. Actively aggregate this demand as a key source of information for project leadership, stakeholders, and the regional Provider community. This step will include thoroughly assessing existing and potential commercial locations in the project area, with specific criteria and a template to "inventory" all input in a consistent manner – to build a database and periodically update and grow it for use among all participants in the project area.
d) Based on the findings of the assessment described above, develop actions and tactics that build on the process and activities laid out in Appendix I. The actions should allow for funding and other project contingencies.

Key variables in tailoring the plan to available resources should include: *use of a "prototype" site to demonstrate this approach; building a "catalog" of commercial sites with "upgrade" potential; and site prioritization requiring the least capital outlay and/or the least upgrade difficulty.

7.2.2 Improving Availability of Broadband in Rural Residential Areas

The issue of poor or no Internet service in rural residential areas is highly fragmented in the North Kentucky project area. Establishing a regional approach to enable local leaders to address these needs is an effective way to move rural Broadband efforts forward in the project area. ***This plan recommends a process whereby communities in the project area take responsibility for proactively identifying,***

finding, and compiling detailed information about unserved and underserved areas at the street level that addresses their community's needs. The local efforts should be supported by the regional body with outreach, education and support.

Later in Appendix I is a detailed outline of the key opportunities and requirements facing local communities. It is recommended that communities adapt this process to determine subsequent tasks and choices. As communities move toward implementing specific strategies, they may find that initial choices need to be re-assessed.

If the overall strategy is based on local responsibility and leadership, there still remains significant scope for regional Work Group and stakeholder efforts to support these local initiatives to expand broadband availability. ***The recommendations below can be combined with or in addition to the steps outlined in the section on leadership.***

Initial Recommendations:

a) Develop and circulate an information package among local communities that identifies the resources and opportunities available for improving broadband availability at the local level;
b) Circulate, promote and leverage the "eLearning Module" on community approaches to improving broadband developed by the Office of Broadband Outreach and Development.
c) Use regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website.
d) Leverage the Broadband Provider sub-committee and regularly meet to discuss availability issues in the project area, solicit on-going input from the group on their information package (Recommendation a), and to begin broadband-specific collaboration among project leadership and Providers to improve communication and find ways to collectively improve availability.

Medium-Term Recommendations:

e) Building on the efforts identified above, develop and expand regional approaches to Local Internet Expansion, bringing together communities that undertake local broadband availability initiatives. This would be a collaborative effort based on a shared process, in tandem with community work on local project initiatives and would include additional regional or Statewide Providers. Include a process for communities to share information and resources, active mutual aid or peer support, and technical assistance as noted in the section on leadership.

In Appendix 1 detailed information is provided about the process and tasks for local communities to use for expanding broadband services in rural residential areas. This includes basic starting points for consideration prior to commencing a community effort.

7.2.3 Stages and Tasks for the Internet Access Initiative

The diagram on the following page is a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified are explored in greater detail in Appendix I. The Office of Broadband Outreach and Development (OBOD) has also created an online "eLearning" module that addresses local broadband availability. The module is available on the website noted below and includes a case study of the GRADD project: http://finance.ky.gov/initiatives/broadband/pages/default.aspx .

1: Preparation

- Develop Leadership
- Establish preliminary objectives and priorities
- Identify assets and key data

2: Engaging Internet Services Providers (ISPs)

a) Identify ISPs
   - Existing ISP(s): as backhaul or last mile
   - Adjacent ISP(s)
   - Regional ISPs

b) Determine Level of ISP Interest
   - Informal approaches
   - Request for expressions of interest (RFI)
   - Qualify Interested ISPs: Due diligence (capacity, references)

3: Refine Objectives and Relationships

a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
   - Support ISP as sole provider
   - Outline Public Private Partnership as solution
   - Local government or NP entity as provider

4: Make Commitments

a) Secure funding
b) Commit funding
   - Request For Proposals (unless direct award)
   - Contract Negotiations

8. Action Plan for Broadband in North Kentucky Project Area

The action plan components included in this section are preliminary. They begin to outline the tasks, timelines, and responsibilities reflected in the recommendations in Section 7. It is expected that this outline will be adjusted with more additional detail as the plan is implemented, to reflect the availability of resources and with more information being developed for the work required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Regional Lead Body	Recruit & confirm involvement and level of commitment	KIPDA, NKADD, Kentucky Connected		1	Establish committees and subcommittees
1b	Secure Funding Sources	Approach potential funders	KIPDA, NKADD, Kentucky Connected, work groups		2 (ongoing)	Submit funding applications, research others
1c	Expand leadership (Community Level)	Recruit new community leaders & stakeholders	KIPDA, NKADD, Kentucky Connected, work groups	K – 12 Superintendents & principals; commercial property owners; technical college; members outside of government	1,2	Leaders with focus on rural residential and commercial broadband, as well as economic development
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	KIPDA, NKADD, Kentucky Connected, work groups	K–12 Superintendents & principals; post-secondary institutions, non-government stakeholders	2	At least two webinar or face-to-face orientation session
1e	Tactical develop. to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives	KIPDA, NKADD, Kentucky Connected, work groups	Local government or business contact w/PR skills and project interest	2	*e-Link to appropriate state web sites *Connect/coordinate with state on PR progress reporting

1f	Establish Provider sub-Committee	Build partner relationships and problem solving approach	KIPDA, NKADD, Kentucky Connected	Project area providers and utilities	1,2	Group becomes an input source on availability gaps in the project area
1g	Organize a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband planning and outreach	KIPDA, NKADD, Kentucky Connected, work groups		Subject to resources	Community oriented workshops and webinars
1h	Establish peer support	Facilitate peer support for community leadership	KIPDA, NKADD, Kentucky Connected, work groups	Technical college, commercial business, Local Gov., tech service providers , BB Providers	Subject to resources	Functioning community leadership peer group
1i	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	KIPDA, NKADD, Kentucky Connected, work groups	Technical college, commercial business, local Gov., tech service providers , BB Providers	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders

Objective 2: Enabling nationally competitive broadband for commercial enterprises along the I-71 Corridor

	Component	What	Who	Other Stakeholders & Local Leadership	Begin *(Month)*	Outcome
2a	Determine standards for "nationally competitive broadband"	Research other regions	Working group, Kentucky Connected	Broadband service providers, economic development agencies, other institutions and academia (researchers)	2 to 3	Definition of "nationally competitive broadband" as applied to the I-71 Corridor
2b	Leverage the Broadband Provider sub-committee	Leverage sub-committee: *regularly meet *discuss availability issues *solicit on-going input	KIPDA, NKADD, Representative *Provider-appointed Leader	Providers with service in project area and other regional providers	2 to 3 ongoing Frequency TBD	*Input on fragmentation and demand aggregation; *collaboration on gaps *review and share SBI coverage data and State/Nationwide trends
2c	Determine fragmentation or concentration of demand	Conduct survey of commercial areas	Working group, Kentucky Connected	Education sector – students	2 to 4	Documentation of current and future "effective" demand relative to supply

2d	Develop action plan with contingencies based on level of resources	* Establish target areas * Establish one or two "pilot" areas within project area	Working group, Kentucky Connected		4	*List of target areas, together with demand/supply data. * Work plan.

Objective 3: Improving Broadband Availability in Residential Areas

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders & Local Leadership	Begin (Month)	Outcome
3a	Develop and circulate information package	Agree on design and approach to information package	KIPDA, NKADD, work group	Providers, Local Govt., GIS person, Chambers	2-3	Agreement on content, packaging, and points of distribution at communities in project area.
		Produce and distribute package	KIPDA, NKADD, work group	Local media, education sector.	2 & ongoing	Package sent to local governments, officials, and stakeholders.
3b	Promote & leverage eLearning modules	Promote eLearning & outreach activities: Webinars; presentations;	KIPDA, NKADD, & Community Leadership	Local media, education sector.	3 - 4 & ongoing	Participation of interested individuals and stakeholders; identification of local projects.
3c	Regularly planned events	Promote/support local broadband availability initiatives, ideas, materials (see tech assistance 1i: Leadership).	KIPDA, NKADD, & Community Leadership	Muni and county gov; utilities and Providers.	Subject to resources	Better Broadband info on services to unserved or underserved households in the project area.
3d	Leverage the Broadband Provider sub-committee	Leverage sub-committee: *regularly meet *discuss availability issues *solicit on-going input *input on information package	KIPDA, NKADD, Representative *Provider-appointed Leader	Providers with service in project area and others from region.	2 & ongoing Frequency TBD	*Discuss availability issues *Solicit input on information package * Begin collaboration on avail. Gaps *Review and share SBI coverage data and trends in State/Nationwide
3e	Expand participation of local internet initiatives to more communities	Build on initial project work, grow the number of participating communities, info sharing/collaboration., peer support, technical assistance.	KIPDA, NKADD, working group.	Local Gov; K–12 superintendents & principals;	3 - 4 & ongoing (Subject to resources)	More community participation with interested individuals and stakeholders; identify more/new local projects.

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Enabling nationally competitive broadband in Commercial Areas along the I-71 Corridor**
3. **Improving broadband availability in rural residential areas**

Building Local and Regional Leadership & Capacity		
Metric:		***Data:***
1a	Lead regional body is established and committees defined	• Creation of organizational parameters that define structure, mandate, accountability and membership. • Endorsement of group parameters is affirmed by key stakeholders.
1b	Secure Funding Sources	• Document names, contacts status of funders approached, • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State Broadband Initiatives	• Submitted & approved tactical plan
1f	Established Provider sub-Committee	• Document participants, meeting frequency & issues addressed • Over time, document solution collaboration, opportunities to fill availability gaps through partnership
1g	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*

Building Local and Regional Leadership & Capacity		
Metric:		***Data:***
1h & i	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact

Enabling Nationally Competitive Broadband in Commercial Areas along the I-71 Corridor		
Metric:		**Data**
2a	Defined standards for "nationally competitive broadband"	Written statement on how to define standard of "nationally competitive broadband"
2b	Leveraging Broadband Provider sub-committee and regularly meet and discuss availability issues in project area, solicit on-going input from the group on fragmentation and demand aggregation, begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability	• Document meetings, attendees, provider attendees, info exchanged, etc. • # of availability gaps by commercial area or industrial park • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for target areas projects) and collective provider "work plan" for problem solving
2c	Determination of fragmentation or concentration of demand	Databases with street level data, identifying geographic patterns of target areas and levels of existing and potential demand, as well as current level of service and broadband infrastructure
2d	Action plan with contingencies based on level of resources	Written plan

Improving Broadband Availability in Rural Residential Areas		
Metric:		***Data:***
3a (1)	Completed broadband availability information kit	• Finished kit content and subsequent updated kit at periodic intervals.
3a (2)	Distribution of information kit on broadband availability and public Internet access sites to local governments and stakeholders	• Points of distribution, activity log related to community use and engagement • Number of kits distributed, plus online tracking of access to kits (if online) *(# TBD)* • Plan/prepare for v2 updates, timing, team contributors, data sources

Improving Broadband Availability in Rural Residential Areas		
Metric:		***Data:***
3b	Circulation, promotion and leveraging the "eLearning Module" on community approaches to improving broadband developed by OBOD	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
3c	Use of regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
3d	Leveraging Broadband Provider sub-committee and regularly meet and discuss availability issues in project area, solicit on-going input from the group on their information package (Recommendation **3a**), begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability.	• Document meetings, attendees, provider attendees, info exchanged, etc. • Document provider inputs on info package/overall use of package • # of availability gaps at the community level (areas w/community-based projects) • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for areas w/community-based projects) and collective provider "work plan" for problem solving.
3e	Development and expansion of regional approaches to expanding the number of participating communities through info sharing/collaboration, peer support, and technical assistance	• # of new community initiatives launched • # and type of groups involved, total team involved • # of info "bulletins" and communication activity *(#TBD)* • # of tech assistance events or responses "logged" by lead group *(#TBD)*

Impact Metrics

Impact Metrics measure overall benefit on Internet access in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improved access to broadband infrastructure (both rural residential and commercial)**

Improved Access to Broadband Infrastructure		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# households served (service available)	Stats on broadband service coverage (e.g. households passed or within serv. area)
5	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I - Steps for Local Planning for Broadband Availability

The next few pages provide a detailed review of the process and tasks for local communities that want to expand broadband services in rural residential areas. It is useful to begin with some basic starting points.

- ✓ ***Begin with needs and goals, rather than solutions --*** Local and regional initiatives should not begin by assuming what the eventual Internet solution will look like, the appropriate scale of "build out", type of technology, type of ISP, or what the appropriate role of the local government should be. Instead, initiatives should address specific needs and the goals in the project area that ultimately lead to better solutions.

- ✓ ***Identify the specific needs and locations of the fragmented areas.*** Local needs and goals need to be supported with actual information on-the-ground that identifies problem areas and certain local asset information on a map, as well as aggregating the "demand potential" for underserved and unserved populations. This can become powerful information to empower and inform local leaders, and help facilitate ISP partnerships.

- ✓ ***Include, inform, and attract local leadership***. Local elected officials, economic development organizations, small business, and other active energetic leaders in the community. The educational sector has often played an important role in providing leadership and a clear rationale for making local broadband initiatives a priority. The educational sector has particular value with access to students who could be involved in documenting current and potential Internet service and demand.

- ✓ ***Consider Internet Service Providers (ISPs) as partners.*** A major point of feedback from Providers is that communities and local governments often see them as an "outsider" or only as a potential source of revenues, rather than as a partner in achieving community goals. Providers are a lot more willing to spend time exploring options with friendly communities than with those who place obstacles in their path. While a community may or may not find an attractive ISP to partner with, they should start by considering potential ISP partners. Facilitating a consultative relationship with ISP's as partners opens up an essential communication channel for the longer term of this project and enables the Broadband team to tap into a valuable resource of information on technology, equipment, and network maintenance & expertise – *the business of broadband.*

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were unserved or underserved. However, in many cases unserved or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [7]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:

- **Target population or organization(s):** location (topography), number and age of households (rural residential), density, and income/budget.
- **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
- **Pole access**: pole owner, pole type, attachment capacity, cost.
- **Rights of Way** – can be used to expedite/reduce cost of conduit placement
- **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
- **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
- **Land** – that can be used for tower construction/locating points of presence, etc.
- **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.
- **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.

[7] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government that supports a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in its community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[8]

[8] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:
   - By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
   - By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

   In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

   At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer.

---

encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, are market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable and projected revenues will cover expenses. Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.
   - A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
   - Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
   - Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used to attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.

- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:
   - ***Aggregating existing demand and purchasing power in the form of guaranteed contracts*** can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

   - ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html) continue to provide federal grant opportunities. The Connect America Fund is still in its early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

   - ***Funding mechanisms of Kentucky*****:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

   - ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public

funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require the skills to enter into complex contract negotiations with an ISP.

Appendix II: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Local Government Economic Development Program (LGEDP) --
http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) – Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency –
Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY **...**,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280
NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center (TATRC)**, located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)
School Turnaround AmeriCorps FY13
http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity
The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix III: Contributors to this Plan

This Plan was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for North Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the North Kentucky region's project area, consisting of the Carroll, Henry, Gallatin, Oldham, Owen, and Trimble Counties, this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the three ADD regions were contacted about the Broadband planning initiative. Many were invited to provide input and participate in the two workshops. A list of organizations that were consulted as part of the development of this plan is available through the KC-ADD office.

Appendix IV - IPA Workshop Meeting Notes: North Region

October 29th, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the North Region of Kentucky, focusing primarily on the I-71 Corridor within the KIPDA and Northern Kentucky Area Development Districts (including the counties of Oldham, Trimble, Carroll, Henry, Gallatin, Owen, excluding Jefferson County). The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This document draws on notes taken by NKADD, KIPDA, KCADD, Baker, and SNG staff.

Brian Kiser convened the meeting and introduced the project team members and working group members before asking attendees to introduce themselves around the room. Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies.

Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. He also summarized the challenges Kentucky faces in Broadband adoption and utilization. Having Broadband available to homes and businesses does not ensure it is being used effectively to improve the way people live and businesses work. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine what goals and objectives for the region.

Lisa Cooper then presented the North Region Working Group's Scope of Work (SOW) document. Cooper explained that as soon as the North Region's boundaries were defined, NKADD and KIPDA wanted to address breaching the rural/urban gap in the six county area already identified by the newly-created I-71 Corridor Group. Because the area includes three counties from each ADD, both ADDs are equally invested in gaining broadband along this corridor. Cooper explained that the corridor is an ideal site for industrial recruitment; it already has roads, river, and rail. All the area needs is broadband to entice industrial investment in the area. At this juncture, the Working Group has enlisted the help of the stakeholders present to assist in designing an initiative that addresses the connectivity issues in along that corridor.

Bill Bates provided technology and trending information relating to regional broadband availability, project goals, changes in provider participation over the past two years, and data on users, usage, and uses. Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy then informed the group that the goals for the day's workshop would be creating a vision, goals and strategies, as well as action items for implementing an action plan.

Plenary discussions then ensued on the issue of local broadband availability. Those present confirmed that broadband generally is available in the towns but begins to deteriorate beyond those borders. A representative from Gallatin County noted that the only connectivity in the county is in the county seat.

Other elected officials confirmed that they know the map does not accurately reflect where broadband is available in their counties. Representatives from Carroll and Owen counties said they could obtain information down to a road level regarding broadband availability that would more accurately reflect the project area.

Steve Dale from the I-71 Corridor Group noted that while residential connectivity is an issue, there is a real need to pair up high-end broadband availability at the junctions of other infrastructure already in place. He agreed to work with the group at a later date to identify those potential locations.

The plenary session identified two main objectives for this planning process:

1. Create access to reliable broadband connections in currently un-served and underserved rural residential areas by focusing on provider-centered partnership for potential build-out;
2. Improve broadband service to businesses to enable them to compete at a global level.

The group broke for lunch and reconvened at 1 p.m., splitting into two breakout groups—one to address rural residential broadband availability and one to address world-class commercial broadband services.

With both breakout groups dealing with the issue of broadband infrastructure, there were many issues common to both groups. These included valuable criteria and attributes for Providers considering service expansion:

1. Population information at the county and local level, including potential broadband subscriber **density** in area -- Institutional, CAI's, Residential, Business, Gov.
2. Geography / Topology
3. Providers presently operating in the area
4. Technology options in the area
    - Cost/timing of fiber network expansion (a limiting factor)
    - Fixed-Wireless may likely provide a faster way to bring service in underserved areas
    - Understanding the "partnership potential" of an area – <u>Facilitating</u> the partnering between local governments, institutions or Providers
5. Land ownership, parcel boundary, business zoning or districts, ROW access -- location
6. Public / Private Structures
    - Public/Muni towers or water tanks -- Does muni-owned infrastructure have specific business and contract terms? Document business processes and contract terms.
    - Pole access -- Pole owner, Pole Type, Attachment capacity, Cost, Permitting/Licensing process, *Speed-of-attachment (bureaucracy)
    - Private-sector tower assets in the region
7. Government rules/requirements/regulations/constraints –
    - Thinking more in a broadband-centric way…
    - RFI / RFP: Value-based? Cost-based? Criteria defined? Is the decision/evaluation process defined, open and fair (People/Committee/Processes)?

World-Class Commercial Broadband Group

For the six-county area along the interstate corridor, there is a lack of knowledge surrounding the technology needed. The group was asked, "How do we determine what tomorrow's technology will be?"

In a similar vein, the group was asked "what companies are looking for in relocating; will they only relocate to an area with existing availability or will they look at a location with a plan for infrastructure that can be tailored to the business' needs?" The group needs to identify the trends in the existing economic development market.

A survey was suggested with industries similar to the ones they would be recruiting to see what they are currently using in terms of broadband and what they would look for when relocating. A separate survey of industries already in the counties could identify how much they paid for infrastructure for their operations and what they look for in a broadband connection?

Gallatin County Attorney Spike Wright suggesting the creation of business-friendly zones that interweave on a local level, possibly along the interstate exits.

When recruiting businesses, BB service is not always available for the businesses to come to the area. Businesses need to know BB will be available to locations they are considering moving into.

Specific sites can be identified for BB service needed to those locations.

The group was asked if they wanted to work with small businesses in the area to educate them on the benefits of broadband. The group agreed that doing so could not only benefit the small businesses in the area, but also increase the demand for broadband along the interstate, which would aid industrial recruitment efforts in the future.

Rural Residential Broadband Availability Group

1. Residential group objective: to get residential access to BB service in the 5 counties project area.
2. Carroll County schools need BB access for households for their kids, so they have BB at home for homework.
3. Each county needs a community champion, either individual or a group.
4. Fixed wireless needs about 10 customers per vertical asset to make in financially feasible, versus the previously mentioned 40 households per mile for wireline.
5. Fiber is about $9,000 per mile to install.
6. Need a business case based on real numbers: population, costs, and probable revenues.
7. Gallatin County talked about what they have done in their county.
    a. Initial goal was 75-80% population with BB coverage in first year.
    b. The remainder 20% of population will have BB service in 3-4 years later.
    c. They made a $50,000 capital investment to go from 20% population coverage to 80% coverage.
    d. They will get back their $50,000 investment later.
8. Shelby Broadband invested >$50,000 in Harrison County and got about 600 customers.

9. Schools have contracts with Windstream, but if they need more capacity, they can get it elsewhere if they choose. Maybe can be a core service to start projects in an area.
10. Need communication to community about what this group is doing, in order to sell this plan.
11. There are a lot of misunderstandings about broadband that need to be resolved through communication.

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the North Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the North Region will be presented to a stakeholder workshop in March for final discussion, input and adoption. The draft plan will begin to address the implementation by identifying specific tasks, timelines, cost/benefit statement, outcome measures, and responsibilities. If any area is not completely addressed in the draft plan, they will be addressed at the stakeholder workshop.

Develop a Strategic Plan for Broadband Availability

I. A strategic plan will be developed for production of detailed and targeted information needed to initiate efforts that address broadband access and availability, while also engaging Providers in identifying and developing solutions. The plan will provide tools to assist local governments and stakeholders in developing a "kit" of information with resources specific to broadband, with defined technical service levels and requirements to make it easier for Providers to understand the business needs.

II. The strategic plan will include sections on both residential and commercial broadband availability.

III. The Strategic plan will develop a vision statement for commercial broadband in the corridor.

IV. The Strategic plan will identify complementary efforts to these regional efforts :
   - Demand Aggregation
   - Business Surveys
   - CAI identification & inventory,
   - Wi-Fi Hot-Spot strategies

V. Connected to the above, the plan will provide strategies for developing the leadership needed to build capacity for sustaining ongoing efforts over time.

VI. More thorough information is needed to gain an understanding of different business and ownership models and the elements involved. The strategic plan will provide examples of successful Broadband business models for use in un-served or underserved areas, as well as sample legal documents such as RFIs, RFPs and water tower leases;

VII. Funding is a critical component to the North Region Plan, regardless of the model involved. The Plan will identify possible funding sources to enable a sustainable effort over time

Appendix V - Project Area Scope of Work

Name of Region NORTH **Name of Project Area** KIPDA/NKADD

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Bandwidth to meet world-class industrial standards
Project Area Boundaries	Boundaries for this Project Area: KIPDA-NKADD OLDHAM-TRIMBLE-Carroll-Henry-Gallatin-Owen
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Industrial sector – adequate service
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: 1. Increasing/Develop BB infrastructure along I-71 corridor
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. Lisa Cooper, NKADD 2. Jack Couch, KIPDA 3. Drew Tilow, NKADD 4. Keith Roberts, KIPDA 5. Felicia Harper, KIPDA
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: • Lisa Cooper – Jack Couch (co-Chairs)
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Meet w/I-71 Work Group 2. Finding needs of I-71 Work Group 3. Meet w/Family Resource Centers - Schools 4. Local Chambers of Commerce

** If additional space is required, please attach additional pages to this template. **

Approved: May 31, 2012 - KY Broadband North Planning Session _____Jack & Lisa

1) Project Area Focus:

- Oldham, Trimble, Carroll, Henry, Gallatin, Owen
- Availability of advanced broadband in I-71 corridor

2) Project Area Profile: (Baker/SNG Team responsibility)

The project area profile will draw on data in recent reports, with specific attention paid to outlining the current availability of advanced broadband. The profile will provide criteria for exploring advanced broadband.

- Detailed description of existing broadband infrastructure in I-71 corridor.
- Criteria for broadband infrastructure goals and options.

3) Identify, contact and recruit stakeholders for Initial Planning Session (Sept)

Stakeholders Recruitment (Working Group responsibility)

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be Recruited

A. Availability of advanced broadband
   - Local governments in target areas.
   - Organizations involved in I-71 planning
   - ISPs and WISPs

4) Logistics

a) Identify and confirm Initial Planning Area (IPA) Workshop date and location
b) Identify how invitations will be sent out, including follow-up and registration process.
c) Other logistics: refreshments, audio-visual aids, etc.

5) Purpose of Initial Planning Area (IPA) Workshop in September

a) General awareness and education around broadband adoption and utilization
b) Presentation of Project Area Profile
c) Discussion and issue identification within focus area: advanced broadband in I-71 Corridor
d) Priority setting
e) Identification of general strategies for dealing with priority issues

Appendix VI - Project Area Profile: North Kentucky

This section provides a profile of Internet utilization in the North Region, consisting of the KIPDA and Northern Kentucky Area Development Districts, but excluding Jefferson County (unless otherwise noted). Most of the material is taken from the Kentucky e-Strategy Report and consolidated into one area-specific profile. For context in prioritizing regional planning activities it is important to consider the overall profile of the population and economy of North Kentucky.

Figure 1: Demographic and Economic Profile of North Kentucky (excluding Jefferson)

Households	North minus Jefferson	Kentucky
Population	656,642	4,339,367
Median Household Income	$54,330	$40,061
% in Poverty	11.4%	18.4%
% of Population 65+	11.1%	13.3%
Organizations		
Establishments	12,417	90,511
Employment	215,405	1,480,658
Annual Payroll (in billions)	$7.59	$51.44
Average Size of Employer	17.3 employees	16.4 employees
USCB County Business Patterns 2009		

North Kentucky has significantly higher than average (median) income and an age profile similar to the State. The area has proportionally 38 percent less households in poverty compared to Kentucky as a whole. At 13.9 percent of employment and 14.7 percent of payroll, Health Care and Social Assistance plays a large role in the North region (followed by Manufacturing). Northern Kentucky has the most diversified economy of the five regions, with the eight largest industries, ranked by employment, representing 68.1 percent of all employment in the region.

Figure 2: Largest Economic Sectors in North Kentucky (including Jefferson)

Rank	Industry Sector	Percent Employment
1	Health Care & Social Assistance	13.9%
2	Manufacturing / Processing	10.9%
3	Retail Trade	10.4%
4	Accommodation & food services	10.2%
5	Finance & Insurance	6.3%
6	Administrative & Support Services	5.9%
7	Wholesale Trade	5.5%
8	Professional & Technical Services	5.1%
	% Employment	68.1 %
% of Payroll	64.9%	% of Establishments 67.2%

Figure 3: Age Profile of North Kentucky (including Jefferson)

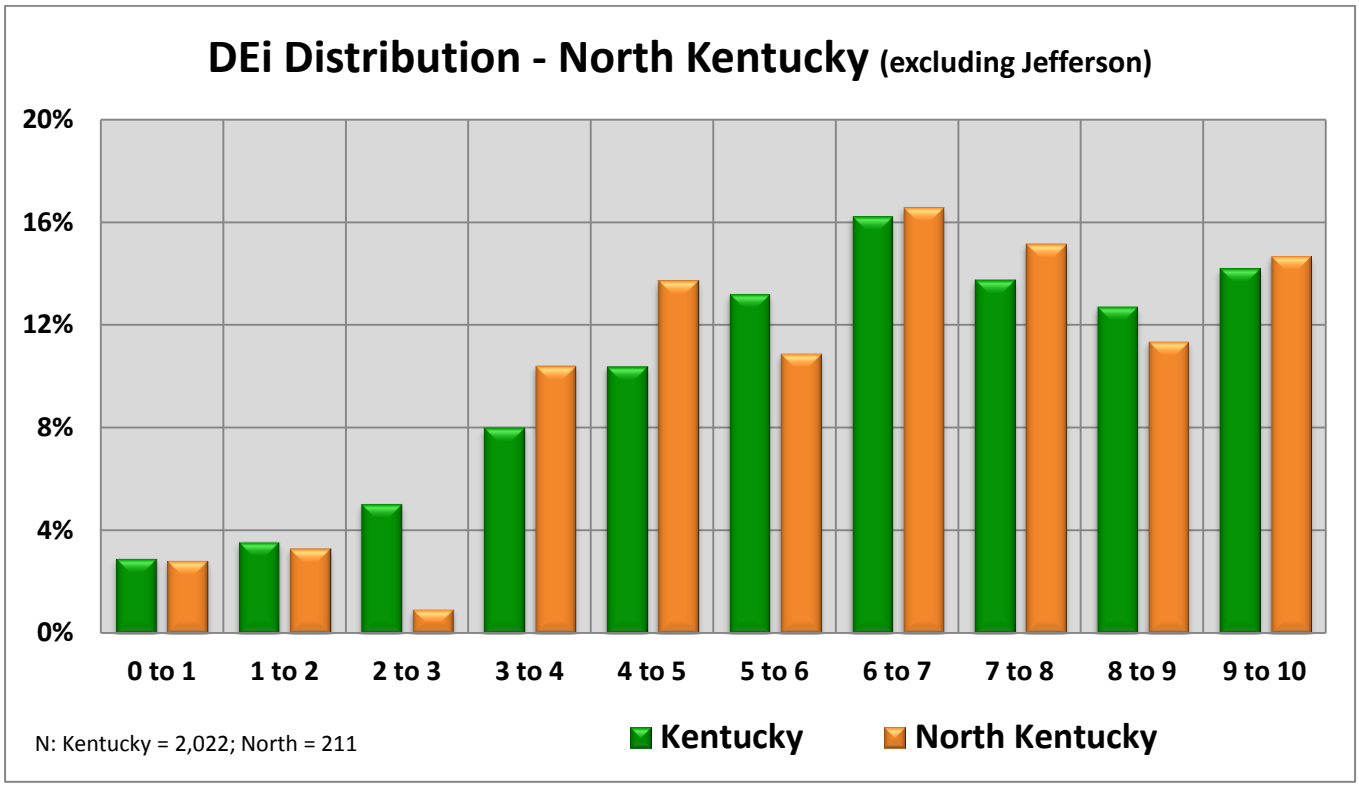
Age Distribution of Adults	North	Statewide
18 to 34 years	22.4%	22.6%
35 to 49 years	21.3%	20.7%
50 to 64 years	19.7%	19.8%
65 years and over	12.3%	13.3%

Utilization by Organizations in North Kentucky

Internet utilization by organizations in North Kentucky is moderately higher than the state average. The median Digital Economy Index (DEi) for North Kentucky (excluding Jefferson) is 6.6 compared to the statewide DEi of 6.41.The profile of utilization levels from low (1) to high (10), mimics statewide patterns.

Median DEi Score		
Kentucky	North Kentucky (excluding Jefferson)	Ranking by Region
6.41	6.60	N/A

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as seen below:

Figure 5: Internet Utilization by Employment Size: North Kentucky (excluding Jefferson)

Organizations by Number of Employees	Kentucky DEi (Median)	North Kentucky DEi (Median	Sample Size North Kentucky
1 to 4	5.83	6.31	71
5 to 49	6.41	6.56	98
50 to 99	6.8	6.85	21
100 or more	7.38	7.57	25
All Size Ranges	**6.41**	**6.6**	**215**

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 93.2 percent of organizations in North Kentucky.

Figure 6: Share of Labor Force by Size of Organizations (including Bluegrass)

Number of Employees	North Kentucky
1 to 19	82.8%
20 to 49	10.4%
50 to 99	3.7%
100 to 499	2.8%
500 or more	0.3%

It is usually very informative to look at which industry sectors vary in their Internet utilization levels from state-wide averages and how they compare to the other regions. However, for the most part, the North Region does not exhibit any notable gaps (the only region without gaps The following industries show relative **strength or weakness within North Kentucky** in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
North Kentucky	• Professional & Technical Services • Information Services • Public administration • Health Care & Social Assistance	• Manufacturing • Other services

The following table summarizes utilization for major industries within North Kentucky (according to DEi scores) and compared to the state average, as well as the region's ranking among the five regions.

Figure 8: Summary of Utilization Levels by Industry Sector (North Region including Jefferson)

Major Industry Category	Statewide	North Kentucky (including Jefferson)	Rank Compared to Other Regions
Finance & Insurance	7.5	7.43	4
Information	6.9	7.69	1
Educational Services	6.7	6.71	3
Manufacturing / Processing	6.6	6.38	2
Retail Trade	6.4	6.53	2
Other services (exc. public admin)	6.3	5.85	5
Professional & Technical	6.2	6.93	1
Wholesale Trade	6.2	6.51	2
Construction	5.8	6.44	1
Health Care & Social Assistance	5.7	5.93	1
Public Administration	5.2	5.71	1

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for North Kentucky, grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential. In North Kentucky there are no large gaps in utilization – the only region in Kentucky without significant gaps. Nonetheless, it can be noted that the manufacturing sector showed below average performance and is the region's second largest sector.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	North Region Variation from State Average	Sector Size - Rank within Region	Growth Expectation
Health Care & Social Assistance	**0.2**	**1**	↑
Manufacturing / Processing	**-0.19**	**2**	↑
Retail Trade	**0.17**	**3**	↑
Finance & Insurance	**-0.04**	**5**	
Wholesale Trade	**0.29**	**7**	↑
Professional & Technical Services	**0.69**	**8**	↑↑
Construction	**0.6**	**10**	↑↑
Information	**0.79**	**12**	↓
Public Administration	**0.54**	**n/a**	
Gap 1 (0.6 or more below the state DEi)	**0**		
Gap 2 (0.6 to 0.3 below statewide DEi)	**0**		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate significantly higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in North Kentucky are similar to the rest of Kentucky, with privacy, slow Internet and lack of internal expertise the most frequently cited.

Figure 10: Barriers to Adopting Internet Applications and Processes (excluding Jefferson)

Barriers to e-Solutions - % Saying Important	North	Statewide
Privacy concerns	**75.4%**	71.4%
Available Internet is too slow	**63.4%**	59.2%
High cost of development/maintenance	**49.7%**	45.8%
Lack of internal expertise and knowledge	**49.7%**	41.5%
Suppliers not ready	**46.1%**	45.8%
Loss of personal contact with clients	**43.5%**	45.1%
Security concerns	**31.4%**	28.7%
Uncertain about benefits	**29.8%**	24.6%
Internal organization resistance	**26.7%**	28.7%
Products not suited to Internet sales	**23.0%**	24.9%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in North Kentucky were more impressive at 67.5 percent, though this came from a relatively small sample of thirty nine.

Figure 11: Job Creation and Internet Use in Commercial Enterprises

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
North Kentucky	1,582	342	231	67.5%	39
Kentucky	15,657	1,731	593	34.3%	401

Households in North Kentucky

Utilization of the Internet by households in the North Kentucky is significantly higher than the state average. The overall Digital Economy Index (DEi) for households in North Kentucky is 6.54 compared to the statewide DEi of 6.1.

Figure 12: Utilization by Households: DEi Score for North Region, excluding Jefferson

	Average DEi Score	Rank	Difference from Average	Households in Sample
North Kentucky	6.54	**N/A**	+.44	413
Statewide	6.1			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to higher household utilization in North Kentucky. With a slightly younger and significantly more affluent population, it is no surprise that North Kentucky has households with above average computer skills and above average utilization. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups.

Figure 13: Impact of Age and Income on Internet Utilization (excluding Jefferson)

North Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**6.08**	**6.59**	**6.15**	**7.07**
35 to 54	**5.05**	**6.75**	**6.86**	**7.88**
55 to 64	**6.35**	**5.28**	**6.09**	**6.60**
65 years and over	**3.80**	**5.35**	**6.11**	**6.58**

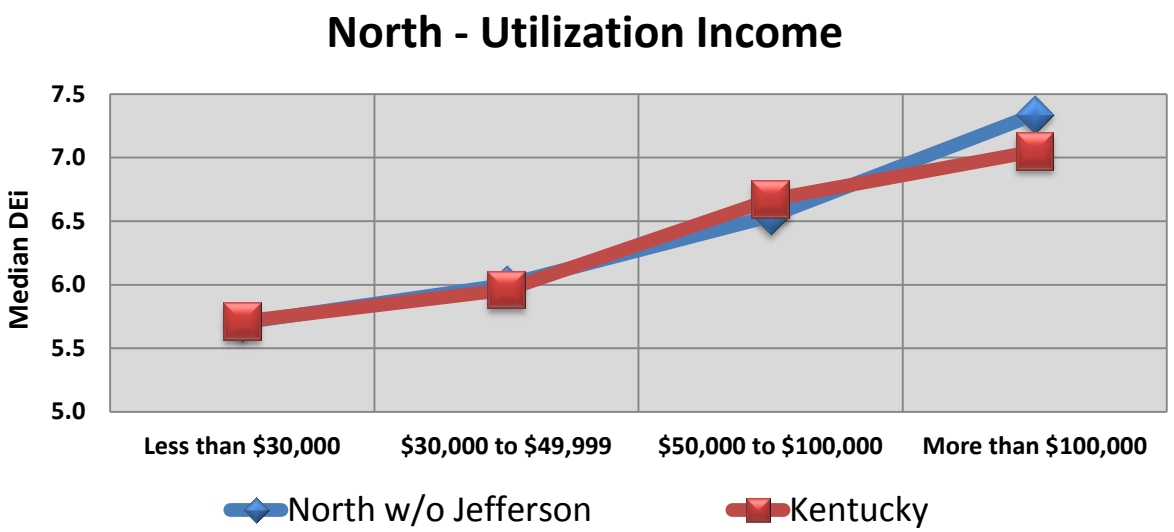
Figure 14: Computer Skill Levels (excluding Jefferson)

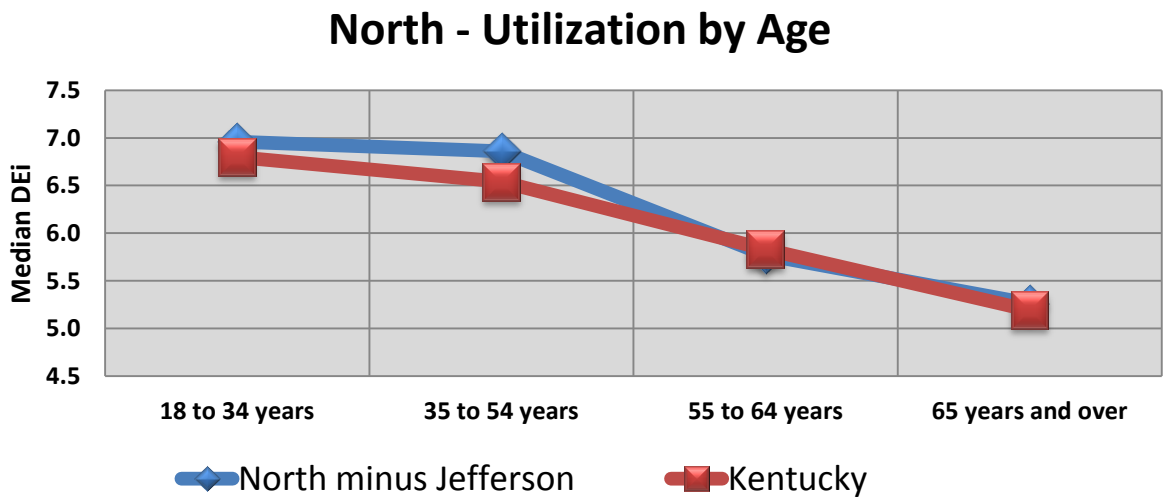
	Expert user	Use computers with confidence	Know the basics
North Kentucky	26.5%	59.6%	13.4%
Statewide	25.6%	59.9%	14.1%

For North Kentucky, 13.4 percent of households “know only the basics” in computer skill. North Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the

greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: North Internet Utilization Levels by Age and Income





Use of Internet for Productivity

In terms of productivity, households in the North region show above average utilization for most work oriented activities, including telework, home-based businesses, and accessing their work place from home.

Figure 16: Percentage of Households Using the Internet for Productivity (excluding Jefferson)

North Kentucky	% Currently Engaged In	Statewide Average	Variance from State Average
Accessing workplace	56.1%	55.6%	+0.5%
Home business	26.1%	20.8%	+5.3%
Telework	26.1%	20.8%	+5.3%
Education or training	40.5%	45.9%	-5.4%

Focus on Project Area Priorities

The North Region has identified improving broadband infrastructure along the 1-71 Corridor to world-class standards as its priority focus. This profile provides some insights into current connectivity within the region. Readers should keep in mind that the sample sizes are relatively small and should be used with caution. Nonetheless, the data on this priority area is suggestive and worth consideration.

According to the 63 responding organizations from the five counties of Carroll, Gallatin, Henry, Oldam and Trimble, their level of satisfaction with speed and reliability of connections is comparable to the state average. Only a relatively small percentage of respondents stated that their connection had frequent reliability problems (11.1%) or was not fast enough (14.3%). In contrast, over 60% stated that available Internet was too slow and constituted a barrier to adopting new applications and processes. This discrepancy can partly be explained by the fact that many respondents who rate their own connection as “very fast” or “fast enough” with always excellent reliability still say that there is a need for faster and more reliable Internet service. In addition, respondents from the five counties were disproportionately from smaller businesses with less than 20 employees.

Appendix VII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of

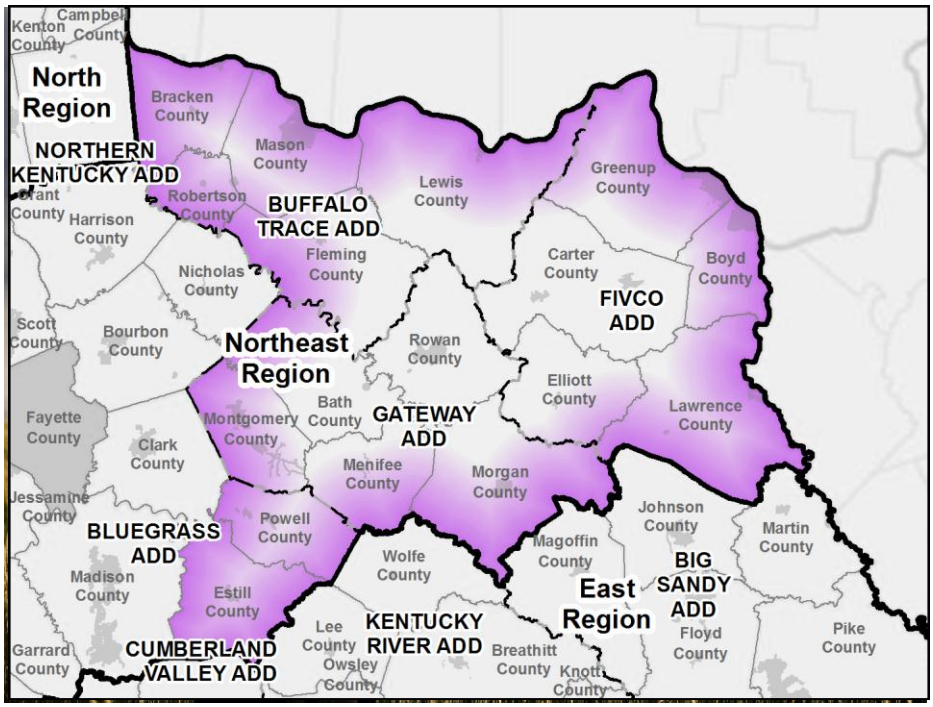
applications currently being used by an organization or household, a composite score is calculated that summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.

Broadband *KY*

Improving Broadband Access and Utilization for Businesses in Northeast Kentucky

(FIVCO, Buffalo Trace, and Gateway Area Development Districts)



This report is based on input received from FIVCO, Buffalo Trace, and Gateway Area Development Districts and regional stakeholders and was prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

March 19th, 2013

Prepared for:

Commonwealth Office
of Broadband Outreach and Development
&
Kentucky Northeast Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

Table of Contents

INTRODUCTION **3**

1. EXECUTIVE SUMMARY **5**

2. PURPOSE AND FOCUS **7**

3. CORE PRINCIPLES **8**

4. WHY BROADBAND MATTERS: *BENEFITS OF BROADBAND INVESTMENTS* **8**

5. CURRENT STATUS: *HOW IS NORTHEAST KENTUCKY DOING?* **10**

5.1 Broadband Access 10

5.2 Internet Utilization 14

6. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS **17**

7. STRATEGIES AND RECOMMENDATIONS **20**

7.1 Recommendations for Building Local and Regional Leadership and Capacity 22

7.2 Improving Small Business Utilization of the Internet 25

7.3 Improving Broadband to Commercial and Industrial Areas 27

8. ACTION PLAN FOR BROADBAND IN NORTHEAST KENTUCKY PROJECT AREA **30**

9. METRICS FOR TRACKING PROGRESS AND IMPACTS **33**

Appendix I - Steps for Local Planning for Broadband Availability 36

Appendix II - Programming Considerations --Internet Utilization by Small Businesses 44

Appendix III: List of Resources 46

Appendix IV: .Contributors to this Plan 48

Appendix V - IPA Workshop Meeting Notes:Northeast Region 49

Appendix VI - Project Area Scope of Work 52

Appendix VII - Project Area Profile: Northeast Kentucky 54

Appendix VIII: Glossary 63

Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - KY -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been this strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide at a local level are paramount.

In the Northeast region project area (FIVCO, Buffalo Trace, and Gateway Area Development Districts), the regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. Since then, the planning process has been progressing through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

As a result of the planning process noted above, to address the priorities identified by the Regional Work Group and the Stakeholders, three objectives have been established and documented in this plan:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level.
2. Improving **small business utilization of broadband** to assist in economic development.
3. Improving **competitive broadband services** in industrial parks and commercial clusters.

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in unserved and underserved communities*, especially areas with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and

also provides information on how to build momentum around Broadband initiatives in the project area. Recommendations will be scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the timeline in the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholder focus is on activities that are within the resources available, while providing for more ambitious actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic planning report can be found in sections 7.1, 7.2, and 7.3.

Section 8 provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, timelines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of components within the plan (from Section 8), and the degree to which each component has produced tangible results.

2. Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses, and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters;
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI[1] Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the Northeast Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level --driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are unserved and underserved[2] by broadband services, as well as in populations that are underutilizing the Internet.

[1] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[2] NTIA definition - *Unserved* and *Underserved:* "***Unserved***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***Underserved*** for Last Mile Projects: "An area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

This Broadband Planning document has the following purpose:

- Defining a Strategic Framework for Planning
- Assessing the current state of broadband access, adoption and awareness in Northeast Kentucky
- Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Unserved" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

In the case of government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of government moving services to the Internet, those who do not use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, Broadband (see page 10 for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community to compete for skilled labor that will not move to an area without broadband. The implication is that those areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[3] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the report underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** the Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** the Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased use of the Internet results in a growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization is not equally present across Kentucky, as explored in the next section of this report. The relatively low level of broadband availability, adoption and use in Kentucky[1] has a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[4]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it is access to the Internet, adoption of the Internet or productive use of the Internet. The following sections provide information and strategies to help local and regional leaders in addressing these challenges.

---

[3] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: Northeast Kentucky,*** *(Appendix VII)***.**

[4] The 2012 SNG report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

5. Current Status: *How is Northeast Kentucky Doing?*

Given the importance of broadband to the current and future health of Northeast Kentucky, its communities, residents and businesses, it is important to assess Northeast Kentucky's situation regarding broadband availability and utilization. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in the Northeast Region is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households, and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at Northeast Kentucky performs in terms to access to the Internet relative to both national and Kentucky targets. This assessment will need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "broadband" comes from the National Broadband Map of the National Telecommunication and Information Administration web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the 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." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second***[5]. For the sake of consistent use of terminology, the FCC has defined the following "Internet speed tiers".

TABLE 1: FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

[5] http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf (page 3). "Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

Table 2: FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and tele-learning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

In its National Broadband Plan of 2010, the FCC identifies 4 MBPS as the short-term target for download speed in communities nationwide. While current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

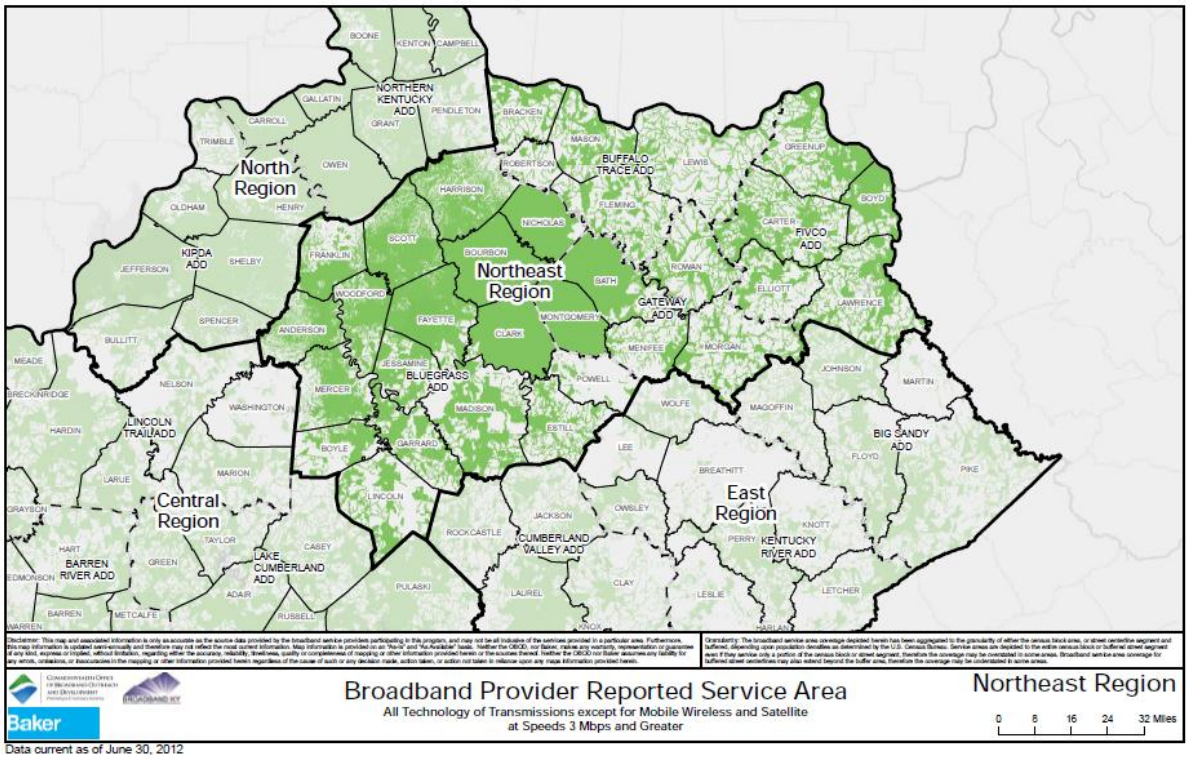
The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online:

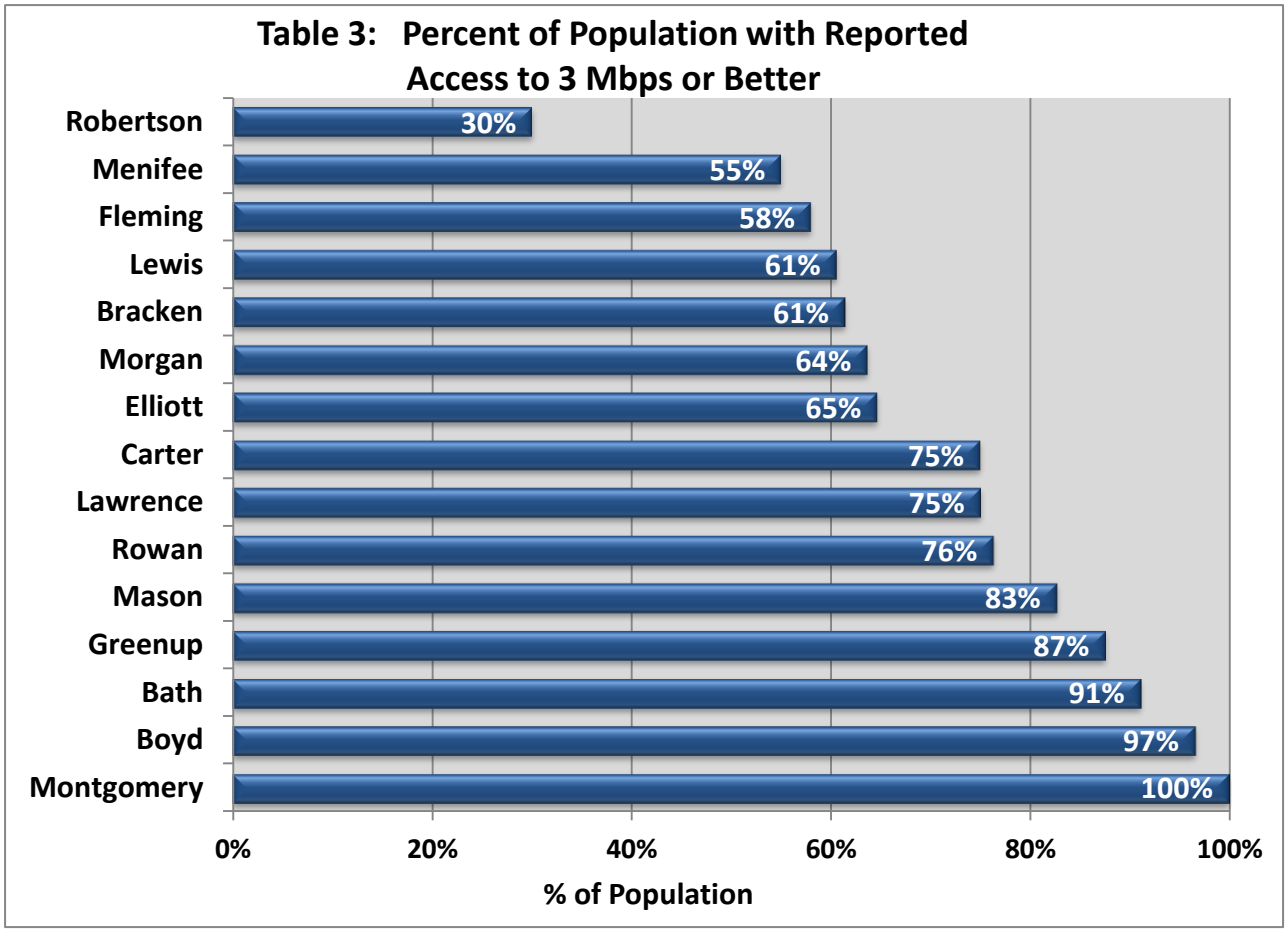
http://www.bakerbb.com/kybroadbandmapping/

During the broadband planning workshops, participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

According to Kentucky SBI provider data, twelve out of the fifteen counties in the Project Area have less than 90 percent coverage at the target of 4 Mbps. Seven counties have less than 70 percent coverage at this speed. The information provided is current as of January 1, 2013.

Figure 1: Broadband Provider Reported Service Area – 3Mbps or Greater





Broadband coverage is becoming more complex with the growth of mobile wireless coverage and the increasing use of smartphones accessing the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual. For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access

(redundancy) to the Internet becomes a major consideration in locational decisions. Lastly, there are many organizations (and households) whose demands on their Internet access require more speed than "just basic broadband".

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as a competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

5.2 Internet Utilization

Organizations differ in their utilization of broadband and Internet infrastructure. Turning potential into reality requires skills, training, and both formal and informal support, in addition to access to broadband connectivity. The data and analysis contained in the Broadband KY *e*-Strategy Report show that productive use of the Internet is related to the size and density of a community or region, the types of industry sectors that make up its economy, the level of diversification of its economy, and the income, age and education of its citizens.

While there are no national data sets that allow for regional comparisons of Internet utilization, several in-state research efforts have been carried out, including one in 2012 in Kentucky. Results from these various states show a relatively consistent picture of how the digital divide continues to manifest itself once adoption has happened. The benchmarking of Internet utilization in 2012 identified where the digital divide manifested itself in Kentucky.

<u>The key findings were:</u>

- **Internet utilization by organizations** in Northeast Kentucky is moderately lower than the state average (see table, next page).
- There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations in the Northeast Region have low levels of Internet utilization when compared to both larger organizations and to the Kentucky average for small organizations.
- Smaller organizations represent a key opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in the Northeast Region (see table below).

- Organizations outside of metropolitan areas[6] have, on average, significantly lower utilization levels than those in a metro region. Organizations outside of a metropolitan area usually do not benefit from the dense network of supports and a large skilled labor pool.
- Utilization of the Internet by households in the Northeast Region is close to the state average.
- For households, the dynamics of the digital divide in Internet utilization are very similar to those with Internet adoption. Lower Internet utilization is typically associated with households that are lower income, older, less well educated and non-metropolitan. While there is a consistent increase in utilization that tracks increased income, the most dramatic drop in utilization occurs among the oldest age group (those over 65), especially seniors with household incomes under $30,000.

TABLE 4: Share of Labor Force by Size of Organizations

Number of Employees	Northeast Kentucky
1 to 19	87.4%
20 to 49	7.8%
50 to 99	2.7%
100 to 499	1.9%
500 or more	0.2%

Internet Utilization (DEi[7]) by Employment Size: Northeast Region

Organizations by Number of Employees	Kentucky DEi (Median)	Northeast Region DEi (Median)	Sample Size Northeast Region
1 to 4	5.83	4.71	35
5 to 49	6.41	6.16	71
50 to 99	6.8	7.14	15
100 or more	7.38	6.70	13
All Size Ranges	**6.41**	**6.02**	

[6] A metropolitan area is defined by the Census Bureau as having a core urban area of over 50,000 with a population density greater than 1,000 people per square mile. A Micropolitan area has a population of 10,000 to 49,999. A small town has a population of 2,500 to 9,999. The category of "isolated small town" includes the remainder.

[7] The Digital Economy index (DEi) reflects an organization's utilization of 17 Internet applications and process. Based on the number of applications currently being used by an organization or household, a composite score is calculated. An organization's score (from 0 to 10) captures their Internet utilization, with 10 being the highest possible use. **The Color Coding for DEi Scores:** To better show how sectors perform, the DEi tables in this report are color coded from the highest (**green**) to lowest (**red**) to highlight how DEi scores compare. **The color coding** (**green to red**) allows one to quickly compare groups based on how utilization varies.

Lower utilization levels have important impacts on the overall benefits from Internet access by users (household or business) and their communities. Households with higher utilization levels demonstrate higher use activities that produce household income, through both teleworking and home-based businesses. Businesses with high levels of utilization report noticeably higher levels of revenue generation from the Internet.

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals for the Commonwealth of Kentucky:

a) Communicating the value of internet access to improve the lives of all citizens;
b) Accelerating the expansion of sustainable Broadband access, participation, and adoption by citizens and businesses in the digital economy and society;
c) Promoting Broadband use to be globally competitive and to enable a better economy;

The preceding section has shown that the current situation in Northeast Kentucky falls short of meeting these goals. If Northeast Kentucky is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	Weaknesses
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Improved potential from wireless services (fixed and mobile)	Low density population in unserved rural areas Poor business case for conventional solutions Lower interest among some incumbent ISPs Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Fixed and mobile wireless technology Greater provider collaboration Public-private partnerships Renewed interest from incumbent Providers	Economic uncertainty Global competition eroding local economic base Fiscal constraints on all levels of government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.

- The increased technical capacity of both fixed and mobile wireless have provided some previously unserved or underserved areas with cost effective Internet access.

Weaknesses

- Many of the unserved rural areas in the Northeast region have low population densities and challenging topography.
- Unserved or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.
- The dynamics described in preceding points may mean incumbent ISPs are less motivated to expand landline services in unserved and underserved areas.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing “vertical assets”, fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently unserved or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds. . Kentucky SBI data also shows fixed wireless technology as having the fastest growth in 2012.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently unserved or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.
- Provider interest and participation during the Northeast Region IPA workshop, and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.

Threats

- Residents in unserved communities may lose access to public and private services that increasingly are available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, this planning document is designed to assist the Commonwealth with the implementation of the following two goals:

- Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
- Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals in the Northeast Region project area.

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to inform communities and regions of initiatives on broadband access, adoption and improved utilization.

In pursuing change, this Broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and,
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to “Unserved” and “Underserved” areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level.
2. **Improving utilization of the Internet by small and medium enterprises**, leading to economic development and related benefits in the region.
3. **Improving access to competitive broadband for commercial enterprises and industrial parks** in the region.

The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of financial and non-financial resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction set out in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.***

Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- **Initial:** Related to project initiation and intended to be completed over the first 1 to 2 months.
- **Short-term:** Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- **Medium-Term:** These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, some may be subject to obtaining the required resources, which may need additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Example of Implementation Timeline for Recommendations in Section 7

Approximate Recommendations Timeline						
Recommendations	Month 1	Month 2	Month 3	Month 4	Month 5	Project Duration
Objective 1:						
Initial	Commence at 45-60 Days or Less		Some Require Ongoing Effort			
Short Term			Commence at 2-4 Months or Less		Some Require Ongoing Effort	
Medium Term					Commence at 4 Months or Less	
Objective 2:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less
Objective 3:						
Initial		Commence at 1-3 Months or Less		Some Require Ongoing Effort		
Short Term				Commence at 3-5 Months or Less		Some Require Ongoing Effort
Medium Term						Commence at 4 Months or Less

The detailed recommendations are found below in sub-sections: 7.1, 7.2, and 7.3

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the Northeast Region project area, the Area Development Districts have identified themselves as leaders with organizational capacity to manage the broadband initiative in their region. The ADDs bring the following abilities to the broadband initiative:

- An organizational structure and network of elected officials and stakeholders
- Local knowledge of the area and its priorities
- Ability to work with communities to identify unserved and underserved households at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In addition to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the project area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.
- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.

- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Build a regional leadership group that draws on the Morehead State Small Business Development Center, Chambers of Commerce, regional Internet Service Providers and other organizations. The regional body will support three working groups for each of FIVCO, Gateway and Buffalo Trace. The three Area Development Districts will provide organizational support and active leadership in harnessing stakeholders, identifying localized needs, and writing proposals for funding. The core groups will expand as interest from other organizations and communities is developed.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to orient them about Broadband, the available resources and how they can improve broadband availability and/or enhance Broadband opportunities in their community.
e) Develop tactics that fully leverage State Broadband initiatives.

Medium Term Recommendations:

<u>In addition to the above:</u>

f) Organize a series of webinars or face-to-face workshops to assist local community leaders in the project area in developing local broadband planning and outreach priorities on broadband for education or through expanded public access.
g) Facilitate a peer-to-peer support group among community leadership;
h) Provide technical assistance on issues related to improving broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in broadband initiatives, they will encounter issues requiring expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

As the project develops, the regional body should consider establishing a sub-committee of Broadband Service Providers. Working with Provider-specific groups builds high-value collaborative and trusting relationships over time. This approach has been proven successful in community programs across the country and has also been instrumental in attracting private capital for network build out.

Checklist for Developing Community Leadership

Individual leadership

- Community leaders and elected officials understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational leadership and capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support for a broadband initiative.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potential groups to be targeted.***

7.2 Improving Small Business Utilization of the Internet

The Northeast Kentucky Working Group identified improvement of small business utilization of the Internet as a priority broadband planning issue for the region. As a starting point, ***this plan defines the scope of the initiative by defining the target group as not only incorporated businesses, but also micro and home-based businesses.*** This more broadly defined group shares the common goal of generating income from for-profit entrepreneurial activities. This group also shares similar challenges of limited financial and human resources as well as specialized skills.

With the goal of improving the level and effectiveness of Internet utilization by small businesses, the following are **recommended strategies** for the Northeast Region:

Recommendations for Improving Small Business Utilization of the Internet

Initial Recommendation:

a) Develop a work plan with tactics that support the region's strategy and includes moderate to high levels of effort depending on the level of energy, commitment and resources available. The work plan should be scalable, and based on integrating new resources and activities recommended in this plan into the current programs and activities of organizations that already support small businesses in Northeast Kentucky. The work plan should address the distinct needs and barriers facing business with only basic Internet skills and those that have more developed skills but still have not adopted the more advanced Internet applications and processes (see section on "programming considerations" for more on this issue).

Short-term Recommendations (to maximize existing resources):

b) Develop and maintain a resources/communications "directory" for the small business community in the project area. This can include local and regional private sector consulting services firms, tech developers as well as regional ISP's.

c) Organize and conduct a series of training workshops or tech "forums" for small businesses in participating communities. The workshops will review barriers and opportunities facing small businesses in their use of the Internet. A brief review of these issues is found in Appendix II. Use the workshops to identify technology challenges for small businesses/entrepreneurs specific to the region with assistance from the Small Business Development Center(s).

Medium-Term Recommendations:

d) Develop on-site training sessions for small businesses, both group and one-on-one.

e) Develop a mentoring program for small businesses, focused on better use of the Internet. Key elements of the mentoring program would include: design of program elements (matching process, mutual expectations, problem solving and impact tracking); recruitment of knowledgeable Internet users willing to act as mentors; outreach to small businesses wishing to link-up with a mentor; and, actively involving Provider/ISP's for participation and support.

f) Organization of an annual conference that highlights Internet Service Providers (ISPs), and Internet applications for business - cloud solutions, training, etc.

7.3 Improving Broadband to Commercial and Industrial Areas

Participants in the planning workshops stated that some industrial and commercial areas in the Northeast Region lack access to competitive broadband. Nonetheless, communities in the region have the potential to develop the leadership and commitment to achieve the broadband they need. A regional body is needed to recruit and organize this potential in a planned and strategic manner.

Many of the strategies and activities needed to address the inadequacies of current broadband services to commercial areas are covered in Appendix I, which provides a detailed process for improving broadband at a local or regional level. ***It is recommended that the leadership group develop its detailed work plan by drawing on this process.***

Prior to developing a detailed work plan, the group should determine the level of fragmentation or concentration of existing and potential demand for advanced Internet services. This task is critical in understanding the level of "effective demand", which forms a critical part of any business plan for enhancing broadband services to these areas. Understanding the geographic footprint of effective demand, as well as the disparity between effective demand and current broadband services, are key steps in the preparation phase described in Appendix I. Completion of this task will also help identify the potential for aggregating demand by geographic area and initiating discussions with Internet Service Providers that can potentially serve that area.

The following are the recommendations for addressing availability of competitive broadband in commercial areas:

Initial Recommendations:

a) Determine standards for competitive broadband, as they would apply to the region. An initial step in defining these standards should include identifying the characteristics of existing and projected broadband services in the areas in and around Lexington. Identification of these characteristics will assist in developing targets for new broadband services to be developed in the region.
b) Leverage Provider participation on the regional and local sub-committee level to discuss availability issues in the project area, to solicit on-going input from the group (recommendations **c** and **d** below), and to begin broadband-specific collaboration with Providers to improve communication and find ways to collectively improve availability.

Short-Term Recommendations:

c) Identify the level of fragmentation and concentration of existing and potential demand for advanced Internet services in industrial parks and commercial clusters. Actively aggregate this demand as a key source of information for project leadership, stakeholders, and Providers. This step will include thoroughly assessing existing and potential commercial locations in the project

area, with specific criteria and a template to "inventory" all input in a consistent manner – to build a database and periodically update and grow it for use among all participants in the project area.

d) Based on the findings of the assessment described above, develop actions and tactics that build on the process and activities laid out in Appendix I. The actions should allow for funding and other project contingencies.

The diagram on the following page provides a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified in the diagram are explored in greater detail in Appendix 1.

1: Preparation

- Develop Leadership
- Establish preliminary objectives and priorities
- Identify assets and key data

2: Engaging Internet Services Providers (ISPs)

a) Identify ISPs
   - Existing ISP(s): as backhaul or last mile
   - Adjacent ISP(s)
   - Regional ISPs

b) Determine Level of ISP Interest
   - Informal approaches
   - Request for expressions of interest (RFI)
   - Qualify Interested ISPs: Due diligence (capacity, references)

3: Refine Objectives and Relationships

a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
   - Support ISP as sole provider
   - Outline Public Private Partnership as solution
   - Local government or NP entity as provider

4: Make Commitments

a) Secure funding
b) Commit funding
   - Request For Proposals (unless direct award)
   - Contract Negotiations

8. Action Plan for Broadband in Northeast Kentucky Project Area

The action plan components included in this section are preliminary. They begin to outline the tasks, timelines, and responsibilities reflected in the recommendations in Section 7. It is expected that this outline will be adjusted with more additional detail as the plan is implemented, to reflect the availability of resources and with more information being developed for the work required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Leadership Groups (regional and ADD level)	Confirm involvement and level of commitment	ADDs, Chambers of Commerce, Morehead SBDC	Internet Service Providers (ISPs)	1	Establish committees and subcommittees
1b	Secure Funding Sources	Approach potential funders	Regional and local leadership		2 (ongoing)	Submit funding applications, research others
1c	Expand leadership (Community Level)	Recruit new community leaders & stakeholders	ADDs, Chambers of Commerce, Morehead SBDC	Muni government; local individual/ business stakeholders; commercial property owners; members outside of gov., ISPs	1,2	Leaders with focus on competitive commercial Internet services and small business Internet utilization
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	Regional and Add level leadership	K–12 Superintendents & principals; members outside of gov.	2	At least two webinar or face-to-face orientation session
1e	Develop tactics to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives	Regional and ADD level leadership	Local gov. or business contact w/PR skills and project interest	2	*e-Link to appropriate state web sites *Connect/coordinate with state on PR progress reporting
1f	Organize a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband	Regional and ADD level leadership	Morehead SBDC, tech companies/providers	Subject to resources	Community oriented workshops and webinars

		planning and outreach.				
1g	Establish peer support	Facilitate peer support for community leadership	Regional and ADD level leadership	Commercial businesses, local Gov., tech service providers , BB Providers	Subject to resources	Functioning community leadership peer group
1h	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	Regional and ADD level leadership	Commercial businesses, local Gov., tech service providers , BB Providers	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders

Objective 2: Improving Small Business Utilization of the Internet

Component		What	Initial Leadership	Other Stakeholders and Local Leadership	Month	Outcome
2a	Develop a work plan with tactics that builds on plan's recommendation & strategy	Detailed plan to address needs of small businesses.	Regional body with ADD level and local leadership		2	Agreed course of action with concrete commitments and tasks
2b	Develop and maintain a resources/contact list	Reach out to vendors and resources with invitation to be on regional list	Regional body	Larger firms in area, technology providers, Kentucky Chamber of Commerce.	2, ongoing	Database of information sources and technical advice from vendors and other resources.
2c	Organize & conduct educational presentations and workshops	Local delivery of group sessions to small businesses	ADD level working groups		2 ongoing	Improved use of specific tools or online resources by participating businesses
2d	On-site one-on-one training sessions	Delivery of training activities	ADD level working groups		Subject to resources	Improved use of specific tools or online resources by participating businesses
2e	Develop a mentoring program	Design and implement self-sustaining mentoring	Regional body and ADD level working groups		Subject to resources	Better interaction and improved "network" of business support
2f	Organization of an annual conference	Highlights Internet Service Providers (ISPs) and Internet applications for business - cloud solutions, training, etc.	Regional body with ADD level and local leadership		Subject to resources	Build strategic relationships with tech service Providers and business community

Objective 3: Improving Broadband to Commercial and Industrial Areas

	Component	What	Who	Other Stakeholders & Local Leadership	Begin *(Month)*	Outcome
3a	Determine standards for "competitive broadband"	Research other regions	Regional body	Service providers, property owners, economic development agencies	2 to 3	Definition of "competitive broadband" as applied to the Northeast Region
3b	Leverage the Provider participation on regional and ADD level working groups	*regularly discuss availability issues *solicit on-going input	Regional body and ADD level working groups	Providers with service in project area and others from region	2 & ongoing	*Input on fragmentation and demand aggregation; *collaboration on gaps *review and share SBI coverage data and State/Nationwide trends
3c	Determine fragmentation or concentration of demand	Conduct survey of commercial areas	ADD level	Education sector – students	2 to 4	Documentation of current and future "effective" demand relative to supply
3d	Develop action plan with tactics, along with funding contingencies	* Establish target areas * Establish 1 - 2 initial work areas	ADD level		4	*List of target areas, together with demand/supply data. * Work plan.

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Improving Small Business Utilization of the Internet**
3. **Improving Broadband to Commercial and Industrial Areas**

Building local and regional leadership & capacity		
Metric:		***Data:***
1a	Regional body and ADD level working groups are established and committees defined	• Creation of organizational parameters that define structure, mandate, accountability and membership. • Endorsement of group parameters is affirmed by key stakeholders.
1b	Secure Funding Sources	• Document names, contacts status of funders approached, • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State Broadband Initiatives	• Submitted & approved tactical plan
1f	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*
1g & h	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact

Improving Small Business Utilization of the Internet		Data
2a	Detailed action plan for both low and high levels of efforts	Completion of action plan.
2b	Resources/contact list	Production and circulation of list.
2c	Make educational presentations and workshops	Number of workshops and participants, including communities involved. (# TBD)
2d	Delivered on-site one-on-one training sessions	Number of workshops and participants, including communities involved. (# TBD)
2e	Deploy mentoring program	Establishment of program; number of mentors and participants. (# TBD)
2f	Conduct annual conference	Production of the event; number of participants, providers and small businesses. (# TBD)

Improving Broadband to Commercial and Industrial Areas		Data
3a	Defined standards for "competitive broadband"	Written statement on how to define standard of "competitive broadband"
3b	Leveraging Provider participation to regularly discuss availability issues in project area, solicit on-going input from the group on fragmentation and demand aggregation, begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability	• Document provider attendees, info exchanged, etc. • # of availability gaps by commercial area or industrial park • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for target areas projects) and collective provider "work plan" for problem solving
3c	Determination of fragmentation or concentration of demand	Databases with street level data, identifying geographic patterns of target areas and levels of existing and potential demand, as well as current level of service and broadband infrastructure
3d	Action plan with contingencies based on level of resources	Written plan

Impact Metrics

Impact Metrics measure overall benefit on Internet access in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improve broadband adoption and utilization by small businesses**
- **Improve competitive broadband in Commercial Areas**

Improve broadband adoption and utilization by small businesses		Data
1	Documented increase in skills among small businesses in project area	Assessment of skills levels and skills learned: tool to be developed.
2	Documented increase in utilization among small businesses in project area	Survey of participants

Improve competitive broadband in Commercial Areas		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I - Steps for Local Planning for Broadband Availability

The next few pages provide a detailed review of the process and tasks for local communities that want to expand broadband services in rural residential areas. It is useful to begin with some basic starting points.

- ✓ ***Begin with needs and goals, rather than solutions --*** Local and regional initiatives should not begin by assuming what the eventual Internet solution will look like, the appropriate scale of "build out", type of technology, type of ISP, or what the appropriate role of the local government should be. Instead, initiatives should address specific needs and the goals in the project area that ultimately lead to better solutions.

- ✓ ***Identify the specific needs and locations of the fragmented areas.*** Local needs and goals need to be supported with actual information on-the-ground that identifies problem areas and certain local asset information on a map, as well as aggregating the "demand potential" for underserved and unserved populations. This can become powerful information to empower and inform local leaders, and help facilitate ISP partnerships.

- ✓ ***Include, inform, and attract local leadership***. Local elected officials, economic development organizations, small business, and other active energetic leaders in the community. The educational sector has often played an important role in providing leadership and a clear rationale for making local broadband initiatives a priority. The educational sector has particular value with access to students who could be involved in documenting current and potential Internet service and demand.

- ✓ ***Consider Internet Service Providers (ISPs) as partners.*** A major point of feedback from Providers is that communities and local governments often see them as an "outsider" or only as a potential source of revenues, rather than as a partner in achieving community goals. Providers are a lot more willing to spend time exploring options with friendly communities than with those who place obstacles in their path. While a community may or may not find an attractive ISP to partner with, they should start by considering potential ISP partners. Facilitating a consultative relationship with ISP's as partners opens up an essential communication channel for the longer term of this project and enables the Broadband team to tap into a valuable resource of information on technology, equipment, and network maintenance & expertise – *the business of broadband.*

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were unserved or underserved. However, in many cases unserved or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [8]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:

- **Target population or organization(s):** location (topography), number and age of households (rural residential), density, and income/budget.
- **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
- **Pole access**: pole owner, pole type, attachment capacity, cost.
- **Rights of Way** – can be used to expedite/reduce cost of conduit placement
- **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
- **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
- **Land** – that can be used for tower construction/locating points of presence, etc.
- **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.
- **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.

[8] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government that supports a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in its community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[9]

[9] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:
   - By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
   - By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

   In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

   At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for

encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer. Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, is market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable and projected revenues will cover expenses. Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.
   - A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
   - Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
   - Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used to attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.

- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:
   - ***Aggregating existing demand and purchasing power in the form of guaranteed contracts*** can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

   - ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html) continue to provide federal grant opportunities. The Connect America Fund is still in its early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

   - ***Funding mechanisms of Kentucky*****:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

- ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require the skills to enter into complex contract negotiations with an ISP.

Appendix II - Programming Considerations for Improved Internet Utilization by Small Businesses

By drawing on data on who is struggling to utilize the Internet, business-user motivations, barriers and learning preferences, it is possible to design a broadband utilization initiative that supports local economic development. The key elements to be considered in designing local broadband utilization initiatives may include:

- Increasing awareness among target groups through outreach, assessment, and presentations.
- Providing access to online and off-line resources that address the interests/needs of the target group.
- Providing personalized support in the form of one-on-one counseling, mentoring, and vendor tech events.
- Leveraging local and regional Provider/ISP resources for developing and promoting the power of business internet use though specific ISP "forums".

Initiatives targeting increased Internet utilization by local businesses need to be based on an understanding of how organizations acquire the skills needed to become proficient in "e-solutions"[10]. Research shows that small organizations are likely to feel that there is no skill shortage (even though they are on average lagging larger organizations). The key point is that many ***small businesses need to be made more aware of the potential benefits of the Internet***. Awareness efforts can consist of outreach (electronic or personal), free online assessments, blog messaging, leveraging other social media for push messaging to mobile devices of small business owners, and issue specific presentations where small businesses already participate (Chambers of Commerce).

Once a business has been motivated to explore ways to more productively utilize the Internet, it is important that skill enhancement efforts be designed to fit the skill acquisition preferences of the "student". Larger businesses use hiring of appropriately skilled staff, hiring of external contractors, and training of existing staff. With less financial resources, smaller businesses rely more heavily on training existing staff. ***If small businesses are a main target group, then initiatives need to consider in-service training as a core feature.***

If training existing employees is the preferred method of skill acquisition among small businesses, which learning methods are preferred? Self-directed learning methods are strongly preferred over classroom and even online courses. Access to service vendors, live webinars and in-person sessions are also attractive and emphasize the importance of the "personal touch" to many small business people.

[10] e-Solutions refer to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

The last piece of the design puzzle consists of the content of the learning opportunities. Much of the material on the Internet is targeted at individual consumers and usually relates to generic digital literacy and rarely deals with business applications. Moreover, those Internet resources targeted at businesses are highly fragmented and often consist of higher end services targeted at larger businesses. If utilization efforts are to be effective they need to speak to issues facing their target group.

Broadband KY's Benchmarking Research in 2012 indicates[11] that there are at least two distinct sub-groups that could be targeted with broadband utilization initiative: the novices and the experienced but not yet sophisticated. The novices have adopted the Internet but are still learning the basics (or have been stuck using only the most basic applications). The more experienced group has adopted many Internet applications but wants to learn more, especially in areas that promise to have a tangible impact on their business. ***For the novices, priority should be given to "quick and easy wins" -- applications and activities that are quick and relatively easy to adopt, such as:***

- ***research;***
- ***electronic document transfer;***
- ***accessing government information;***
- ***building a basic website; and***
- ***Purchasing goods and services online.***

It is notable that there is a strong linkage between the "easy to adopt" processes for businesses and those Internet based activities that households are most likely to adopt early. Therefore, developing skills within households is beneficial to businesses.

Activities and applications of potential interested to the more experienced user would include:

- ***teleworking, selling online, and online commerce;***
- ***delivering services or content online;***
- ***Advanced website with rich media or service creation.***

Quick to adopt / adoption rates		Slow to adopt / adoption rates	
Research by staff	91.8%	Teleworking	34.4%
Electronic document transfer	91.8%	Selling goods or services	34.4%
Access government information	85.0%	Deliver services or content	20.8%
Web site	81.7%	Rich media or service creation[12]	18.0%
Purchasing goods or services	79.2%		

It is also recommended that learning materials and opportunities address the number one barrier cited by all businesses: concern over security and privacy.

[11] **Broadband KY e-Strategy Report,** May 2012, pages 25 to 28.

[12] Rich media describes Web pages that use advanced technology such as streaming video, downloaded programs that interact instantly with the user for advertising.

Appendix III: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Local Government Economic Development Program (LGEDP) --
http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) – Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency –
Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY **...**,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280

NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center (TATRC)**, located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)
School Turnaround AmeriCorps FY13
http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity

The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix IV: Contributors to this Plan

This Plan was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for Northeast Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the Northeast Kentucky region's project area, consisting of the FIVCO, Buffalo Trace, and Gateway Area Development Districts, this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the three ADD regions were contacted about the Broadband planning initiative. Many were invited to provide input and participate in the two workshops. A list of organizations that were consulted as part of the development of this plan is available through the KC-ADD office.

Appendix V - IPA Workshop Meeting Notes: Northeast Region

October 30th, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the Northeast Region of Kentucky, focusing on ***Northeast Kentucky (Buffalo Trace, Gateway and FIVCO Area Development Districts)***. The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This documents draws on notes taken by KCADD, Baker and SNG staff.

Brian Kiser convened the meetings and introduced the project team members and working group members before asking attendees to introduce themselves around the room. Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies.

Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. He also summarized the challenges Kentucky faces in Broadband adoption and utilization. Having Broadband available to homes and businesses does not ensure it is being used effectively to improve the way people live and businesses work. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine what goals and objectives for the region.

Jason Boggs then presented the Northeast Region Working Group's Scope of Work (SOW) document. Boggs explained that in looking at the data for the area, it became clear that there was a real opportunity to address utilization among small businesses. Subsequently, the group began working with the SBDC through Morehead State University to determine what the needs of small businesses may be. This process is ongoing, but the group would like to create a plan that addresses the needs of small businesses in the area through educational methods suited to the businesses.

Bill Bates then provided technology and trending information relating to regional broadband availability, project goals, changes in provider participation over the past two years, and data on users, usage, and uses.

Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy informed the group that the goals for the day's workshop would be creating a vision, goals, and strategies for achieving those goals, with an action plan for implementation.

The group took a break and re-convened for a working lunch/group discussion regarding identifying and solving the broadband needs of small businesses in the area. Some key discussions included:

a) Chambers of Commerce (COC) have had a good experience and turn out for face-to-face businesses training workshops when training has a specific topic. Having business people present the training classes works better than a college type class, due to experience of the business people.

b) Morehead Small Business Development Center (SBDC) noted that most folks come in for help on short term issues – not long term. It is hard to get folks involved in proactive/long term efforts.

c) SBDC thought efforts to reach small businesses would be more effective if they provided ROIs on implementation of internet applications.

d) COC and SBDC have some different objectives, but they do work together.

e) Non-urban areas typically don't have access to computer support services. Discussion on building a list of computer/IT vendors that can provide cost effective and personal help support and education. It was mentioned that Commonwealth government may have IT contractors that would have an interest in this as well.

f) The ADD Business Service Coordinators (BSC) could possibly help with internet support. The BSCs already know and communicate with SBs.

g) Availability of broadband doesn't always translate into customers/users.

h) Chamber representatives are seeing small businesses that need higher-priced Internet packages to do the processes they would like to adopt. Small businesses could benefit from a guide that helps them determine what they need in a broadband connection.

i) The provider's role would be in promoting use of internet and helping ADDs/Counties in this effort. Providers are willing to participate in BB promotion efforts.

j) Provide Educational Instructional resources for general dissemination, but also provide personal touch. May want to consider some sort of on-line help resource. Place where SBs can also share lessons learned and other knowledge.

k) A mentorship program is needed but must be sustainable. In order to entice participation of mentors, there must be an incentive in place to justify small business owners spending the time to participate.

l) Affordability is the # 1 issue in region – low income. This also the top issue for Small Business, who can't find the start-up funds.

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the Northeast Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the Northeast Region will be presented at the Final Planning Session (FPS) workshop in February to stakeholders--for final discussion, amendment and adoption. The draft plan will begin to

develop an action plan for implementation with specific goals, objectives, tasks, timelines and responsibilities. If any areas are not completely addressed in the draft plan, they will be finalized at the Final Planning Session workshop with stakeholders.

1. There was agreement that the regional Broadband initiative should focus on providing means/tools that build on current resources

2. The 4 directions for this group to focus on are:
    - Provision of training for small businesses, both in person and online.
    - Development of mentoring for small businesses.
    - Organization of an annual conference that highlights Internet Service Providers (ISPs), and Internet applications for business -- cloud solutions, training, etc.
    - Develop and maintain a resources/contact list for live help for small businesses.

3. The Strategic plan will consider inclusion of leverage complementary elements that support the regional effort:
    - Demand Aggregation (Business)
    - Business Surveys
    - Regional Community Anchor Institutions (CAI 's) -- identification & inventory,
    - Wi-Fi Hot-Spot Strategies

4. Connected to the above, the plan will provide input for developing the stakeholder leadership needed to build capacity for sustaining the ongoing efforts over time.

5. Funding is a critical component to the Region Plan, regardless of the model involved. The Plan will identify possible funding sources to enable a sustainable effort

Appendix VI - Project Area Scope of Work

Name of Region Northeast **Name of Project Area** SME/Entrepreneur Utilization

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Increase awareness of the benefits of Broadband for econ. development 2. Increase meaningful utilization among small/medium enterprises
Project Area Boundaries	Boundaries for this Project Area: Gateway ADD, FIVCO ADD, Buffalo Trace ADD
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Training organizations and supporting agencies for SMEs in FIVCO/BT/Gateway/parts of Bluegrass ADDs
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: 1. Small business adoption and use, particularly for business growth 2. Public Access/Availability to broadband
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. Jason Boggs, Gateway ADD 2. Gail Wright, Gateway ADD 3. Kevin Cornette, Buffalo Trace ADD 4. Amy Kennedy, Buffalo Trace ADD 5. Sherry McDavid, FIVCO ADD 6. Kelly Ward, FIVCO ADD
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: Jason Boggs
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Conf Call/buy-in consensus Monday 11 am

** If additional space is required, please attach additional pages to this template. **

Approved: May 31, 2012 - KY Broadband Central Planning Session _____Jason Boggs
Project Area Working Group Chair

Project Area Focus

- FIVCO, Buffalo Trace, and Gateway ADDS
- Focus: training and supports for existing and new small businesses to enhance their Internet utilization through increased digital literacy.

Project Area Profile: (Baker/SNG Team responsibility)

The task will be to develop a project area profile, drawing on data in recent reports. Special attention will be provided to the following areas:

a) Identify predicted level and characteristics of low utilization by small businesses.
b) Identify main barriers to adoption and utilization, as well as preferred means of acquiring Internet skills.
c) Identify opportunities for increased utilization by small businesses.

Identify, contact and recruit stakeholders for Initial Planning Session (Sept)

Stakeholders Recruitment

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be recruited

A. Utilization by SMEs
   - Agencies supporting small businesses, especially those with a training mandate
   - Local governments
   - Chambers of Commerce and organizations assisting SMEs

Logistics

a) Identify and confirm Initial Planning Area (IPA) Workshop date and location
b) Identify how invitations will be sent out, including follow-up and registration process.
c) Other logistics: refreshments, audio-visual aids, etc.

Purpose of Initial Planning Area (IPA) Workshop in September

a) General awareness and education around broadband adoption and utilization
b) Presentation of Project Area Profile
c) Discussion and issue identification within the focus area: small business utilization
d) Priority setting
e) Identification of general strategies for dealing with priority issues.

Appendix VII - Project Area Profile: Northeast Kentucky

This section provides a profile of Internet utilization in the Northeast Region, consisting of ***Buffalo Trace, Gateway and FIVCO Area Development Districts***. Data and analysis does not include the Bluegrass Area Development District unless explicit noted.

For context in prioritizing regional planning activities it is important to consider the overall profile of the population and economy of Northeast Kentucky.

Figure 1: Demographic and Economic Profile

Households	Northeast	Kentucky
Population	276,014	4,339,367
Median Household Income	$34,381	$40,061
% in Poverty	24.6%	18.4%
% of Population 65+	14.9%	13.3%
Organizations		
Establishments	4,918	90,511
Employment	54,689	1,480,658
Annual Payroll (in billions)	$1.62	$51.44
Average Size of Employer	11.1 employees	16.4 employees
USCB County Business Patterns 2009		

The Northeast region has below average (median) income and an older age profile compared to the State. At 18.7% of employment, the retail sector plays a large role in the Northeast region. The manufacturing sector is also important providing 15.1% of employment. The eight largest industries, ranked by annual payroll, that collectively represent over 84% percent of all jobs and payroll in Northeast Kentucky are:

Figure 2: Largest Economic Sectors in Northeast Kentucky (excluding Bluegrass)

Rank	Industry Sector	Percent Employment
1	Retail Trade	18.7%
2	Manufacturing / Processing	15.1%
3	Accommodation & food services	10.7%
4	Health Care & Social Assistance	10.6%
5	Other services (exc. public admin)	4.1%
6	Construction	3.2%
7	Wholesale Trade	3.2%
8	Finance & Insurance	2.7%
	% Employment	84.2 %
% of Payroll	83.2%	% of Establishments 72.4%

Figure 3: Age Profile of Northeast Kentucky (excluding Bluegrass)

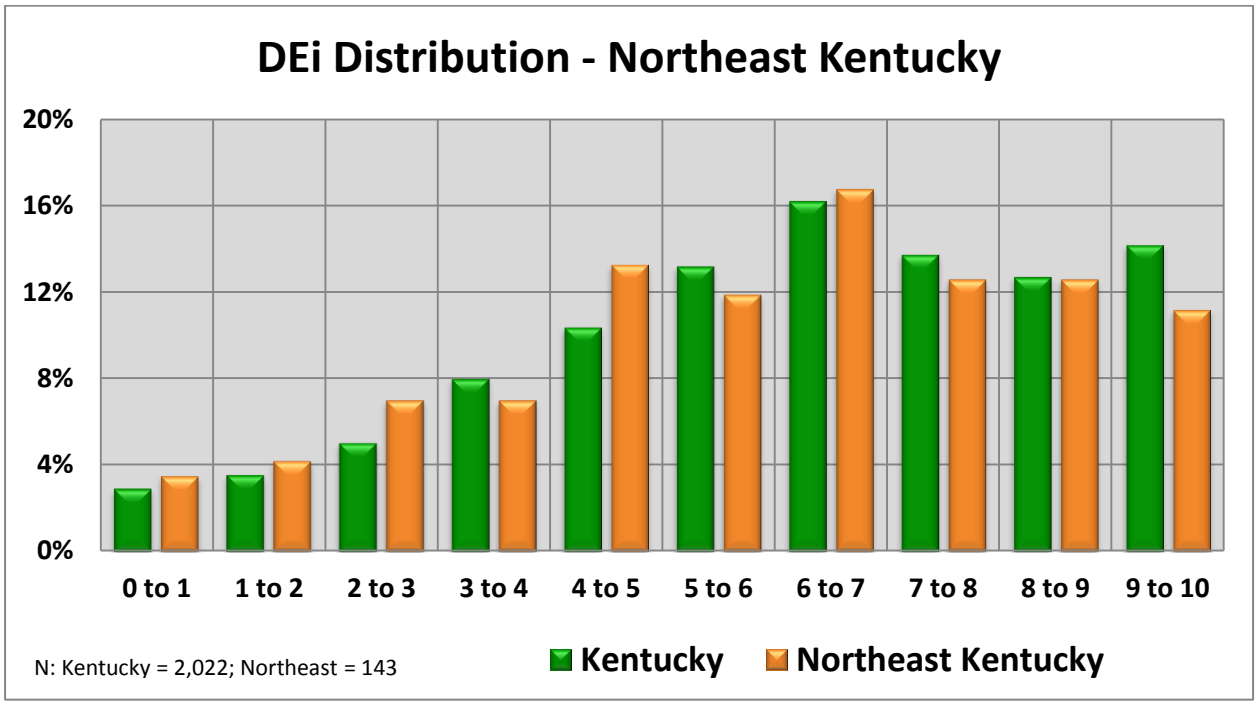
Age Distribution of Adults	Northeast	Statewide
18 to 34 years	21.1%	22.6%
35 to 49 years	20.7%	20.7%
50 to 64 years	20.5%	19.8%
65 years and over	14.9%	13.3%

Utilization by Organizations in Northeast Kentucky

Internet utilization by organizations in Northeast Kentucky is moderately lower than the state average. The overall Digital Economy Index (DEi) for Northeast Kentucky is 6.02 compared to the statewide DEi of 6.41. The profile of utilization levels from low (1) to high (10), mimics statewide patterns.

Median DEi Score		
Kentucky	Northeast Kentucky	Ranking by Region
6.41	6.02	N/A

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following table:

Figure 5: Internet Utilization by Employment Size: Northeast Kentucky

Organizations by Number of Employees	Kentucky DEi (Median)	Northeast Kentucky DEi (Median)	Sample Size Northeast Kentucky
1 to 4	5.83	4.71	35
5 to 49	6.41	6.16	71
50 to 99	6.8	7.14	15
100 or more	7.38	6.70	13
All Size Ranges	**6.41**	**6.02**	

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in Northeast Kentucky.

Figure 6: Share of Labor Force by Size of Organizations

Number of Employees	Northeast Kentucky
1 to 19	87.4%
20 to 49	7.8%
50 to 99	2.7%
100 to 499	1.9%
500 or more	0.2%

It is very informative to look at where which industry sectors in Northeast Kentucky vary in their Internet utilization levels from state-wide averages and how they compare to the other four regions. The following industries show relative **strength or weakness within Northeast Kentucky** (inclusive of the Bluegrass Area Development District) in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
Northeast Kentucky	• ***Manufacturing*** • ***Financial & Insurance***	• Retail Trade • Wholesale Trade

The following table summarizes utilization for major industries within Northeast Kentucky (according to DEi scores) and compared to the state average, as well as the region's ranking among the five regions. This table includes data for the Bluegrass Area Development District because data sets are too small for just the Buffalo Trace, Gateway and FIVCO Area Development Districts.

Figure 8: Summary of Utilization (average DEi) Levels by Industry Sector (including Bluegrass)

Major Industry Category	Statewide	Northeast Kentucky	Rank Compared to Other Regions
Finance & Insurance	7.5	7.79	**1**
Information	6.9	6.83	**3**
Educational Services	6.7	6.77	**2**
Manufacturing / Processing	6.6	7.35	1
Retail Trade	6.4	6.01	**5**
Other services (exc. public admin)	6.3	6.69	**1**
Professional & Technical	6.2	6.42	**2**
Wholesale Trade	6.2	5.85	**4**
Construction	5.8	6.21	2
Health Care & Social Assistance	5.7	5.69	**4**
Public Administration	5.2	5.19	**3**

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for Northeast Kentucky (inclusive of Bluegrass), grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential. In Northeast Kentucky, areas that have the great's gaps in utilization, while also being growth sectors, are: retail trade (the region's largest sector) and Wholesale Trade.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	Northeast Region Variation from State Average	Sector Size - Rank within Region	Growth Expectation
Retail Trade	**-0.34**	**1**	↑
Manufacturing / Processing	**0.78**	**2**	↑
Health Care & Social Assistance	**-0.04**	**3**	↑
Wholesale Trade	**-0.38**	**5**	↑
Professional & Technical Services	**0.18**	**6**	↑ ↑
Construction	**0.37**	**7**	↑ ↑
Finance & Insurance	**0.32**	**11**	
Information	**-0.07**	**12**	↓
Public Administration	**0.01**	**n/a**	
Gap 1 (0.6 or more below the state DEi)	**0**		
Gap 2 (0.6 to 0.3 below statewide DEi)	**2**		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate areas with higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in Northeast Kentucky are similar to the rest of Kentucky, with privacy, slow Internet and lack of internal expertise the most frequently cited.

Figure 10: Barriers to Adopting Internet Applications and Processes (excluding Bluegrass)

Barriers to e-Solutions - % Saying Important	North	Statewide
Privacy concerns	70.8%	71.4%
Available Internet is too slow	63.8%	59.2%
Lack of internal expertise and knowledge	51.5%	45.8%
Suppliers not ready	46.9%	41.5%
High cost of development/maintenance	41.5%	45.8%
Loss of personal contact with clients	39.2%	45.1%
Security concerns	37.7%	28.7%
Internal organization resistance	30.0%	24.6%
Uncertain about benefits	26.9%	28.7%
Products not suited to Internet sales	20.0%	24.9%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in Northeast Kentucky were more modest at 13.5 percent.

Figure 11: Job Creation and Internet Use in Commercial Enterprises (including Bluegrass)

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
Northeast Kentucky	3,310	371	50	13.5%	98
Kentucky	15,657	1,731	593	34.3%	401

Households in Northeast Kentucky

Utilization of the Internet by households in the Northeast Kentucky is very close to the state average. The overall Digital Economy Index (DEi) for households in Northeast Kentucky is 6.15 compared to the statewide DEi of 6.1.

Figure 12: Utilization by Households: DEi Score and Regional Ranking

	Median DEi Score	Rank	Difference from Average	Households in Sample
Northeast Kentucky	6.15	**N/A**	+0.05	408
Statewide	6.1			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to household utilization in Northeast Kentucky. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups. With a slightly older and significantly less affluent population, it is somewhat surprising that Northeast Kentucky has households with average computer skills and average utilization.

Figure 13: Impact of Age and Income on Internet Utilization (excluding Bluegrass)

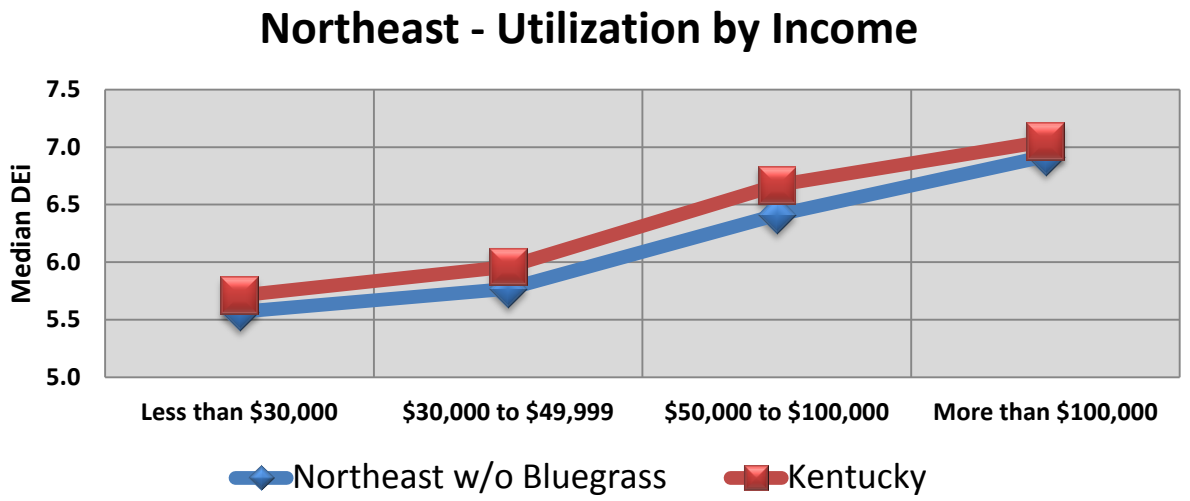
Northeast Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**5.62**	**6.99**	**6.87**	**7.07**
35 to 54	**5.12**	**5.94**	**6.17**	**6.83**
55 to 64	**5.85**	**5.24**	**6.18**	**6.56**
65 years and over	**5.24**	**3.83**	**4.45**	**5.29**

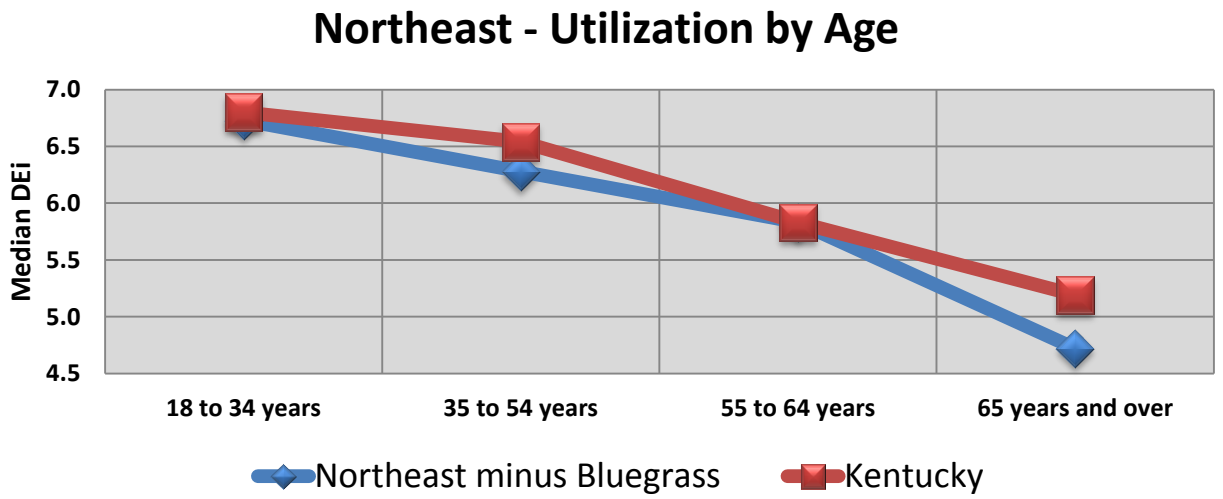
Figure 14: Computer Skill Levels (excluding Bluegrass)

	Expert user	Use computers confidently	Know the basics
Northeast Kentucky	24.3%	62.9%	12.5%
Statewide	25.6%	59.9%	14.1%

For Northeast Kentucky, 12.5 percent of households "know only the basics" in computer skill. Northeast Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: Northeast Internet Utilization Levels by Age and Income (excluding Bluegrass)





Use of Internet for Productivity

In terms of productivity, households in the Northeast region show above average utilization for work oriented activities, including teleworking, training, and accessing their work place from home.

Figure 16: Percentage of Households Using the Internet for Productivity (excluding Bluegrass)

Northeast Kentucky	% Currently Engaged In	Statewide Average	Variance from State Average
Accessing workplace	52.0%	55.6%	-3.6%
Home business	19.6%	20.8%	-1.2%
Teleworking	19.3%	20.8%	-1.5%
Education or training	48.8%	45.9%	+2.9%

Focus on Project Area Priorities

The Northeast Region has identified small business utilization of the Internet as their priority focus. This profile provides some insights into the performance of small medium enterprises (SMEs). Readers should keep in mind that the sample sizes for SMEs that participated in the survey are relatively small and should be used with caution. Nonetheless, the data on this priorities areas is suggestive and worth consideration.

As seen in Figure 18, small businesses (with 1 to 19 employees) in the Northeast Region have significantly lower utilization of Internet applications and processes when compared to their peers elsewhere in Kentucky. The gap is even larger when compared to businesses of all sizes across Kentucky. Part of the lower utilization levels can be attributed to the composition of the small business sample in the Northeast compared to the rest of state. The Northeast sample has a higher percentage of its responses from the Health and Social Services sector (which generally has low levels of utilization) and a relatively low number of responses from the Professional and Technical Services sector (which has high levels of utilization).

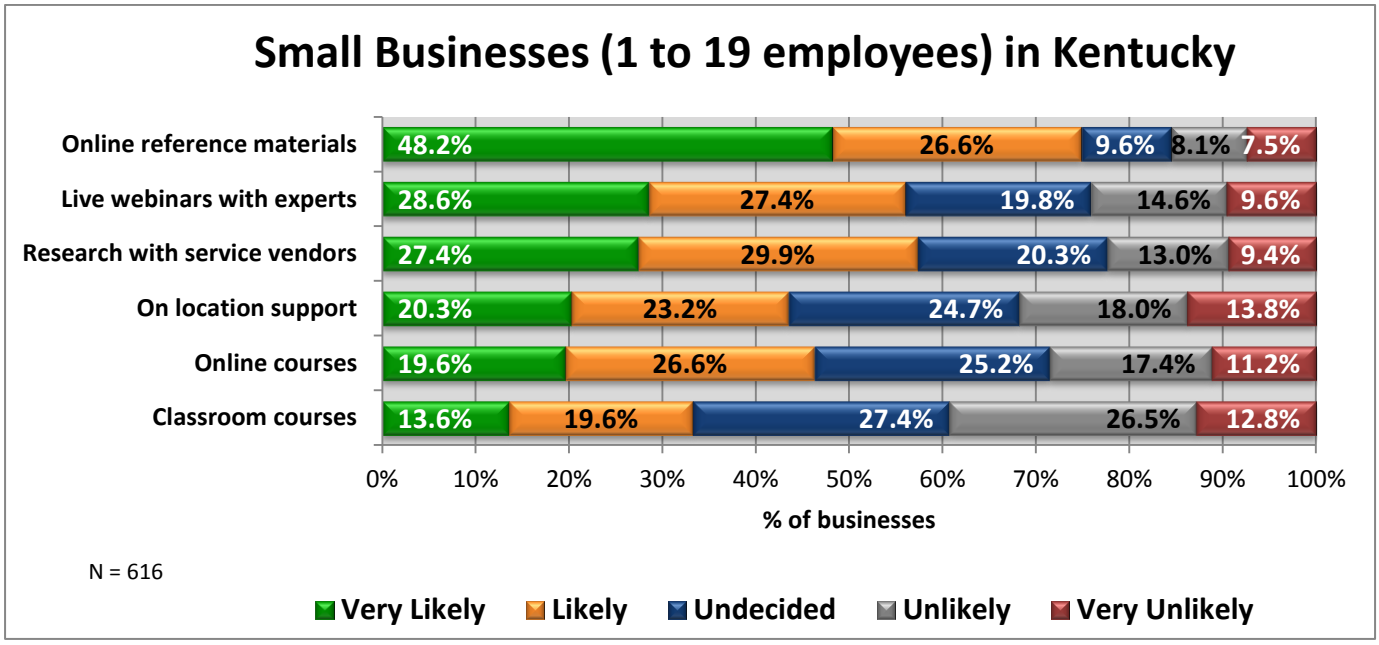
Figure 17: Percent of Commercial Organizations Using Specific Applications and Processes

% Currently Using Applications and Processes	Northeast Businesses with 1 to 19 Employees	Kentucky Businesses with 1 to 19 Employees	Kentucky Businesses All Sizes
Median DEi	4.47	6.31	6.60
Electronic document transfer	86.2%	84.8%	86.9%
Research by staff	79.3%	85.2%	86.2%
Purchasing goods or services	72.4%	84.3%	84.1%
Web site for organization	55.2%	75.8%	78.1%
Access government information	69.0%	78.8%	80.6%
Supplier communication and coordination	65.5%	73.8%	77.9%
Banking and financial	62.1%	73.0%	72.5%
Customer service and support	51.7%	65.2%	67.2%
Staff training and skills development	62.1%	60.3%	65.4%
Social networking	51.7%	64.1%	64.0%
Accessing collaborative tools	51.7%	59.5%	63.5%
Advertising and promotion	37.9%	59.6%	62.3%
Government transactions	51.7%	60.6%	61.7%
Selling goods or services	27.6%	53.6%	54.8%
Teleworking	31.0%	39.9%	45.7%
Rich media or service creation	27.6%	42.2%	44.4%
Deliver services and content	27.6%	35.2%	38.7%
Sample Size	35	808	1182

Nonetheless, the difference is utilization levels is large and suggests an underlying pattern within the small business sector in the Northeast. Figure 18 identifies in which applications and processes Northeast small businesses are lagging. Most notable are: business website; customer services; advertising and promotion; selling goods and services; and rich media or service creation[13]. The areas where small businesses in the Northeast are lagging are also those areas most closely tied to revenue generation. Consequently, adoption of these applications and processes provide a significant opportunity.

In examining how small businesses in the Northeast can take advantage of this opportunity, it is worth noting that staff training is one area where small businesses in the Northeast out-perform their state-wide peers. There appears to be interest and willingness to address the performance gaps through training. Survey data show that providing online resources is the preferred choice for acquiring new skills and knowledge. Least preferred are formal courses, either in classrooms or online.

Figure 18: Preferred Learning Methods



Another promising area for exploration with small businesses would be the potential of using cloud solutions to address gaps in utilization. While Northeast businesses reported lower than average use of cloud solutions, this weakness has the potential to become an opportunity.

Figure 19: Percent of Businesses that Currently Use Cloud Solutions

Size and location	% of Businesses	Sample Size
Northeast Businesses with 1 to 19 employees	24.1%	29
Kentucky Businesses with 1 to 19 employees	31.3%	729
Kentucky Businesses All Sizes Ranges	34.5%	1,059

[13] Rich media describes Web pages that use advanced technology such as streaming video, downloaded programs that interact instantly with the user for advertising.

Appendix VIII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of

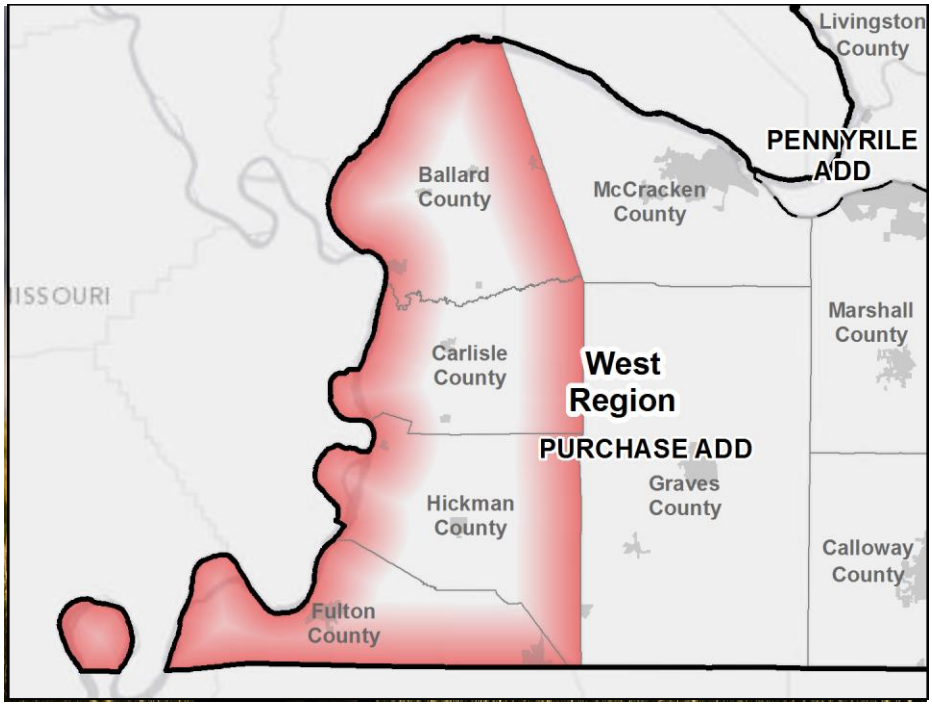
applications currently being used by an organization or household, a composite score is calculated that summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.

Broadband *KY*

Expanding Broadband for Education and Households in Kentucky's Mississippi River Counties

(Ballard, Carlisle, Hickman, and Fulton)



This report is based on input received from the Green River, Pennyrile and Purchase Area Development Districts and regional stakeholders, and prepared by Strategic Networks Group in partnership with Michael Baker Jr., Inc.

March 19th, 2013

Prepared for:

Commonwealth Office
of Broadband Outreach and Development
&
Kentucky West Region Working Group

COMMONWEALTH OFFICE OF BROADBAND OUTREACH AND DEVELOPMENT
Promoting a 21st century economy

BROADBAND KY

Table of Contents

INTRODUCTION **3**

1. EXECUTIVE SUMMARY **5**

2. PURPOSE AND FOCUS **7**

3. CORE PRINCIPLES **8**

4. WHY BROADBAND MATTERS: *BENEFITS OF BROADBAND INVESTMENTS* **8**

5. CURRENT STATUS: *HOW IS WEST KENTUCKY DOING?* **10**

5.1 BROADBAND ACCESS 10
5.2 INTERNET ADOPTION 14
5.3 INTERNET UTILIZATION 16

6. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS **18**

7. OBJECTIVES AND RECOMMENDATIONS **21**

7.1 RECOMMENDATIONS FOR BUILDING LOCAL AND REGIONAL LEADERSHIP AND CAPACITY 23
7.2 RECOMMENDATIONS FOR ENABLING BROADBAND AVAILABILITY 26
7.2.1 STAGES AND TASKS FOR INTERNET ACCESS INITIATIVE 27
7.3 RECOMMENDATIONS TO IMPROVE INTERNET ACCESS 29

8. ACTION PLAN FOR BROADBAND IN WEST KENTUCKY PROJECT AREA **31**

9. METRICS FOR TRACKING PROGRESS AND IMPACTS **35**

APPENDIX I - STEPS FOR LOCAL PLANNING FOR BROADBAND AVAILABILITY 40
APPENDIX II: LIST OF RESOURCES 48
APPENDIX III: CONTRIBUTORS TO THIS PLAN 50
APPENDIX IV - IPA WORKSHOP MEETING NOTES: WEST REGION 51
APPENDIX V - PROJECT AREA SCOPE OF WORK 56
APPENDIX VI - PROJECT AREA PROFILE: WEST KENTUCKY 58
APPENDIX VII: GLOSSARY 67

Introduction

This broadband planning document is one of five plans that have been developed as part of the Broadband KY initiative. Each of the five plans addresses a distinct set of broadband issues within a defined geographic area.

The five plans have both shared and distinct components. The shared components consist of a Kentucky-wide framework for broadband planning that establishes a common set of principles and high-level priorities across Kentucky. One of the strategic priorities shared across all regions and plans is development of the local and regional leadership needed to build sustainable momentum for improving broadband.

The distinct components of each plan are comprised of strategies and action plans specifically designed to address the priorities, circumstances and capacities of each region. All five plans have identified the lack of broadband availability as one of their local priorities. Consequently, these plans share a strategic approach to addressing this wide-spread challenge.

Creation of these plans has been through a partnership between the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD) and Kentucky's Area Development Districts through the creation of five Project Area Working Groups. The working groups have been led by the Area Development Districts, engaging with stakeholders from the project area addressed by the plan.

Each of the five plans draw upon a body of work produced and compiled over the past several years:

- Commonwealth of Kentucky, State Broadband Initiative (SBI) maps
- Broadband KY – Central Planning Session documents and maps
- Broadband KY – Regional Provider Directories
- Broadband KY – Project Glossary
- Project Area Scope-of-Work Document
- 2012 e-Solutions Benchmarking Technical Report
- 2012 e-Strategy Report
- Regional Project Area Profile Report
- IPA Workshop – Regional Outcomes Report
- Regional Work Group Meeting Notes
- Broadband KY – Regional maps --
    - Broadband availability,
    - Household and Organization Utilization Analysis
    - KY -- Population
    - Transmission Technology
    - Upload and Download Speed

All information will become part of a Broadband planning resource document as a reference to the final regional plan, and available by qualified project participants online upon request.

The individual plans were prepared for OBOD by Strategic Networks Group, working in partnership with and under direction of Michael Baker Jr., Inc.

1. Executive Summary

With the creation of the Commonwealth Office of Broadband Outreach & Development in October 2010, the Commonwealth of Kentucky has made a commitment to pursue solutions for local broadband challenges in adoption and utilization. Key to its efforts has been a strategic approach that positions the Commonwealth as an enabler of local and regional efforts.

Kentucky's commitment to improved broadband access, adoption and utilization is based on an understanding of the impacts that broadband has on the wellbeing of Kentucky's citizens, economy and government services. Initiatives that address the digital divide at a local level are paramount.

In the West Region project area (Mississippi River counties of Ballard, Carlisle, Hickman, and Fulton), this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. Since then, the planning process has been progressing through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

As a result of the planning process noted above, to address the priorities identified by the Regional Work Group and the Stakeholders, three objectives have been established and documented in this plan:

1) Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level;
2) **Enabling availability of broadband in rural residential areas;**
3) Improved public access to broadband where citizens can access broadband for free on public devices in **Internet Access Centers**[1] (IAC) or on their own device at **Hot Spot**[2] locations.

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

To assist in developing a plan to bridge the digital divide, an assessment of the current situation was undertaken (Sections 5 and 6). One important conclusion from this assessment is that that local leadership is critical in *developing momentum in unserved and underserved communities*, especially areas with limited institutional capacity and a small population base.

Section 7 sets out recommendations to address the planning objectives and to build the momentum needed to produce meaningful broadband outcomes in the target areas. The adoption of a flexible

[1] **Internet Access Centers** (IAC): For this regional plan, **IAC** is defined as a facility, room or area within a facility that is equipped with computers, local area network and Broadband class data transmission speed, which can be used by the public for access to the Internet. An IAC may also have the potential of providing training and support in the project area.

[2] Wikipedia: "A **Hot Spot** is a site that offers Internet access over a wireless local area network through the use of a router connected to a link to an Internet service provider. Hotspots typically use Wi-Fi technology. Hotspots may be found in coffee shops and various other public establishments." *Additionally defined:* Collins English Dictionary - 10th Edition.

approach is a strategy that acknowledges the uncertainty over the level of resources available to implement the plan.

The plan provides recommendations for addressing these challenges on a local level, identifies steps for achieving goals, explores potential mechanisms for measuring outcomes through community efforts, and also provides information on how to build momentum around Broadband initiatives in the project area. Recommendations should be scalable to available funding.

The strategic direction set out in this plan is based on establishment of initial, short and medium term recommendations that can be scaled and adapted to reflect the availability of funds and commitment. Implementation times for recommendations are based on the NTIA Broadband Planning Grant received by the OBOD, from 2011 to December 2014.

By providing for varying levels of activity, regional stakeholder focus is on activities that are within the resources available, while providing for more ambitious actions and tasks as additional resources become available. Building on this approach, the detailed recommendations for this strategic planning report can be found in sections 7.1, 7.2, and 7.3.

Section 8 provides an Action Plan template for developing detailed actions and tactics to support the recommendations outlined in this document. The template will continue to be utilized after completion of the plan to identify ongoing tasks, timelines, and responsibilities associated with the project area plan.

Section 9 identifies specific metrics for measuring the progress of components within the plan (from Section 8), and the degree to which each component has produced tangible results.

2. Purpose and Focus

This document is designed to assist community efforts in achieving better access and effective use of broadband services. Through efforts to improve broadband, the people, businesses, and government bodies in Kentucky can improve opportunities, promote a dynamic economy, and develop healthy and resilient communities.

The foundation of this broadband planning document is a Kentucky-wide Strategic Framework that consists of the following elements:

- A core set of principles that reflect the Commonwealth's values and strategies regarding broadband;
- A clear understanding of why broadband matters
- Emphasis on regions and communities currently lagging behind other areas of Kentucky;
- A clear rationale for government policies and programs;
- High level goals for broadband initiatives that establish purpose and expectations for local community-based broadband initiatives;
- Development of regional broadband plans as a resource to communities in each region.

According to 2012 **Broadband KY *e*Strategy Report** and **Kentucky SBI[3] Data**, gaps currently exist in the availability and usage of Broadband services, with some sectors of the economy slow to adapt to the increasing pace of the knowledge-based economy. This planning document identifies how certain aspects of digital divide can be addressed in a defined project area within the West Region of Kentucky. While the Commonwealth of Kentucky can be an advocate and enabler (documenting best practices and developing tools and assistance programs), the most effective change agents are at the local level -- driving action and implementation on the frontline of broadband initiatives.

The strategies in this document focus on the digital divide, which can be seen in areas that are unserved and underserved[4] by broadband services, as well as in populations that are underutilizing the Internet.

[3] SBI – State Broadband Initiative: NTIA program; Investment of approximately $4 billion in the United States to support the deployment of broadband infrastructure, enhance & expand public computer centers, encourage sustainable adoption of broadband, and promote statewide broadband planning and data collection.

[4] NTIA definition - *Unserved* and *Underserved:* "***Unserved***: An area, composed of one or more contiguous census blocks where at least 90% of households in the proposed funded service area lack access to faculties-based, terrestrial broadband service, either fixed or mobile, at the minimum-broadband speed. The rules defined ***Underserved*** for Last Mile Projects: "An area composed of one or more contiguous census blocks where at least one of the following is met: 1) no more than 50% of households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband speed; 2) no fixed or mobile broadband service provider advertises broadband speeds of at least 3 Mbps downstream in the proposed funded service area; or 3) the rate of broadband subscribership for the proposed service area is 40% of households or less.

This Broadband Planning document has the following purpose:

- Defining a Strategic Framework for Planning
- Assessing the current state of broadband access, adoption and utilization in West Kentucky
- Providing Objectives and Recommendations with supporting Strategic Direction

3. Core Principles

The core principles that guide broadband planning in Kentucky:

a) The Commonwealth is an enabler of local efforts to address the digital divide.
b) Broadband initiatives should always recognize the complementary roles of markets (consumers and providers), communities, and local governments.
c) Broadband initiatives should build on benchmarks and comparative assessment of communities, regions and sectors that have been developed through the Broadband KY initiative.
d) Priority should be given to the digital divide in access, adoption and use of the Internet. More specifically, priority to "Unserved" and "Underserved" areas in terms of Internet access.
e) The Commonwealth will endeavor to provide options and resources to support local broadband initiatives addressing the digital divide.

4. Why Broadband Matters: *Benefits of Broadband Investments*

In the twenty-first century, the Internet has become an essential part of a region's infrastructure, a business's internal and external operations, and a household's participation in their community life. Availability and meaningful use of the Internet speaks directly to a community's viability, competitiveness and quality of life. The shift to the knowledge economy manifests itself at a variety of levels, from the private sector to public services to the private household. At each of these levels, Internet based activities have become integrated in the daily functioning of businesses, governments and individuals. The Internet facilitates communications, innovation, recreation, and production and Broadband access is an essential technology infrastructure to enable the knowledge economy.

In the case of government organizations, the impact of the Internet can be felt in terms of cost efficiency, accountability and the ability to deliver services to local residents. With all levels of government moving services to the Internet, those who do not use the Internet find themselves with increasingly restricted access to government information and services.

From an economic perspective, Broadband (see page 10 for description) impacts local and regional economies by facilitating internal business growth and retention, while attracting new businesses. In a similar manner, broadband facilitates development of a skilled labor force and allows a community

to compete for skilled labor that will not move to an area without broadband. The implication is that those areas that don't have broadband will lose existing skilled labor and businesses, while failing to attract new businesses and skilled residents.

Two recent reports from *Broadband KY*[5] have provided evidence of the impacts of broadband on the economy of Kentucky and its regions. The findings of the report underscore the large and critical role that the Internet plays in the shift to a knowledge economy. First and foremost, job creation is a vital aspect of the impact of broadband. The report found that that the Internet contributes significantly to job growth, with jobs facilitated by the Internet accounted for almost one third of all new jobs. The number of jobs lost (1,812) and created (3,498) over the preceding 12 months in the 720 reporting organizations in Kentucky. The seemingly high "churn" of job loss and creation is a natural part of a healthy economy. The small business sector (0 to 19 employees) was particularly effective at creating jobs through the Internet. Although this group contained less than 5 percent of all employment in the reporting group, this group produced 11.1 percent of all new jobs and Internet enabled jobs.

Evidence of the pronounced impact of broadband on the health of a local and regional economy is growing and indisputable. But for many, the mechanisms of these impacts are unclear. To better understand why broadband produces the impacts attributed to it, it helps to identify some of the specific ways in which broadband benefits the operations of businesses. Drawing on 2012 broadband utilization benchmarking data from Kentucky, the benefits most valued by businesses fell into three categories:

- **Productivity:** The Internet makes operations easier and allows organizations to more effectively use their resources.
- **Customer support and reach:** The Internet allows businesses to improve customer support, while also helping them reach new customers, often on a global scale.
- **Profitability:** Increased use of the Internet results in a growing revenues from the Internet, which is one of the fastest areas of growth. Use of the Internet also helps in reducing costs.

However, broadband availability and effective utilization is not equally present across Kentucky, as explored in the next section of this report. The relatively low level of broadband availability, adoption and use in Kentucky[1] has a negative impact on job creation and attraction of new businesses in those regions. Consequently, the lack of competitive broadband strongly impacts the ability of a region to retain its existing businesses and population.[6]

Local and regional leaders face the challenge of assessing how their community or region is performing on broadband issues. They face the challenge of finding the means to improve performance, whether it

[5] ***Broadband KY eStrategy Report:*** May 2012 and: ***Project Area Profile: West Kentucky,*** *(Appendix III)***.**

[6] The 2012 SNG report that benchmarked broadband utilization across Kentucky found that over 19% of households would "definitely" relocate to another community for broadband service if it was not available to them in their current location. Another 20% would consider relocation "very likely". Broadband was also considered "essential" for selecting location by 36% of businesses and other organizations, as well as "essential" for remaining in location by 59% of organizations.

is access to the Internet, adoption of the Internet or productive use of the Internet. The following sections provide information and strategies to help local and regional leaders in addressing these challenges.

5. Current Status: *How is West Kentucky Doing?*

Given the importance of broadband to the current and future health of West Kentucky, its communities, residents and businesses, it is important to assess West Kentucky's situation regarding broadband availability, adoption and utilization. The evidence drawn from national, Kentucky-wide, and regional sources shows the digital divide in West Kentucky and the Mississippi Counties in the Project Area is very real. The various broadband maps and utilization surveys undertaken by Broadband KY identify areas, households and businesses that continue to face barriers to participating fully in the digital economy. The data and perspectives presented reflect this document's focus on local broadband planning. Wherever possible, data from the project area are used. Additional data sources are used where needed.

5.1 Broadband Access

This section looks at how West Kentucky performs in terms to access to the Internet relative to both national and Kentucky targets. This assessment will need to be adjusted periodically to reflect the rapidly changing face of Internet access.

What is Broadband? The following definition of "Broadband" comes from the National Broadband Map National Telecommunication and Information Administration web site**. "**Broadband refers to a high-speed, always-on connection to the Internet. The primary factors that people consider when deciding what type of broadband Internet service to subscribe to include service availability, connection speed, technology, and price. Organizations define broadband in different ways. For information to be included on the 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." More recently, ***the FCC has set a goal of affordable broadband with a minimum download speed of 4 megabits per second*** (http://www.broadband.gov/plan/). For the sake of consistent use of terminology, the FCC has defined the following "Internet speed tiers".

FCC Speed Tier Download Speeds Broadband		
	From	To
1st Generation	200 Kbps	768 Kbps
Tier 1 Broadband	768 Kbps	1.5 Mbps
Tier 2 Broadband	1.5 Mbps	3 Mbps
Tier 3 Broadband	3 Mbps	6 Mbps
Tier 4 Broadband	6 Mbps	10 Mbps
Tier 5 Broadband	10 Mbps	25 Mbps
Tier 6 Broadband	25 Mbps	100 Mbps
Tier 7 Broadband	Greater than 100 Mbps	

FCC Activity Minimum Recommended Download Speeds(Mbps)	
Application	Minimum Speed Recommended (megabits per second)
Email	0.5
Web browsing	0.5
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Standard streaming videos	0.7
Streaming feature movies	1.5
Basic video conferencing	1
HD-quality streaming movie or university lecture	4
HD video conference and tele-learning	4
Game console connecting to the Internet	1
Two-way online gaming in HD	4 symmetrical
Lower definition telemedicine	0.6-1 symmetrical
HD Telemedicine (diagnostic imaging)	5-10+ symmetrical

In its National Broadband Plan of 2010[7], the FCC identifies 4 MBPS as the short-term target for download speed in communities nationwide. Since current Kentucky SBI data does not breakout broadband coverage at this speed, this report uses 3 MBPS download as a benchmark for assessing current broadband coverage throughout Kentucky. The plan does not include satellite or mobile wireless Internet service in its assessment due to the challenges these technologies face with cost and reliability. This may be addressed in the future with advances in technology.

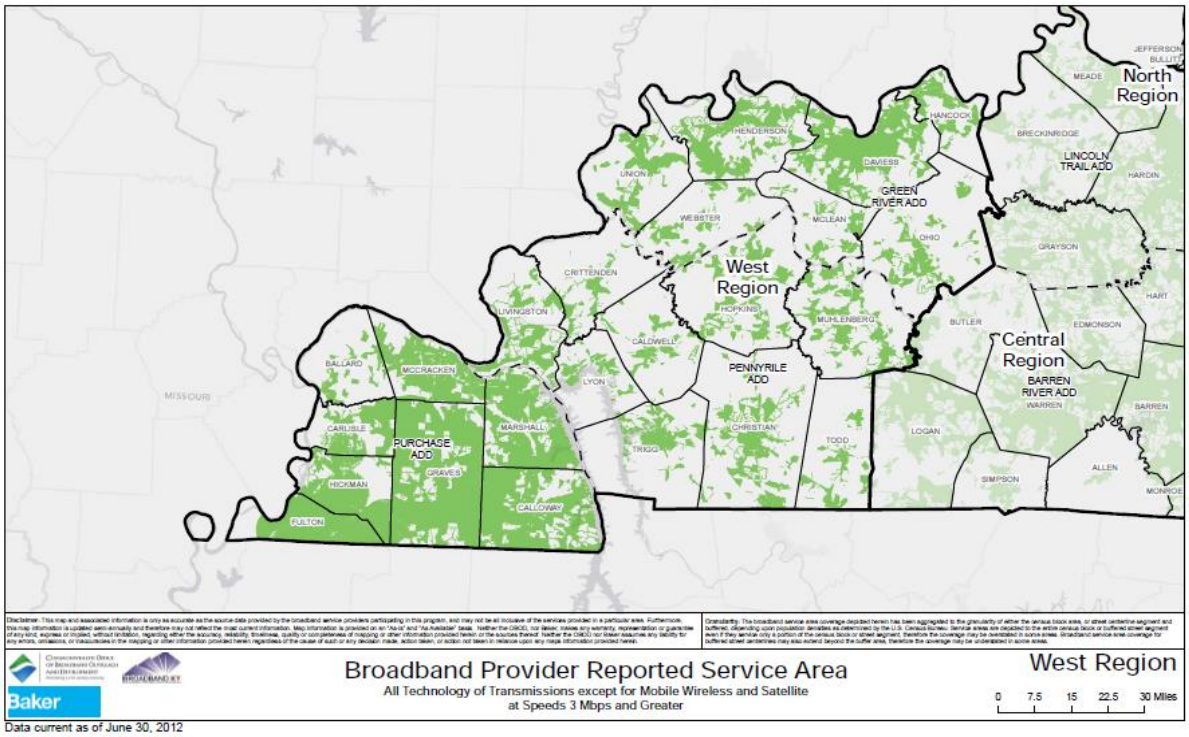
[7] http://download.broadband.gov/plan/national-broadband-plan-executive-summary.pdf *(page 3).* "Ensure universal access to broadband network services: create the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speed."

The Office of Broadband Outreach and Development collects data from Broadband Service Providers. Mapping depicting this information is available online :

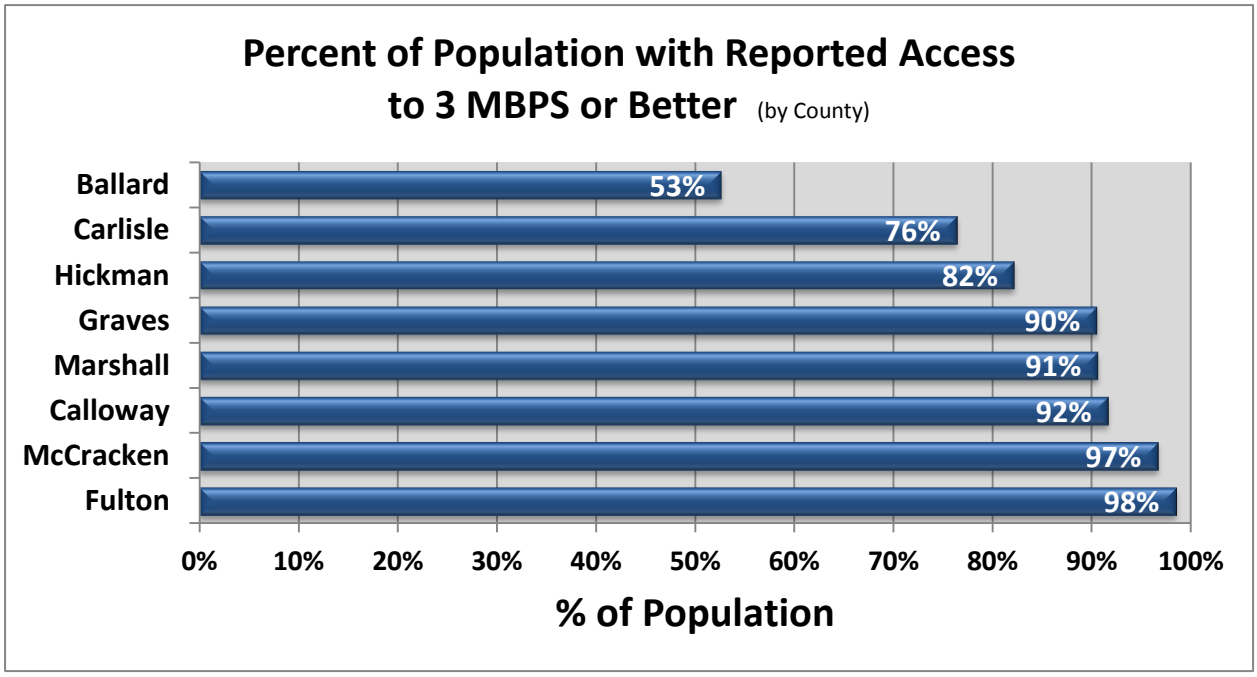
http://www.bakerbb.com/kybroadbandmapping/

During the broadband planning workshops , participants (including local service providers) reported that this mapping may not show the entire details of actual local Broadband availability. Section 7 and Appendix 1 lays out a process for documenting detailed coverage at the local level.

According to Kentucky SBI provider data, most counties in the Project Area are well below the FCC target of 4 MBPS. The information provided is current as of January 1, 2013.



Data current as of June 30, 2012



Broadband coverage is becoming more complex with the growth of mobile wireless coverage and the increasing use of smartphones accessing the Internet. Assessing the impact of 4G wireless networks on broadband availability, adoption, and utilization is still in its early stages. For the most part, smartphones, tablets and other mobile devices are valuable adjuncts to a business' or household's broadband access. However, mobile wireless is not presently attractive as the primary means of broadband access, especially for organizations. With lower levels of reliability, higher costs, usage caps and smaller screens, mobile broadband is usually not a good option as the primary Internet connection for businesses. For households, mobile wireless may be more attractive as a primary vehicle for accessing the Internet, though the situation depends greatly on usage patterns of each individual. For a community, having mobile broadband wireless coverage may be seen as necessary to remain a viable place for its businesses and residents. However, most will not see mobile wireless as desirable as the primary means of broadband connectivity.

There are considerations beyond simple availability of basic broadband, especially for businesses and community anchor institutions such as educational institutions, libraries and public safety agencies. As the Internet becomes a more integral part of the operations and critical systems of an organization, reliability usually becomes as or more important than speed. Moreover, for businesses with truly critical operations that are dependent on the Internet, the ability to have more than one means of access (redundancy) to the Internet becomes a major consideration in locational decisions. Lastly, there are many organizations (and households) whose demands on their Internet access require more speed than "just basic broadband".

Whether a community's motivation is acquiring basic broadband or upgrading beyond basic broadband, a similar challenge presents itself. If there is sufficient demand for broadband services as well as a competition among local Internet Service Providers (ISPs), the market will most likely address the needs of that community. Where there is limited demand or competition, communities may decide to undertake initiatives to address the lack of (adequate) broadband service. The options available to communities in this latter situation are explored in Section 7.

5.2 Internet Adoption

Providing access to Internet services is only the first step in achieving a digitally active and engaged community. National studies are consistent in their findings on which demographic groups have the lowest adoptions rates. Both the Pew and Department of Commerce studies show that approximately one in five (20 percent) Americans do not use the Internet[8]. While the non-adoption rate dropped steadily throughout the decade from 2000 to 2010, recent data suggests that the rate has not changed over the last two years. Looking at availability of broadband in the home in 2010, 58 percent of Kentucky households had adopted broadband, which is significantly lower than the national average of 68 percent. Sixty-five percent of Kentucky households in urban areas had broadband compared to only 49 percent of households in rural areas.[9] Whether by choice or economic circumstance, these residents do not access services that provide a broad range of benefits to most residents of Kentucky.

Looking at businesses, the issue of adoption is less clear. A FCC study in 2010 found that 95 percent of businesses with five or more employees had a *broadband connection* and consequently can be considered adopters of the Internet. For businesses with four or less employees, the situation is less clear, with mixed estimates from different studies. To the extent that low adoption is an issue among micro businesses, adoption efforts targeted at individuals and households will have a secondary benefit as these people will also be the owners of many of West Kentucky's micro businesses.

Recognizing the benefits of increasing levels of Internet adoption is a first step on the road to developing a Broadband adoption strategy. A key consideration in designing a strategy is understanding who the "non-adopters" are and what are the barriers or motivations that keep them from using the Internet. Results across different national and state studies are very consistent in their findings. Non-adopting individuals have disproportionately one or more of the following characteristics: lower income, over 65 years old, residents of non-metropolitan areas, physical or mental disability and less than a college education. Race and ethnicity have a noticeable correlation to adoption levels, with African Americans

[8] See: *Digital Differences,* Pew Internet & American Life Project*,* April 2012; and*: Exploring the Digital Nation - Computer and Internet Use at Home*, US Department of Commerce (Economics and Statistics Administration and National Telecommunications and Information Administration), November 2011. Based on Current Population Survey of the Census Bureau.

[9] ***Digital Nation: Expanding Internet Usage***: **U.S. Department of Commerce:** National Telecommunications and Information Administration; 2011; http://www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home.

and Hispanics having significantly lower adoption levels. However, most of the variance in adoption levels between whites and African Americans or Hispanics is explained by differences in incomes and education. Rural residents also have noticeably lower levels of adoption, compared to residents of metropolitan areas.[10]

Numerous research efforts have been carried out to determine the main barriers to Internet adoption. The results have shown that non-adoption is usually a result of a combination of factors, rather than any one factor. The three most critical factors include: costs of broadband service and owning a computer; digital literacy; and, lack of interest or perceived relevance of the Internet to the non-adopting individual or household. Other relevant but less frequently cited factors include concern over privacy and security and lack of broadband availability.

Additional characteristics of non-adoption include the following:

- In a survey of non-adopters in Kentucky in 2012[11], seniors were far more likely to cite lack of interest (46%) and non-use of computers (26%) as their primary barriers (with cost cited by 21%). In contrast, 59 percent of low income households with children cited cost as the primary barrier, with lack of interest cite by only 11 percent and non-use of computers cited by 13 percent.
- According to a 2012 Illinois study[12], "Some one-quarter (24%) of non-broadband users in Illinois say they would be interested in getting broadband service at home. Three-quarters (76%) of non-adopters exhibit little interest in home **broadband** service and they typically cite a range of reasons for not having high-speed Internet at home – such as not seeing the relevance of broadband, digital literacy, and cost barriers."

In recent years, the popularity and power of smartphones has added a dimension to Internet adoption. With people increasingly using smartphones to access the Internet[13], it is important to understand the implications of smartphones and mobile wireless connectivity. In the previously cited Illinois study, 46 percent of Illinois residents were found to have a smartphone that provided wireless online access (similar to the national smartphone adoption rate). This study had found that "for the most part, those with smartphones also have broadband at home – 85% of smartphone users have home high-speed service. This translates into just 7% of those surveyed having "smartphones only" as their sole means of online access." These findings reflect the situation in Mississippi Counties, as Pew Research Center surveys show smartphone trends to be consistent nation-wide, with some regional variation.

---

[10] ***Broadband KY* e-Strategy Report 2012**.

[11] ***Broadband KY* e-Strategy Report 2012** Page 42;

[12] ***Broadband Adoption in Illinois***, 2012; http://www.broadbandillinois.org/news/203. Additional findings on smartphone use from this report include: Smartphone adoption is particularly strong for African Americans (52%) and Hispanics (60%). Some 15% of African Americans and 18% of Hispanics are "Smartphone only" users (i.e., they have a Smartphone but no home broadband). ***However, those with Smartphone-only access do substantially fewer online activities than those with both broadband and Smartphones, or broadband-at home alone.***

[13] **Pew Research Center - Internet & American Life Project:** "Among cell phone users, smartphone ownership has increased from 33% in May of 2011 to 46% in April 2012." Survey of 3,014 adults between August 7 and September 6, 2012. http://pewinternet.org/Reports/2012/Smartphone-Update-Sept-2012.aspx

An important conclusion in the Pew report was that "smartphones have made significant inroads into addressing access inequities across racial and ethnic categories. However, while smartphones open the door to online engagement, they do not open the door as widely as home broadband access."

Based on the above evidence, the following conclusions can be made:

a. Based on Broadband adoption rates in Kentucky, which are consistently below national averages, it can be reasonably extrapolated that this condition is the same for West Kentucky and the Mississippi River Counties, given their low population density and demographics;
b. Based on coverage data from the West Kentucky and Mississippi Counties, as well as national adoption trends, between a third and a quarter of households do not have broadband access in their homes;
c. Based on both national trends and Kentucky data on non-adoption from the Broadband KY *e*-Strategy Report in 2012, it is evident that non-adopters come disproportionately from the following groups: lower income, elderly, rural, African American, and Hispanic.
d. Both Broadband KY data and national surveys show that the major barriers to Internet adoption consist of a combination of cost, interest, relevance, and digital literacy. The type of household has a major impact on the relative importance of the main barriers to Internet adoption, with cost being the greatest barrier for younger households and interest and relevance being most important for older households.

5.3 Internet Utilization

Organizations differ in their utilization of broadband and Internet infrastructure. Turning potential into reality requires skills, training, and both formal and informal support, in addition to access to broadband connectivity. The data and analysis contained in the Broadband KY e-Strategy Report show that productive use of the Internet is related to the size and density of a community or region, the types of industry sectors that make up its economy, the level of diversification of its economy, and the income, age and education of its citizens.

While there are no national data sets that allow for regional comparisons of Internet utilization, several in-state research efforts have been carried out, including one in 2012 in Kentucky. Results from these various states show a relatively consistent picture of how the digital divide continues to manifest itself once adoption has happened. The benchmarking of Internet utilization in 2012 identified where the digital divide manifested itself in Kentucky.

The key findings were:

- **Internet utilization by organizations** in West Kentucky overall is moderately lower than the state average (see Figure 1, next page),
- There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt

and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following Figure 1 below.

- Smaller organizations represent a key opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in West Kentucky.
- Organizations outside of metropolitan areas[14] have, on average, significantly lower utilization levels than those in a metro region. Organizations outside of a metropolitan area usually do not benefit from the dense network of supports and a large skilled labor pool.
- **Utilization of the Internet by households** in West Kentucky is slightly lower than the state average, while the Purchase ADD has higher median utilization than both the West Region and Kentucky as a whole.
- For households, the dynamics of the digital divide in Internet utilization are very similar to those with Internet adoption. Lower Internet utilization is typically associated with households that are lower income, older, less well educated and non-metropolitan. While there is a consistent increase in utilization that tracks increased income, the most dramatic drop in utilization occurs among the oldest age group (those over 65), especially seniors with incomes under $30,000.
- The 2012 benchmarking survey in Kentucky indicated that public access facilities in the Purchase ADD have more restricted hours than most facilities across the West region and across Kentucky. While this conclusion is based on a relatively small sample, if the data is representative of the situation in the Purchase ADD, consideration should be given to extending hours of public access to evenings and weekends.

Figure 1: Internet Utilization (DEi[15]) by Employment Size: *West Kentucky*

Organizations: Employment Range	Kentucky	West Kentucky	Sample Size West Kentucky
1 to 4	5.83	5.92	121
5 to 49	6.41	6.21	195
50 to 99	6.80	6.94	36
100 or more	7.38	7.57	32
All Size Ranges	6.41	6.31	394

[14] A metropolitan area is defined by the Census Bureau as having a core urban area of over 50,000 with a population density greater than 1,000 people per square mile. A Micropolitan area has a population of 10,000 to 49,999. A small town has a population of 2,500 to 9,999. The category of "isolated small town" includes the remainder.

[15] The Digital Economy index (DEi) reflects an organization's utilization of 17 Internet applications and process. Based on the number of applications currently being used by an organization or household, a composite score is calculated. An organization's score (from 0 to 10) captures their Internet utilization, with 10 being the highest possible use. **The Color Coding for DEi Scores:** To better show how sectors perform, the DEi tables in this report are color coded from the highest (**green**) to lowest (**red**) to highlight how DEi scores compare. **The color coding** (**green to red**) allows one to quickly compare groups based on how utilization varies.

Figure 2: Share of Labor Force by Size of Organizations

Number of Employees	West Kentucky
1 to 19	85.9%
20 to 49	9.1%
50 to 99	2.7%
100 to 499	2.1%
500 or more	0.2%

Lower utilization levels have been shown to have important impacts on the benefits from Internet access received by the users (household or business) and their communities. Households with higher utilization levels demonstrate the higher use of activities that produce household income through both teleworking and home-based businesses. Businesses with high levels of utilization report noticeably higher levels of revenue generation from the Internet.

6. Strengths, Weaknesses, Opportunities and Threats

The document sets forward the following as goals for the Commonwealth of Kentucky:

a) Communicating the value of internet access to improve the lives of all citizens;
b) Accelerating the expansion of sustainable Broadband access, participation, and adoption by citizens and businesses in the digital economy and society;
c) Promoting Broadband use to be globally competitive and to enable a better economy;

The preceding section shows that the current situation in the West Kentucky region falls short of meeting these goals. If West Kentucky is to make meaningful progress towards these goals, it is important to assess the current situation. This planning document uses the SWOT process that identifies current **S**trengths and **W**eaknesses, as well as future **O**pportunities and **T**hreats. The table below provides a snapshot assessment using SWOT. Section 7 will draw on this SWOT assessment to develop strategies that address the weaknesses and threats, while building on current strengths and future opportunities.

Strengths	Weaknesses
Interest from many local stakeholders Role of the OBOD as a Broadband advocate and enabler Improved potential for wireless services (fixed and mobile)	Low density population in unserved rural areas Poor business case for conventional solutions Lower interest among some incumbent ISPs Limited financial capacity at all government levels Many competing high-priority projects in rural communities
Opportunities	**Threats**
Fixed and mobile wireless technology Greater provider collaboration Public-private partnerships Renewed interest from incumbent Providers	Economic uncertainty Global competition eroding local economic base Fiscal constraints on all levels of government Current Provider economics make it less attractive for last mile investments

Strengths

- There is a broad appreciation among non-metro communities of the importance of broadband. Understanding of the benefits of broadband is significantly greater than three or four years ago.
- The Commonwealth has been very supportive of local and regional efforts to expand last mile broadband infrastructure.
- The increased technical capacity of both fixed and mobile wireless have provided some previously unserved or underserved areas with cost effective Internet access.

Weaknesses

- Many unserved rural areas in the West Region project area have low population densities and challenging topography.
- Unserved or underserved areas with low populations and challenging topography make a poor business case, especially for conventional landline based Internet services. These areas may be difficult to serve without public financial support and are also less likely to have the institutional capacity and leadership needed to take advantage of the resources and opportunities available.
- In some non-metro areas that have developed broadband infrastructure, there has been low adoption of broadband services or primarily adoption of lower end and lower cost services. This

has resulted in lower than anticipated revenues for providers, while also indicating that local businesses and households are not realizing the potential benefits of many broadband services.

- The dynamics described in preceding points may mean incumbent ISPs are less motivated to expand landline services in unserved and underserved areas.
- Due to their small size and limited staffing, most non-metro communities have limited capacity and face challenging fiscal circumstances that constraint their ability to respond to low levels of broadband availability, adoption and utilization.
- There is presently little interest or energy given to broadband issues in rural and non-metropolitan communities due to many competing high-priority projects in rural communities.

Opportunities

- Across the US, fixed wireless is increasingly seen as an attractive and viable infrastructure technology for last mile (and occasionally middle mile) Internet access in non-metro areas. With low capital costs, relatively short installation schedules, and an ability to use existing "vertical assets", fixed wireless offers an opportunity to extend Internet access to many rural residential areas currently unserved or underserved. Fixed wireless has demonstrated the ability to increase both its quality of service (which has been weak in some areas) and connection speeds.
- Mobile wireless is beginning to offer a broader range of Internet services over 4G networks, which may meet the needs of some households that are currently unserved or underserved.
- As seen in the GRADD public-private partnership (as well as many other communities across the US), there is both potential and interest in collaboration between communities and services providers. In some cases this can extend to collaboration between service providers.
- Provider interest and participation during the West Region IPA and FPA workshops, and successful community and regional Provider engagement strategies regionally and nationally show the potential for greater provider involvement utilizing different technologies.

Threats

- Residents in unserved communities may lose access to public and private services that increasingly are available only online.
- Ongoing regional, national and global competition will erode the economic base of those communities without competitive broadband.
- The weak and uncertain national and global economies make investment decisions more difficult, as future revenue streams become more uncertain.
- Fiscal constraints on local government are anticipated to last for an extended period, limiting their capacity to initiate and support broadband initiatives.
- Providing Internet infrastructure to those areas with the best business case will make the remaining areas increasingly less economically attractive for last mile investments.

7. Objectives and Recommendations

Building on the core principles outlined in Section 3, the Commonwealth of Kentucky has the following high level goals in relation to broadband:

a) Broadband Internet will enhance the productivity, skills, mobility, and employment opportunities for residents of Kentucky;
b) Access and digital inclusion will be achieved for all citizens and businesses.

This planning document is designed to assist the Commonwealth with the implementation of these goals for the Mississippi River Counties in the West Region.

To bring about deliberate and planned change by government or a group of citizens, it is important to base their efforts on a sound understanding of their objectives and how they can best bring about the desired changes. This document sets out a process to inform communities and regions of initiatives on broadband access, adoption and improved utilization.

In pursuing change, this Broadband plan sets out recommendations with strategies that build on the principles set out in Section 3. Two important elements that emerge from these principles are:

- Broadband initiatives should recognize the complementary roles of the market (consumers and providers), communities, and local governments; and,
- Priority should be given to areas where the digital divide is evident in access, adoption and use of the Internet. Specifically, priority should be given to "Unserved" and "Underserved" areas.

The principals, elements and supporting information described in this document serve as the fundamental rationale for the broadband plan. The three objectives addressed include:

1. Development of the **leadership and institutional capacity** needed to initiate and sustain broadband efforts at the local or regional level;
2. Enabling availability of broadband in rural residential areas;
3. Improved public access to broadband where citizens can access broadband for free on public devices in **Internet Access Centers** (IAC) or on their own device at **hot spot**[16] locations.

The first issue that needs to be addressed in terms of achieving these goals is the uncertainty over the level of financial and non-financial resources available to implement this plan and its recommendations. With a tight fiscal situation and declining broadband stimulus funding, ***the first strategic direction set***

[16] Wikipedia: "A **hotspot** is a site that offers Internet access over a wireless local area network through the use of a router connected to a link to an Internet service provider. Hotspots typically use Wi-Fi technology. Hotspots may be found in coffee shops and various other public establishments." *Additionally defined:* Collins English Dictionary - 10th Edition.

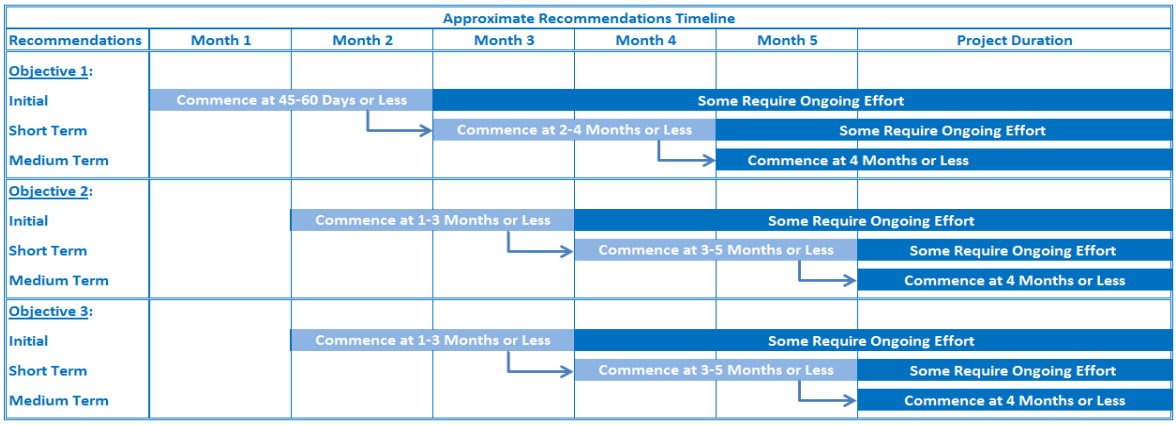
out in this plan is the setting of objectives and recommendations that can be scaled to reflect the availability of funds, energy, and commitment. For each of the strategic objectives, this plan sets out recommendations that allow regional stakeholders to adapt the plan to the resources available.

Addressing the issue of resource availability reduces a significant risk that the objectives, recommendations and supporting strategies outlined in this plan will not be implemented. By adopting a strategy that allows for varying levels of activity, there is a greater likelihood that the recommendations in this plan will be implemented. Additionally, achieving an initial level of success can help to build momentum for the long term achievement of the objectives set out in this plan.

The ***Recommendations*** in Section 7 have been organized into three categories:

- **Initial:** Related to project initiation and intended to be completed over the first 1 to 2 months.
- **Short-term:** Mobilize resources for implementing the project, including: financial, leadership, and partnerships. These recommendations often include ongoing actions, though their initial phase should be completed in the first four months of the project.
- **Medium-Term:** These involve "on-the-ground" implementation of the plan's strategies and would typically occur after the 4th month of project initiation, some may be subject to obtaining the required resources, which may need additional time. The activities covered by these recommendations do not have a completion date, since many of the activities are expected to be ongoing.

Figure 3: Example of Implementation Timeline for Recommendations in Section 7



The detailed recommendations are found below in sub-sections: 7.1, 7.2, and 7.3

7.1 Recommendations for Building Local and Regional Leadership and Capacity

The strategic framework presented in the document relies on communities and regional entities to provide initiative in addressing the digital divide in their area. In rural areas, lack of capacity and leadership has the potential to limit the effectiveness of a community-based approach. Consequently, ***a strategic objective for adequate rural broadband service is the development of motivated leadership and institutional capacity for broadband initiatives.***

In the West Region project area, the Area Development Districts have identified themselves as leaders with organizational capacity to manage the broadband initiative in their project area. The ADDs bring the following abilities to the broadband initiative:

- An organizational structure and network of elected officials and stakeholders
- Local knowledge of the area and its priorities
- Ability to work with communities to identify unserved and underserved households at the street level

During the final development stage of this plan the KC-ADD requested the establishment of a regional broadband council under the auspices of the Area Development Districts. This issue will be considered by the Office of Broadband Outreach and Development after the Project Area plans are submitted.

In addition to establishing leadership, there is broad agreement that "local champions" are a critical component for the success of broadband initiatives. This plan recommends ***establishment of a broadband leadership and support program for local communities within the project area.*** It is increasingly rare for local government leaders to be unaware or uninterested in the desirability of having good Internet access throughout their jurisdiction. However, interest and awareness has frequently not translated into action in communities where financial resources are constrained, technical knowledge is missing, and leadership is in short supply.

Important elements of leadership and capacity development at the community level include:

- **Recruitment of individuals** with the interest, energy, and time needed to provide leadership. Leaders do not need to be people with technical skills, but should be individuals with the motivation and skills to take initiative and engage their community.
- **Empowerment of leaders** by providing official sanction and support from elected officials and key community organizations.
- **A mechanism for accountability** for leaders back to organizations providing support and sanction.
- **Educational and learning opportunities** for leadership so they can acquire the knowledge and skills for developing goals, actions and tasks related to the digital divide in their area.

- **Institutional support** from organizations with the capacity for organizing meetings, ensuring effective communications, and providing logistical support.

Finding and developing leadership at the local level can include key individuals, local stakeholders or stakeholder organizations willing to take on initiating and maintaining local broadband efforts. *In practice, a mix of key individuals and local institutions is often the most effective form of leadership.*

Recommendations for Leadership Development

Initial Recommendations:

a) Establish a regional body to promote and recruit community leadership for broadband availability or public Internet site initiatives.
b) Actively research and access viable funding sources for the project and sustainable broadband planning and leadership.
c) Commence regional efforts to identify and recruit individuals and organizations at the community level willing to take on leadership roles for broadband availability in the project area. This effort can be carried out through proactive telephone and email survey at the local government level, and with major stakeholders in the project area or greater region.
d) Provide orientation sessions to individual and organization leadership to orient them about Broadband, the available resources and how they can improve broadband availability and/or enhance Broadband opportunities in their community.
e) Develop tactics that fully leverage State Broadband initiatives.
f) Establish a sub-committee of Broadband Providers

Medium Term Recommendations:

<u>In addition to the above:</u>

g) Organize a series of webinars or face-to-face workshops to assist local community leaders in the project area in developing local broadband planning and outreach priorities on broadband for education or through expanded public access.
h) Facilitate a peer-to-peer support group among community leadership;
i) Provide technical assistance on issues related to improving rural residential broadband availability. This component is critical to empowering local communities and their leaders and provides community leaders engaged in broadband with a mechanism for accessing local and regional individuals with technical skills and experience in facilitating broadband availability. As communities engage in broadband initiatives, they will encounter issues requiring expertise. Access to knowledgeable individuals, as mentors or paid consultants and a mechanism that facilitates this process will be an important strategy to meeting this need.

Given that many rural communities face the shared challenge of developing and supporting local leadership, it is also ***recommended that active and ongoing outreach to state-wide and regional organizations with complementing objectives be undertaken to explore collaborative opportunities through funding or in-kind contribution. Several agencies of Commonwealth government, industry groups and service organizations are potential groups to be targeted.***

Checklist for Developing Community Leadership

Individual leadership

- Community leaders and elected officials understanding benefits and impacts of broadband
- At least three committed leaders
- Leaders that have the influence to enlist community support
- Leaders committed to obtaining the resources for implementation.

Organizational leadership and capacity

- One or more lead organizations have been identified
- The lead organization(s) are willing to develop partnerships for implementation and operation
- Personnel within lead organization are identified and available to provide leadership and support.

Shared Vision: Leadership (individual and organizational) has a shared vision of the broadband initiative;

Community support:

- Benefits of broadband are understood and supported by local businesses and key organizations
- There has been community engagement on the benefits of broadband and in the level of support for a broadband initiative.

7.2 Recommendations for Enabling Broadband Availability

Communities in the Mississippi River project area that have less than adequate Internet services face significant barriers in overcoming this digital divide. Nonetheless, communities in the project area have the potential to develop the leadership and commitment necessary to achieve the broadband they need for their residents, businesses, and community anchor institutions.

In the West Kentucky project area, the priority is on enabling broadband availability to rural residential areas without high-speed Internet service and improving public access.

The issue of poor or no Internet services in schools and rural residential areas can be highly fragmented in the Mississippi River Counties. A regional approach to this issue in the project area will enable local leaders to directly address the need. ***This plan recommends a process whereby communities in the project area take responsibility for proactively identifying, finding, and compiling detailed information about unserved and underserved areas at the street level that addresses their community's needs. These local efforts should be supported by the regional body with outreach, education and support.***

Appendix I includes a detailed outline of the key opportunities and requirements facing local communities. It is recommended that communities adapt this process to fit their own circumstances and culture. The result should be process where the values and priorities of a community determine subsequent tasks and choices. As communities move down the road to implementing specific strategies, they may find that initial choices need to be re-assessed. Improving broadband availability requires persistence and the ability to work over an extended period.

If the overall strategy is based on local responsibility and leadership, there still remains significant scope for regional Work Group and stakeholder efforts to support these local initiatives to expand broadband availability. ***The recommendations below can be combined with or in addition to the steps outlined in the section on leadership.***

Initial Recommendations:

a) Develop and circulate an information package among local communities that identifies the resources and opportunities available for improving broadband availability at the local level;
b) Circulate, promote and leverage the "eLearning Module" on community approaches to improving broadband developed by the Office of Broadband Outreach and Development.
c) Use regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website.
d) Leverage the Broadband Provider sub-committee and regularly meet and discuss availability issues in the project area, to solicit on-going input from the group on their information package (Recommendation **a**), and to begin broadband-specific collaboration among project leadership and Providers to improve communication and find ways to collectively improve availability.

Medium Term Recommendations:

e) Building on the efforts identified above, develop and expand regional approaches to Local Internet Expansion, bringing together communities that undertake local broadband availability initiatives. This would be a collaborative effort based on a shared process, in tandem with community work on local project initiatives and would include additional regional or Statewide Providers. Include a process for communities to share information and resources, active mutual aid or peer support, and technical assistance as noted in the section on leadership.

Appendix 1 includes detailed information about the process and tasks for local communities to use for expanding broadband services in rural residential areas. It also includes basic starting points for consideration prior to commencing a community effort.

7.2.1 Stages and Tasks for Internet Access Initiative

The diagram on the following page is a visual representation of the stages and tasks that communities should typically follow during an Internet access initiative. The steps and tasks identified are explored in greater detail in Appendix I. The Office of Broadband Outreach and Development (OBOD) has also created an online "eLearning" module that addresses local broadband availability. The module is available on the website noted below and includes a case study of the GRADD project: http://finance.ky.gov/initiatives/broadband/pages/default.aspx .

1: Preparation

- Develop Leadership
- Establish preliminary objectives and priorities
- Identify assets and key data

2: Engaging Internet Services Providers (ISPs)

a) Identify ISPs
   - Existing ISP(s): as backhaul or last mile
   - Adjacent ISP(s)
   - Regional ISPs

b) Determine Level of ISP Interest
   - Informal approaches
   - Request for expressions of interest (RFI)
   - Qualify Interested ISPs: Due diligence (capacity, references)

3: Refine Objectives and Relationships

a) Identify strategic options and make choices
b) Realistic target areas to be addressed
c) Establish business case and budget
d) Organizational model:
   - Support ISP as sole provider
   - Outline Public Private Partnership as solution
   - Local government or NP entity as provider

4: Make Commitments

a) Secure funding
b) Commit funding
   - Request For Proposals (unless direct award)
   - Contract Negotiations

7.3 Recommendations to Improve Internet Access

With limited public access to the Internet in many parts of the project area, a broadband planning priority for the Mississippi River Counties is expansion of Internet Access Center (IAC) services for targeted groups with the greatest need. Internet access centers are seen as a critical element in driving Internet adoption and skills among groups that are either non-adopters or have low levels of Internet use. Based on the assessment highlighted in Sections 5 and 6 and input received from the IPA and FPA Workshops, the following are recommended as specific target groups for IAC services:

- K- 12 students who need broadband access after school hours;
- Seniors, especially those with lower incomes;
- Unemployed members of the labor force, especially those with lower computer skills;
- Small business entrepreneurs / self-employed / home based businesses.

Each of the above groups has sub-optimal Internet use and the potential to improve. The value of Internet Access Centers in addressing the needs of these target groups has a number of components: free Internet access at decent speeds; a safe and quiet environment; support from knowledgeable staff or volunteers; and, specific training on use of the Internet. To develop IAC's during fiscally challenging times, creative strategies are necessary. The strategies recommended are the following:

Initial Recommendations:

a) Expand the Regional Body to include stakeholders interested in supporting the Internet Access Center approach;
b) Develop an Action Plan for both low and high levels of efforts, with the latter being contingent on additional resources.

Short-term Recommendations (to maximize existing resources):

c) Survey existing public access sites to determine interest in the project and the characteristics of current facilities and their programming support.
d) Organize workshops in the project area at existing public access locations to actively explore and promote opportunities for:
    - Integrating public Internet access sites within facilities that have their own resources (examples would include seniors centers, health clinics, recreation centers, employment training centers, and small business support centers. Public Internet access centers need not be stand-alone independent entities).
    - Organizing collaborative initiatives combining different organizations and sectors to improve the services of IAC's. This could include having one organization provide training to their target population out of another organization's facility.
e) Identify potential Wi-Fi hot spots where access centers are not a viable option. While this is not an optimal option, in some communities this may be the best solution.

f) Seek out locally based organizations and facilities that may provide support to targeted groups, such as service clubs, churches, veterans groups, and libraries. This may include recruiting and cultivating project leadership from these groups.

Medium Recommendations:

g) Develop new programming and/or expanded hours to meet the needs of the following groups --
   - **Low income households with children**: Make sure public Internet access sites are open for after-school hours, including evenings.
   - **Unemployed Individuals:** For unemployed individuals, the primary vehicle for digital literacy would be through employment training centers and libraries.
   - **Elderly Individuals and Households:** The most frequently cited barriers for seniors are lack of relevance and lack of digital literacy. Providing inviting and informal settings seems to put many seniors at ease and minimize their anxieties about technology.

h) Examine options beyond Public Internet Access sites that achieve similar objectives.
   - Literacy training is most effective when embedded in activity that the adult already values or is comfortable with. Creative Internet programming for seniors can build on their interest in grandchildren, health, and cooking classes. Training sessions can be delivered in informal settings or seamlessly integrated into existing programs and services. Tablets and set-top television boxes are also non-traditional vehicles for accessing the Internet that provide an alternative to the often intimidating desktop computer with its complex operating programs.
   - The primary barrier to adopting broadband within low income households with children is cost. A number of distinct strategies can help non-adopters who cannot afford (or don't believe they can afford) a broadband connection and computer in their own house: free or low cost computers and broadband services; a Life-Line pilot project.

8. Action Plan for Broadband in West Kentucky Project Area

The action plan components included in this section are preliminary. They begin to outline the tasks, timelines, and responsibilities reflected in the recommendations in Section 7. It is expected that this outline will be adjusted with more additional detail as the plan is implemented, to reflect the availability of resources and with more information being developed for the work required for implementation.

Objective 1: Build Local and Regional Leadership and Capacity

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders and Local Leadership	Begin Month	Outcome
1a	Establish Regional Lead Body	Recruit & confirm involvement and level of commitment	PuADD & Work Group		1	Establish committees and subcommittees
1b	Secure Funding Sources	Approach potential funders	PuADD & Work Group	Delta River Authority & others	2 (ongoing)	Submit funding applications, research others
1c	Expand leadership (Community Level)	Recruit new community leaders & stakeholders	PuADD & Work Group	K – 12 Superintendents & principals; IAC Sponsors; Members outside of gov.	1,2	Leaders with focus on public Internet access.
1d	Orientation Sessions	Provide orientation sessions – for individual & organization leadership	PuADD & Work Group	K–12 Superintendents & principals; Murray State; IAC Sponsors; Members out of gov.	2	At least two webinar or face-to-face orientation session.
1e	Tactical develop. to leverage State initiatives	Develop tactics that fully leverage State Broadband initiatives.	PuADD & Work Group	Local gov. or business contact w/PR skills and project interest	2	*e-Link to appropriate state web sites *Connect/coordinate with state on PR progress reporting
1f	Establish Provider sub-Committee	Build partner relationships and problem solving approach	PuADD & Work Group	Project area providers, utilities, GRADD, QWireless, Fastnet, others	1,2	Group becomes an input source on availability gaps in the project area.

1g	Organize a series of webinars or face-to-face workshops	Raise awareness and support local community leaders in developing local broadband planning and outreach.	PuADD, Community Leaders		Subject to resources	Community oriented workshops and webinars.
1h	Establish peer support and	Facilitate peer support for community leadership	PuADD, Community Leaders	Murray State University, Commercial Business, Local Gov., tech service providers , BB Providers,	Subject to resources	Functioning community leadership peer group.
1i	Provide technical assistance program	Provide community leaders with access to resources, technical skills and experience	PuADD, Community Leaders	Murray State University, Commercial Business, Local Gov., tech service providers , BB Providers,	Subject to resources	Technical assistance program provides expertise and education to community leaders and stakeholders.

Objective 2: Enabling Broadband Availability

Component (with Section 7 Reference Number)		What	Initial Leadership	Other Stakeholders & Local Leadership	Begin (Month)	Outcome
2a	Develop and circulate information package	Agree on design and approach to information package	PuADD	Providers, Local Govt., GIS person, Chambers	2-3	Agreement on content, packaging, and points of distribution at communities in project area.
		Produce and distribute package	PuADD	Local media, education sector.	2 & ongoing	Package sent to local governments, officials, and stakeholders.
2b	Promote & leverage eLearning modules	Promote eLearning & outreach activities: Webinars; presentations;	PuADD & Community Leadership	Local media, education sector.	3 - 4 & ongoing	Participation of interested individuals and stakeholders; identification of local projects.
2c	Regularly planned events	Promote/support local broadband availability initiatives, ideas, materials (see tech assistance 1i: Leadership)	PuADD & Community Leadership	Muni and county gov; utilities and Providers.	Subject to resources	Better Broadband info on services to unserved or underserved households in the project area.

2d	Leverage the Broadband Provider sub-committee	Leverage sub-committee: *regularly meet *discuss availability issues *solicit on-going input *input on information package	*PuADD Representative *Provider-appointed Leader	Providers with service in project area and others from region.	2 & ongoing Frequency TBD	*Discuss availability issues *Solicit input on information package * Begin collaboration on avail. Gaps *Review and share SBI coverage data and trends in State/Nationwide
2e	Expand participation of local internet initiatives to more communities	Build on initial project work, grow the number of participating communities, info sharing/collaboration., peer support, technical assistance.	PuADD & Work Group	Local Govt; K–12 superintendents & principals; Seniors groups; Other social services.	3 - 4 & ongoing (Subject to resources)	More community participation with interested individuals and stakeholders; identify more/new local projects.

Objective 3: Improving Internet Access

Component (with Section 7 Reference Number)		What	Initial Leadership	Others Stakeholders & Local Leaders	Begin *(Month)*	Outcome
3a	Expand the Lead Body to include IAC stakeholders	See leadership section, 1b	Purchase ADD & Working Group	Educators, Town Gov., Chambers, Commercial Bus.	2-3	Project leadership that includes IAC stakeholders and related constituent groups
3b	Develop detailed action plan	Actions, tasks, participants, rolls & responsibilities, time lines	Purchase ADD & Working Group	Current providers of access sites, Educators, Town Gov., Chambers, Commercial Business	2-3	Documented & detailed actions and tactics that support the BB plan.
3c	Conduct survey of existing sites	Design survey; collect contact information; deploy survey; gather and analyze data	Working group on public access	Current providers of access sites; Student volunteers	3-5	Identification of interested organization; obtain data on current sites – technology, hours of operation, facility, staffing, existing program information.
3d	Organize workshops for existing sites	Design and deliver educational workshops for target groups	Working group on public access	Current providers of access sites; others	3-5	Shared understanding of challenges and opportunities. Agreement to participate.

3e	Identify new Hot Spots	Identify potential Wi-Fi hot spot sites	Working group on public access	Student volunteers	4-5	Potential sites and proponents identified.
3f	Recruit organizations/sponsor groups and facilities	ID local agencies who work with target groups, discuss programing and potential facilities	Working group on public access	Current access site providers, local social support agencies, others	4-5	Stakeholder commitment to new programming, additional IAC sites identified
3g	Develop new programming/hours	Delivery of new programing and expand hours at IAC's	Working group on public access	Current access site providers, service organizations, commercial sponsors, others	Subject to resources	New programs designed for specific target groups. Increased Internet skills, adoption, and utilization.
3h	Examine alternative approaches to Public Internet Access	Explore opportunities such as Life-Line, free or low cost computers	Purchase ADD & Working Group	Community groups	Subject to resources	New alternatives identified, begin advanced action planning.

9. Metrics for Tracking Progress and Impacts

An important part of any plan is developing a means to track progress and determine impacts. Without the ability to track progress, plans can go off track without stakeholders knowing why or when. Tracking progress enables project leaders to keep on track, identify issues, and adjust the plan accordingly, while also providing the necessary accountability to OBOD for federal grant reporting.

The three **Objectives** are tied to the **Recommendations** (Section 7) which are associated with Action Plan **Components** (Section 8).

1. **Building local and regional leadership & capacity**
2. **Enabling Broadband Availability**
3. **Improving Internet Access**

Building local and regional leadership & capacity		
Metric:		***Data:***
1a	Lead regional body is established and committees defined	• Creation of organizational parameters that define structure, mandate, accountability and membership. • Endorsement of group parameters is affirmed by key stakeholders.
1b	Secure Funding Sources	• Document names, contacts status of funders approached, • Status of applications submitted • Details/terms/conditions of funds secured, and status funds to be distributed
1c	Recruited key stakeholders / individuals for community leadership group(s)	• Membership of targeted leadership group identified, invited • New individuals and stakeholders recruited to the Lead Body
1d	Delivered orientation sessions	• Number of presentations and participants (# TBD)
1e	Developed tactics to leverage State Broadband Initiatives	• Submitted & approved tactical plan
1f	Established Provider sub-Committee	• Document participants, meeting frequency & issues addressed • Over time, document solution collaboration, opportunities to fill availability gaps through partnership
1g	Organized/ implemented webinars or face-to-face workshops	• Document number of presentations, community locations, participants, ongoing meetings scheduled in project area *(# TBD)*

Building local and regional leadership & capacity		
Metric:		***Data:***
1h & i	Established peer support and technical assistance program	• Document design of program, frequency of use, issues addressed, recruitment of volunteer or contractor presenters, and assess participant program impact.

Enabling Broadband Availability		
Metric:		***Data:***
2a (1)	Completed broadband availability information kit	• Finished kit content and subsequent updated kit at periodic intervals.
2a (2)	Distribution of information kit on broadband availability and public Internet access sites to local governments and stakeholders	• Points of distribution, activity log related to community use and engagement • Number of kits distributed, plus online tracking of access to kits (if online) *(# TBD)* • Plan/prepare for v2 updates, timing, team contributors, data sources
2b	Circulation, promotion and leveraging the "eLearning Module" on community approaches to improving broadband developed by OBOD	• Number of presentations • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
2c	Use of regularly planned events for local governments to promote the ideas and materials available in this plan and on the eLearning website	• Number of presentations *(# TBD)* • Names of groups addressed • # of Participants, # Target Group Types, Leadership Interest, Project Interest
2d	Leveraging Broadband Provider sub-committee and regularly meet and discuss availability issues in project area, solicit on-going input from the group on their information package (Recommendation **a**), begin broadband-specific collaboration among project leadership and Providers to improve communication, find ways to collectively improve availability.	• Document meetings, attendees, provider attendees, info exchanged, etc. • Document provider inputs on info package/overall use of package • # of availability gaps at the community level (areas w/community-based proj's) • Identify/document competitive dynamics of provider-attendees • Document provider input on concept of "collaborative" work w/providers • Document and develop availability "package" (for areas w/community-based projects) and collective provider "work plan" for problem solving.

Building local and regional leadership & capacity		
Metric:		***Data:***
2e	Development and expansion of regional approaches – growth of base of participating communities, info sharing/collaboration, peer support, technical assistance	• # of new community initiatives launched • # and type of groups involved, total team involved • # of info "bulletins" and communication activity *(#TBD)* • # of tech assistance events or responses "logged" by lead group *(#TBD)*

Improving Internet Access		
Metric:		***Data:***
3a	Expansion of Lead Body members specifically interested in Internet Access Sites	• Number of leadership and committee group members w/focus on IAC initiative *(#TBD)* • # of initiatives initiated/in-progress *(#TBD)* • Focus areas of group – geographic, programmatic
3b	Detailed action plan for low *and* high levels of efforts	• Completion of plan with specific actions and tactics
3c	Survey of existing sites	• Set survey completion goals, team rolls & goals • Periodic team calls and status reports • Document # of surveys completed, data results *(#TBD)* • "Map" results
3d	Organization of regional workshops for existing public Internet access sites	• Program types (according to target groups served) • Number of workshops and # of attendees, # of workshops by type *(#TBD)* Completed "feedback" forms from attendees
3e	Identification of potential new Wi-Fi hot spots where access centers are not viable.	• ID # of new hot spots initiatives launched at the community level *(#TBD)* • Identification of new hot spots locations completed and population served • Document broader outreach to communities in the project area for developing new hot spot initiatives • Document provider engagement in the local area

Improving Internet Access		
Metric:		***Data:***
3f	Recruitment of locally based groups that work with target groups	• # and type of support groups engaged or established in each community *(#TBD)*
3g	Establishment of new programming	• Number of new programs, program types, target group served, # participants. *(#TBD)*
3h	Assessment of alternative approaches to public Internet access	• Document status of each alternative -- feasibility, dependencies, implementation timeline, team input, next-steps and follow-up.

Impact Metrics

Impact Metrics measure overall benefit on Internet access and utilization in the project area. This is important to OBOD for NTIA federal grant reporting purposes and for other sponsor-funders who may become part of the effort as the project progresses. Measuring and tracking impacts allows project participants to determine whether their efforts are having the anticipated effect. For funders and sponsors, impact tracking provides critical input into future policy directions and budget allocations.

- **Improved access to broadband infrastructure - Rural**
- **Increased Internet skills, adoption, and utilization in target groups**

Improved Access to Broadband Infrastructure – Rural		Data
1	# of POPs*1* and connected areas	Number of POP's – *new *expanded hrs. *expanded services *communities served in project area
2	Connectivity characteristics of services	Documented increases in *speed, *reliability, *service redundancy, *new services, *service types
3	# of new businesses served (service available)	Stat's on Broadband service coverage (e.g. premises passed or within service area)
4	# households served (service available)	Stats on broadband service coverage (e.g. households passed or within serv. area)
5	# of anchor institutions added or upgraded (by sector)	Number and type of new anchor institutions subscribing to broadband service

1: **POP** – Point of Presence

Increased Internet Skills, Adoption and Utilization in Target Groups		Data
1	Documented increase in skills among target group	Documented assessment of skills levels and skills learned: tool to be developed.
2	Broadband adoption among program participants	Conduct survey of program participants/target groups
3	Documented increase in utilization among target group	Develop and conduct survey of communities participating in project area – quantify users/uses/usage in project area

Impact Metrics may need to shift or adjust when the detailed action plan is finalized, or if any material change is made to the plan when the project commences in the region.

Appendix I - Steps for Local Planning for Broadband Availability

The next few pages provide a detailed review of the process and tasks for local communities that want to expand broadband services in rural residential areas. It is useful to begin with some basic starting points:

- ✓ ***Begin with needs and goals, rather than solutions --*** Local and regional initiatives should not begin by assuming what the eventual Internet solution will look like, the appropriate scale of "build out", type of technology, type of ISP, or what the appropriate role of the local government should be. Instead, initiatives should address specific needs and the goals in the project area that ultimately lead to better solutions.

- ✓ ***Identify the specific needs and locations of the fragmented areas.*** Local needs and goals need to be supported with actual information on-the-ground that identifies problem areas and certain local asset information on a map, as well as aggregating the "demand potential" for underserved and unserved populations. This can become powerful information to empower and inform local leaders, and help facilitate ISP partnerships.

- ✓ ***Include, inform, and attract local leadership***. Local elected officials, economic development organizations, small business, and other active energetic leaders in the community. The educational sector has often played an important role in providing leadership and a clear rationale for making local broadband initiatives a priority. The educational sector has particular value with access to students who could be involved in documenting current and potential Internet service and demand.

- ✓ ***Consider Internet Service Providers (ISPs) as partners.*** A major point of feedback from Providers is that communities and local governments often see them as an "outsider" or only as a potential source of revenues, rather than as a partner in achieving community goals. Providers are a lot more willing to spend time exploring options with friendly communities than with those who place obstacles in their path. While a community may or may not find an attractive ISP to partner with, they should start by considering potential ISP partners. Facilitating a consultative relationship with ISP's as partners opens up an essential communication channel for the longer term of this project and enables the Broadband team to tap into a valuable resource of information on technology, equipment, and network maintenance & expertise – *the business of broadband.*

Step 1: Preparation

a. ***Develop leadership and capacity:*** This task is dealt with in Section 7.1. It is recommended that the local government or entity *not try at this stage* to define its specific role in delivering

broadband access. The role of the local government should emerge from the process of exploring options.

b. ***Establish preliminary objectives and priorities:*** A community's objectives and priorities regarding broadband will likely be in constant flux as the broadband infrastructure around them evolves. In past years, communities were likely to consider ambitious and larger scale initiatives, in part due to the availability of grants from federal and in-state sources and in part due the significant portions of their area that were unserved or underserved. However, in many cases unserved or underserved areas are shrinking, resulting in a smaller group of target users. As a result, the scale of initiative needed to address unmet needs may be smaller than in the past and require fewer resources. In addition, significant improvement to the quality and speeds of some technologies (notably fixed wireless) provides for options that may not have been attractive in the past.

Given these factors, an important early step in the planning process is defining the required scope of the Internet infrastructure initiative. Communities need to define the target or potential broadband users in specific terms that can be measured and mapped. Similarly, the level of broadband service desired for each group of users' needs to be defined so that it can become part of a cost / benefit and business case analysis. [17]

c. ***Collect important information and data*** that is critical to engaging potential ISP partners and assessing options. The list of data to be collected during this step can be extensive, though the effort is not necessarily difficult:

- **Target population or organization(s):** location (including topography), number and age of households (rural residential), density, and income/budget.
- **Vertical Assets: Towers** – if municipally owned, lease payments can be reduced or suspended to spur deployment. **High Structures** – silos, water tanks, buildings for placement of wireless equipment.
- **Pole access**: pole owner, pole type, attachment capacity, cost.
- **Rights of Way** – can be used to expedite/reduce cost of conduit placement
- **Ongoing or Pending Capital Projects** – water, road construction, new subdivisions, main street revitalization, etc.
- **Municipally Owned Utilities** - assets, customer base and back office operations can be leveraged for partnerships
- **Land** – that can be used for tower construction/locating points of presence, etc.

[17] At its most basic level, an effective demand assessment categorizes the location and type of user, information on current broadband services (cost/type), types and bandwidth requirements of applications currently in use and applications being considered (and their bandwidth requirements).

- **Ongoing/Planned First Responder Communication Upgrades –** many of these projects involve the construction of infrastructure and upgraded communication services. If activities can be aligned it is often possible to achieve economies of scale.
- **Existing Vendor Relationships** – existing relationships can often be leveraged to provide enhanced and expanded services.
- **Existing Mapping (GIS) Resources** – to provide a visual representation of community attributes that can be used in the planning process, including prospective partners.

d. **Become an attractive partner**
   - Develop leadership within local government to cultivate a corporate culture that understands and enables partnerships that assist the community in achieving its defined goals and objectives;
   - Ensure availability of Land Use Planning and Zoning documents;
   - Review zoning requirements for impediments to broadband infrastructure;
   - Consider an expedited permitting processes for installation of broadband infrastructure;
   - Review fees and charges that may become an unnecessary barrier.

e. **Communication to community:** keeping the community informed can be important in building public support for the local initiative. Communication should start as soon as possible and provide local residents and businesses with periodic updates. The communication process can prevent inaccurate information about the initiative from circulating or gaining traction. Most importantly, experience with other communities shows that good public communication builds local support and assists in the start-up up phase, especially in terms of obtaining high take-up rates of new Internet services.

f. Preparation includes developing a method of tracking progress so progress can be measured and outstanding tasks and timelines kept in full view.

Through the preparation phase, it is important that the community establish a sense of the scale of the initiative being considered. Some broadband infrastructures may be relatively modest in scope: reaching a hundred or more rural households; or, the initiative may be very much more ambitious, such as bringing ultra-fast broadband (usually fiber) to a larger geographic area with many hundreds or even thousands of households. ***The level of preparation should reflect the anticipated scale of the project.***

Step 2: Engaging Internet Services Providers

At some point early in it community broadband planning, a community will need to engage with one or more Internet Service Providers. Initially this will be to identify the current and planned state of broadband infrastructure within and adjacent to the community. Eventually, the community will need assistance of ISPs, whether it is as the providers of new local services or for connections to the global Internet (middle-mile and backhaul).[18]

The following tasks outline the steps suggested in engaging ISPs. As each step is addressed, it has major implications for the remaining planning process. If an issue is effectively addressed at an early stage, some tasks will no longer be required. If a satisfactory outcome is not achieved, additional tasks will need to be undertaken.

a) Identify ISPs: ***In order to understand possible options it is recommended that communities identify current broadband services and infrastructure***. Knowing where the closest "backhaul" or fiber-optic cable in or near one's community is important in the planning and assessment process. ISPs can be classified in a couple of ways:
   - By their retail service footprint: There will probably be one or more ISPs within the community. In addition, there may be ISPs that serve adjacent areas and may be interested in serving additional areas; lastly, there may be regional ISPs that may not be adjacent, but who have services not too distant from the target community and may be convinced to expand to the target area. Communities should identify all ISPs that fit one of these descriptions.
   - By the type of service they sell: some ISPs may be focused exclusively on retail services (selling directly to the consumer). Other ISPs may also provide wholesale services to other ISPs.

   In identifying ISPs, it is important to include fixed wireless providers (WISPs). While this sector is still maturing, there are an increasing number of WISPs that are very agile and provide services capable of high speeds and good quality. Mobile wireless, on the other hand, while a highly desirable service, at this point is not generally considered an alternative to a dedicated broadband service due to issues with reliability, costs and usage caps. Some of these limitations may be addressed in the near future. Satellite providers are not usually considered a preferred option due to issues with quality, cost, and technological limitations.

[18] Wikipedia: "Backhaul generally refers to the side of the network that communicates with the global Internet, paid for at wholesale commercial access rates … Sometimes middle mile networks exist between the customer's own (*network*) and those exchanges. This can be a local WAN or WLAN connection, for instance Network New Hampshire Now and Maine Fiber Company run tariffed public dark fiber networks as a backhaul alternative to encourage local and national carriers to reach areas with broadband and cell phone that they otherwise would not be serving. These serve retail networks which in turn connect buildings and bill customers directly."

b) Determine Level of ISP Interest: ***once the range of ISPs that can potentially provide new or better broadband services has been established, it is recommended that communities begin the process of entering in exploratory discussions with one or more ISPs***. Completing the previous steps will help community representatives in this engagement process by giving them a clear senses of purpose, information that allows them to convey specific objectives, an understanding of important broadband terminology, and a the ability to convey the idea that the community is a willing and attractive partner.

At this point, the community needs to decide if it wishes to undertake a formal or informal process. Some communities have begun the engagement process by issuing a formal Request for Expressions of Interest (RFIs). These can be more or less detailed. Their primary objective is to identify interested ISPs, as well as the range of options that these ISPs may be able to offer. Generally it is preferred that the RFI not describe the technical solution desired, but rather should focus on the goals and outcomes. Allowing the ISPs to propose different solutions will provide the community with a fresh perspective on how its broadband goals may be achieved. The RFI should convey the information that the community has collected during the preparatory phase, together with a statement that the community is willing to consider a broad range of solutions and is willing consider assisting or partnering with the ISP in a variety of different ways.

Some communities have preferred to start the engagement process with an informal approach to one or more ISPs, usually ones that already provide Internet services to the area. In some cases, the approach may be made to a local utility that does not currently provide Internet services but has the capacity of doing so (e.g. a local or regional electrical utility or telephone cooperative). Depending on the level of interest expressed during the informal conversations, the community may choose to proceed with an RFI or alternatively to begin more detailed discussions with the interested ISP.

c) Qualify Interested ISPs: ***regardless of whether an informal or formal process is used, the community should undertake due diligence of any ISP or utility that is wishes to explore partnering with***. Due diligence would typically include confirming the organizational, technological and financial capacity of the possible partner, as well as its track record for installing infrastructure and delivering quality services.

Step 3: Refine Objectives and Relationships

Once a community or region has completed the preparation phase and collected information through the ISP engagement process, the time should have arrived for making key decisions and developing concrete plans that have defined service areas, is cost effective and is achievable within available resources. There are a number of critical key steps in this process. These steps are not necessarily sequential. Completing the following steps may be a fluid process that shifts back and forth until a satisfactory solution has been developed.

a) ***Review strategic options and set priorities***: At this point, the options should be relatively clear, though the decisions still difficult. Usually there is trade-off between costs and benefits. Hard decisions need to be made on which priorities matter most. The most attractive technology may not be the most pragmatic and cost effective solution. Alternatively, a relatively small increase in project costs may open the doors to future development. Having a longer term vision should help in setting priorities and making choices. Is the community setting itself up for a longer term involvement in a comprehensive and ambitious approach to developing broadband in the area? Or, are market forces felt to be largely effective, with the community stepping in only on the margins?

b) ***Establish a business case and estimate of resources and budget required:*** before any decisions can be finalized, a business case must be made for any investments made by the local government, even if the investment is limited to making public assets available to an ISP.
   - Develop an analysis of the costs and benefits for any investments;
   - Ensure that any proposed service or infrastructure investment is financially sustainable: will projected revenues cover expenses? Are "take-up" rates realistic? Are there contingency plans for lower revenues or unexpected costs?

c) ***Establish a partnership model***: at this point it will probably be clear what the respective roles of local government, community institutions, and ISP will be. Nonetheless, these need to be carefully considered and articulated. While there are numerous options and variations in partnership arrangements, the most common would flow from the following:
   - Community as facilitator of a service to be developed and managed by an ISP. This may include making community assets available for cost or for less than cost. This may also include becoming a long term purchaser of Internet services from the ISP (ensuring a revenue stream).
   - A public private partnership between a local government entity and an ISP. The local government may choose to subsidize the capital costs or build part of the infrastructure and lease it to the ISP. There are numerous other partnerships models. The best approach is to contact other local governments that have developed partnerships or are actively considering one.
   - Local government or local not-for-profit entity as provider: while this is the most ambitious approach, a number of communities have successfully gone down this road.

d) Other considerations:
   - "Over-building" an existing ISPs infrastructure is very costly and may be unnecessary. There should be a clear strategic advantage for this option to be considered. Such a strategic consideration could include bringing in competition, better pricing and a level of broadband that may otherwise not be developed.

- A different approach could consist of a modest extension or enhancement of the existing broadband infrastructure in the area. A community need not fix on high end solutions where more modest solutions may achieve its objectives.
- Communities should look for opportunities to piggyback lower priorities that may be very achievable at low cost and effort within the primary arrangement. An example can be found in communities that have negotiated the "free" provision of Wi-Fi hot spots in return for ISP access to vertical assets owned by the community.
- Demand Aggregation is a strategy for securing better or less expensive Internet services. Consolidating demand into a cluster of guaranteed contracts can also be used attract ISPs or as a bargaining chip in negotiations. Demand aggregation opportunities vary greatly by community.
- To the extent that a community takes on formal responsibilities for provision of Internet Services, either within a partnership or as the sole provider, it is critical that a detailed plan be created for the operation and maintenance of the service and supporting infrastructure. This plan should lay out any ongoing responsibilities of all members within the partnership.
- Development of a marketing and communication plan can help generate both public support and (where appropriate) high levels of subscriptions ("take rate"). High take rates play an important role in generating initial cash flow as well as a financially sustainable broadband service.

Step 4: Make Commitments

Once a community or local government has decided on its course of action, the final steps of securing funding and negotiating contracts must be undertaken with due care.

a) ***Securing funding:*** Funding may or may not be required to execute the planned Internet infrastructure project. In some communities, the facilitated process and access to public assets has been sufficient to entice an ISP to build the required infrastructure. To the extent that funding is required, a number of options exist:
    - Aggregating existing demand and purchasing power in the form of guaranteed contracts can be used as part of a long term financial arrangement with an ISP. This will require organizations to collaboratively commit budget allocations to multi-year contracts. The contract should be based on provision of specified services and service levels.

    - ***Access grant opportunities:*** granting programs for broadband are currently in flux. At a national level, stimulus funding for broadband is coming to a close. However, the Connect America Fund (http://www.fcc.gov/document/connect-america-fund-1) and Rural Utilities Service (http://www.rurdev.usda.gov/RUSTelecomPrograms.html) continue to provide federal grant opportunities. The Connect America Fund is still in its

early stages and its rules are not yet settled. These funding sources may be attractive to larger projects, for established ISPs or for ISP's with certain technologies. For smaller initiatives, the level of administration required by the funding sources may make them inappropriate. The evaluation of grant opportunities and other financing options should be one of the preparatory steps carried out by the leadership group.

- ***Funding mechanisms of Kentucky*:** the Kentucky Infrastructure Authority (KIA) provides a mechanism for funding construction of local public works projects.

- ***Commit funding:*** once funds have been secured, a process is required to commit any public spending directly on a broadband infrastructure project. The committing of public funds must be done in a transparent, effective, and efficient manner. This document does not deal with this issue. Nonetheless, should public funds be required, the community must be ready to undertake either a Request for Proposals (RFP) or Direct Award. It may also require skill to enter into complex contract negotiations with ISP's.

Appendix II: List of Resources

This section provides an inventory of financial resources available to stakeholders undertaking activities recommended in this plan. This list of resources will change over time as priorities, mandates, and budgets of funding organizations change. Stakeholders will need to update and supplement this resource list. It is highly recommended that stakeholder contact prospective funders to review funding availability, criteria, and timelines.

Warm

Delta Regional Authority (DRA) -- http://dlg.ky.gov/news/gradd+dra.htm -- This is a press release is from the ConnectGRADD project back in 2009…relates to this approach. Find more: http://www.dra.gov. Investigate an initiative (Started in 2007) called the **iDelta**- http://www.dra.gov/initiatives/idelta.aspx.

Murray State University Regional Outreach -- http://www.murraystate.edu/outreach -- In its fifth year. The Regional Outreach Grant Program provides seed money for new and innovative educational programming for west Kentucky youth and adults.

Innovation and Commercialization Center -- Paducah, Ian Blanche, Director. Website: http://entrepaducah.com. Funding from http://www.thinkkentucky.com/dci/

Local Government Economic Development Program (LGEDP) -- http://dlg.ky.gov/grants/stategrants/coaldevelopment.htm -- Provides grants of coal severance and processing tax revenues to coal-producing counties, commonly referred to as the Local Government Economic Development Fund (LGEDF), "to assist eligible counties in diversifying their local economies beyond coal production and meet other community development needs"

Kentucky Infrastructure Authority (KIA) – Infrastructure loan programs: http://kia.ky.gov/loan/ --
Fund B: http://kia.ky.gov/loan/fundb.htm (Leg. Appropriation)
Fund C: http://kia.ky.gov/loan/fundc.htm (Bonds) – Application:
http://kia.ky.gov/NR/rdonlyres/B367C47F-F1F0-444F-A9B1-E3AF505A71B0/0/FundCApp090110.pdf

USDA Farm-to-School Grant Program --
http://www.grants.gov/search/search.do;jsessionid=grbyRpjYjpTFpY1f4TLlCm81whPlzb3x9Pp2qpBBZGJflLjJdyQ6!-804278280?mode=VIEWREVISIONS&revNum=0 (NOTE: Matching requirement)
"USDA anticipates awarding up to $5 million in grant funding to support efforts that improve access to local foods in eligible schools"

U.S. Economic Development Agency –
Public Works and Economic Adjustment Assistance Programs
http://www.grants.gov/search/announce.do;jsessionid=5mDyR3wWJRFN74fTPlLk1BjqKjfy9lLqmhVnFmRGKx1ymJ3BqQHd!286685741 ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY … ,
EDA provides strategic investments that foster job creation and attract private investment to support development in economically distressed areas of the United States. Under this FFO, EDA solicits applications from both rural and urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants made under these programs are designed to leverage existing regional assets to support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.

Worth Tracking --

US - DoD Injury Prevention, Physiological and Environmental Health Award (IPPEHA) --
http://www.grants.gov/search/synopsis.do;jsessionid=N0GKRppGJQwpkhgwR2XwL5PyvTjsQZSzph9qzMV6Pps11hmg5CHB!-804278280
NOTE: This is NOT a specific grant for a Broadband initiative, but the **Telemedicine and Advanced Technology Research Center(TATRC**), located at Fort Detrick, Maryland, is administering this grant. This group should be followed closely for applicable initiatives in the future.

Corporation for National and Community Service – (Grant $5m)

School Turnaround AmeriCorps FY13

http://www.grants.gov/search/School%20Turnaround%20AmeriCorps%202013%20Notice%20of%20Federal%20Funding%20Opportunity
The mission of the Corporation for National and Community Service (CNCS) is to improve lives, strengthen communities, and foster civic participation through service and volunteering. CNCS—through its AmeriCorps and Senior Corps programs and the Social Innovation Fund—has helped to engage millions of citizens in meeting community and national challenges through service and volunteer action.

Appendix III: Contributors to this Plan

This Plan was developed over a ten month period by a team that included the Commonwealth of Kentucky Office of Broadband Outreach and Development (OBOD), the Project Area Working Group for West Kentucky, the Kentucky Council for Area Development Districts, Michael Baker Jr. Inc., and Strategic Networks Group.

In the West Kentucky region's project area, consisting of the Ballard, Carlisle, Hickman, Fulton Area Development Districts, this regional planning process was initiated in May 2012 with the active involvement of the Area Development Districts as regional leaders. From May 2012 to February 2013, the planning process progressed through a series of conference calls and two stakeholder workshops in October 2012 and February 2013.

During this process a broad range of stakeholders throughout the three ADD regions were contacted about the Broadband planning initiative. Many were invited to provide input and participate in the two workshops. A list of organizations that were consulted as part of the development of this plan is available through the KC-ADD office.

Appendix IV - IPA Workshop Meeting Notes: West Region

October 22, 2012

This document provides an overview of the issues discussed during a broadband planning workshop held in the West Region of Kentucky, focusing primarily on the Purchase Area Development District. The document concludes with an "Outcomes" summary that identifies the goals and objectives agreed to by the end of the workshop. This documents draws on notes taken by KCADD, Baker and SNG staff.
Brian Kiser convened the meetings and introduced the project team members and working group members before asking attendees to introduce themselves around the room. Kiser provided a brief history of the inception of the Commonwealth Office of Broadband Outreach & Development, including its mission statement, goals, and current involvement in presenting to legislative bodies.

Kiser explained that the purpose of the planning process is to identify and engage stakeholders, identify the priorities of the region, and engage Internet services providers. He also summarized the challenges that Kentucky faces in Broadband adoption and utilization. Having Broadband available to homes and businesses does not ensure it is being used effectively to improve the way we live and work. At this juncture, the planning process turned to the ADDs and regional stakeholders to allow them to determine the goals and objectives for the region.

Jennifer Beck-Walker presented the West Region Working Group's Scope of Work (SOW) document. Beck-Walker explained that when the OBOD asked the ADDs to write the SOW, they were asked to choose a project area based upon an area where there was a measurable broadband need that could be addressed with the involvement of committed stakeholders. The four Mississippi River counties of Carlisle, Hickman, Fulton, and Ballard were selected because of their apparent lack of access to affordable broadband for households. As the working group continued to investigate the situation, they discovered an alarming lack of public access to Internet services for those citizens in the area that cannot get broadband in their home or cannot afford to subscribe to it. In the Regional Profile provided by OBOD's subcontractors, Baker and SNG, the Working Group learned that K-12 schools in the area are already adopting advanced Internet processes at a level consistent with their counterparts across the state. As the primary industry already adopting advanced processes and as a critical community anchor institution in the area, the Working Group determined that any efforts addressing broadband access or use would necessarily involve the school systems. Beck-Walker reported that at this juncture, the stakeholders present in the room were being asked for input and commitment to assist in the goals going forward.

Bill Bates then provided technology and trending information relating to regional broadband availability, project goals, changes in provider participation over the past two years, and data on users, usage, and uses.

Derek Murphy then presented information relating to the regional survey data from March 2012. Murphy then informed the group that the goals for the day's workshop would be creating a vision, goals, strategies for achieving those goals, action items, and other strategies for implementing the action plan. Various fixed wireless providers present noted that if local areas wanted to help them in assessing the cost and possibilities of serving areas, a list of potential vertical assets would be very helpful, including foliage estimates. A representative from Fast Net Wireless noted that they usually hesitate to consider applying for grant funding because of the red tape involved. Q Wireless noted that in working with Green River ADD, they were able to take advantage of grant money without the red tape and found that partnership to work very well for both the ADD and the provider. Fast Net representatives also noted that they have contracted and delivered several county hot spots that were either provided by the city or the county in other areas. They reported having good experiences in working with local officials in doing this work.

The plenary session identified two main objectives for this planning process:

1. Create access to reliable broadband connections in currently unserved and underserved rural areas by focusing on provider-centered partnership for potential build-out;
2. Work with stakeholders to address public access points for citizens who either cannot currently get broadband in their homes or cannot afford to subscribe to broadband.

The group broke for lunch and reconvened at 1 p.m., splitting into two breakout groups—one to address availability needs and one to address public access points.

Public Access Group

1. Many households can't participate in educational and entrepreneurial support programs because they lack or can't afford Internet service. This is a major barrier to increasing the skills and income opportunities for residents in the region.
2. Many Internet access sites are resource poor and have extremely limited hours of operations. Rural libraries were cited as one example.
3. A couple of participants felt that public schools were not a promising base for establishing public access centers, in part because they were more closed than collaborative and the schools presently have limitations on their hours of operation.
4. The group agreed on the following objectives:
    - Initiate a process of developing Internet Access Centers as vehicles to achieve higher levels of adoption and utilization;
    - Access Centers can be an important vehicle in providing education for entrepreneurs and support staff (maybe Best Practice Modules).
    - Need to develop sustainable business model for access centers. This may include funding from foundations.

- The key to developing and sustaining public access centers is a strong and collaborative Leadership team (consisting of strong individuals and key institutions); this planning process needs to develop a work group to start working thru implementation planning.

Availability Group

Participation in the breakout session included Internet Service Providers, ADD business contacts and Stakeholder/citizens. Those who participated had interest in broadband access and availability for the focus area, to gain a better understanding of the business of broadband: how the Providers operate their business, the limitations of technology types, and criteria for household and business services and how decisions are made.

Criteria and attributes for considering service or new service expansion:

- Broadband subscriber **density** in area -- Institutional, CAI's, Residential, Business, Gov.
- Geography / Topology
- Middle-mile Info, Head-end/Hub Location Points
- Providers presently operating in the area
- Network considerations for Providers / Criteria for Households(H) & Business(B):
    - Capacity / Speed / Latency / Symmetric Service
    - Service Redundancy (B) / Service Quality
    - Entry Cost (For HH's and the ROI for Teleworkers)
    - Demand for "Enterprise Class" Service (B)
- Technology options in the area
    - Cost/timing of fiber network expansion (a limiting factor)
    - Fixed-Wireless may likely provide a faster way to bring service in underserved areas
- Understanding the "partnership potential" of an area
- Land ownership, parcel boundary, business zoning or districts, ROW access -- location
- Public / Private Structures
    - Pole access -- Pole owner, Pole Type, Attachment capacity, Cost, Permitting/Licensing process, Speed-of-attachment (bureaucracy)
    - "Vertical Assets" – Existing towers or buildings where wireless or fixed-wireless equipment may be deployed to reach new customers; Including private-sector tower assets in the region --Co-location towers expensive, Interference with cell antenna
    - Private-sector tower assets in the region -- Crown Castle, American Tower
- Fostering a competitive environment can bring down user costs and encourage continued investment in upgrading broadband infrastructure
- Costs of customer acquisition – equipment, maintenance, installation
- Government rules/requirements/reg's/constraints –
    - Muni/County/Regional: Established department(s)? Points-of-Contact?
    - Business "guidelines" or processes: documented and in place?

- RFI / RFP: Value-based? Cost-based? Criteria defined? Is the decision/evaluation process defined, open and fair (People/Committee/Processes)?

Business Models for Broadband:

- GRADD Model: Public/Private Partnership -- ***Connect GRADD Inc.***
  - GRADD owns infrastructure assets
  - Business Partner operates/maintains network (Q-Wireless)
  - Board of Directors oversight (7 County Judges)
  - Leverage Steering Committee
  - State funding
  - Local investment funding
  - Monthly subscriber fees
  - "RIFR" Contract for business partner

- Private-Sector / "Demand-Motivated" Model – ***Work with Providers***
  - Identify area demand-potential of Broadband
  - Develop and provide value-added information "tools"
  - Encourage/engage Providers in an "information-gathering" or formal RFI process, to get input more expert input on technology and network
  - Define an open and fair proposal process – research/identify/include best-practice ideas from other regions; other States.

- Franchise Model – ***Similar to technology franchises elsewhere***
  - Defined territory
  - Longer-term contract to ensure reasonable ROI for network investment
  - Caldwell and Lyon Counties were able to get DRA funding for the initial costs of build-out, allowing the providers to rent the equipment from the county as part of a franchise agreement. The group was interested in this idea and wanted to consider pursuing it as a viable option for the area.

- "Hybrid" Model – ***In a changing economy still in recovery, are there variations to above models worth considering***
  - What would be the "mix" of public-private participation?
  - Funding –Private capital? Public capital? Combination?
  - Other incentives/offsets –Installation subsidy? Equipment subsidy?

Outcomes

This section reflects areas of agreement on goals and objectives going forward. Given the structure of the planning workshop many of the objectives are general or preliminary in nature. The planning

process will be responsible for taking these Outcome Statements and turning them into a Broadband Plan for the region. The planning process will consist of teleconference calls of the West Region Working Group and production of a draft Broadband Plan by the Baker / SNG team. The resulting draft Broadband Plan for the West Region will be presented to a stakeholder workshop in February or March for discussion, amendment and adoption. The draft plan will begin to address the implementation by identifying specific tasks, timelines, cost/benefit statement, outcome measures, and responsibilities. If any area is not completely addressed in the draft plan, they will be addressed at the stakeholder workshop.

Build a Strategic Plan for Internet Access Centers

Expand Work Group to include stakeholders specifically interested in developing and/or supporting Internet Access Centers;

I. Provide a high level strategic plan for development and maintenance of Internet Access Centers.
II. Identify and allocate tasks and responsibilities.
III. Explore funding sources for both the development and maintenance phases.

Develop a Strategic Plan for Broadband Availability

IV. A strategic plan will be developed for production of detailed and targeted information needed to initiate efforts that address broadband access and availability, while also engaging Providers in identifying and developing solutions. The plan will provide tools to assist local governments and stakeholders in developing a “kit” of information with resources specific to broadband, with defined technical service levels and requirements to make it easier for Providers to understand the business needs.
V. The Strategic plan will identify complementary efforts to these regional efforts :
    - Demand Aggregation
    - Business Surveys
    - CAI identification & inventory,
    - WiFi Hot-Spot strategies
VI. Connected to the above, the plan will provide strategies for developing the leadership needed to build capacity for sustaining ongoing efforts over time.
VII. More thorough information is needed to gain an understanding of different business and ownership models and the elements involved. The strategic plan will provide examples of successful Broadband business models for use in un-served or underserved areas, as well as sample legal documents such as RFIs, RFPs and water tower leases;
VIII. Funding is a critical component to the West Region Plan, regardless of the model involved. The Plan will identify possible funding sources to enable a sustainable effort over time.

Appendix V - Project Area Scope of Work

Name of Region WEST **Name of Project Area** PURCHASE RIVER COUNTIES

Planning and Outreach Priorities	Broadband planning and outreach priorities for this Project Area: 1. Availability 2. Adoption
Project Area Boundaries	Boundaries for this Project Area: 4 Purchase Counties: BALLARD, CARLISLE, HICKMAN, FULTON
Priorities (Sector/Geography)	Priority sectors and/or geographies for focus in this Project Area: 1. Education 2. Household/Residential Use
Availability, Adoption, Utilization Gaps	Broadband availability, adoption, or utilization gaps for focus in this Project Area: 1. Places with no BB Availability 2. Limited Adoption, where there is BB 3. Gaps in utilization of all sectors
Project Area Working Group Membership	Individuals who have agreed to be members of this Project Area Working Group: 1. 5 SCHOOL SYSTEMS 2. BB PROVIDERS 3. ELECTED OFFICIALS 4. ECONOMIC DEVELOPMENT PARTNERS 5. 3-ADD
Project Area Working Group Chair	Individual who has agreed to chair this Project Area Working Group: Jennifer Beck Walker
Next Steps	Next steps and timeframes guiding the work in this Project Area: 1. Regional Group Meeting – June 2012 2. Stakeholder Group – July 2012

** If additional space is required, please attach additional pages to this template. **

Approved: **May 31, 2012 - KY Broadband Central Planning Session _____Jennifer Beck Walker**
Project Area Working Group Chair

Project Area Focus

- 4 Purchase Counties: BALLARD, CARLISLE, HICKMAN, FULTON
- Primary Focus: Adoption, with emphasis on education system and non-adopting households.
- Secondary Focus: Availability of broadband: confirming unserved and underserved areas. Developing strategy for unserved areas.

Project Area Profile: (Baker/SNG Team responsibility)

The task will be to develop a project area profile, drawing on data in recent reports.

a) Identify predicted level and characteristics of non-adoption by households.
b) Identify main barriers to adoption and preferred means of acquiring Internet skills.
c) Analysis of education sector's role in utilizing broadband (elementary, middle, high school).
d) Identify any data on CAIs that offer availability in both served and unserved areas.
e) Confirm data on availability – identifying if areas shown to have no availability on maps accurately capture on-the-ground reality. (Working Group assistance in this area is needed)

Stakeholders Recruitment: Identify, contact and recruit stakeholders for Initial Planning Session (Sept)

- Make personal contact with key stakeholders to ensure availability and participation
- Send written workshop invitations (and personal calls if time and energy permit)
- Send Invitations to pre-workshop Webinar

Types of Stakeholders to be Recruited

a) Broadband Adoption
    - Education (K – 12)
    - CAIs (libraries, seniors' centers, others)
    - Agencies serving lower income and elderly households
    - Local governments
    - Affordable Internet for lower income households
b) Broadband Availability in Rural Areas
    - ISPs and WISPs with services in project area (4 counties)
    - Local governments

Logistics

a) Identify and confirm Initial Planning Area (IPA) Workshop date and location
b) Identify how invitations will be sent out, including follow-up and registration process.
c) Other logistics: refreshments, audio-visual aids, etc.

Purpose of Initial Planning Area (IPA) Workshop in September

a) General awareness and education around broadband availability, adoption and utilization
b) Presentation of Project Area Profile
c) Discussion and issue identification within two focus areas: adoption and availability (two break-out groups).
d) Priority setting within focus area by break-out groups
e) Identification of general strategies for dealing with priority issues

Appendix VI - Project Area Profile: West Kentucky

This section provides a profile of Internet utilization in the West Region, consisting of the Purchase, Pennyrile and Green River Area Development Districts. Most of the material is taken from the Kentucky e-Strategy Report and consolidated into one area-specific profile. Additional data is provided for the Purchase ADD, where available. For context in prioritizing regional planning activities it is important to consider the overall profile of the population and economy of West Kentucky.

Figure 1: Demographic and Economic Profile

Households	Purchase ADD	West Region	Kentucky
Population	196,393	629,170	4,339,367
Median Household Income	$38,027	$39,030	$40,061
% in Poverty	18.4%	17.5%	18.4%
% of Population 65+	17.1%	15.4%	13.3%
Organizations			
Establishments	4,676	13,268	90,511
Employment	71,646	199,490	1,480,658
Annual Payroll (in billions)	$2.28	$6.38	$51.44
Average Size of Employer	15.3 employees	15 employees	16.4 employees
USCB County Business Patterns 2009			

The West region and Purchase ADD have slightly below average (median) income and an older age profile compared to the State. The Purchase ADD has proportionally 28% more people 65 and older compared to Kentucky as a whole. At 16.8% of employment and 22.5% of payroll, manufacturing plays a large role in the West region. The manufacturing sector consists of primarily larger establishments, with only 5.1% of all businesses classified as manufacturing. The eight largest industries, ranked by annual payroll, that collectively represent over 75 percent of the economy in West Kentucky are:

Figure 2: Largest Economic Sectors in West Kentucky

Rank	Industry Sector	Percent Employment
1	Manufacturing / Processing	16.8%
2	Health Care & Social Assistance	16.3%
3	Retail Trade	15.2%
4	Accommodation & food services	9.9%
5	Construction	5.2%
6	Wholesale Trade	4.6%
7	Other services (exc. public admin)	4.5%
8	Transportation & Warehousing	3.8%
	% Employment	76.4%
% of Payroll	71.5%	% of Establishments 79.4%

Figure 3: Age Profile of West Kentucky

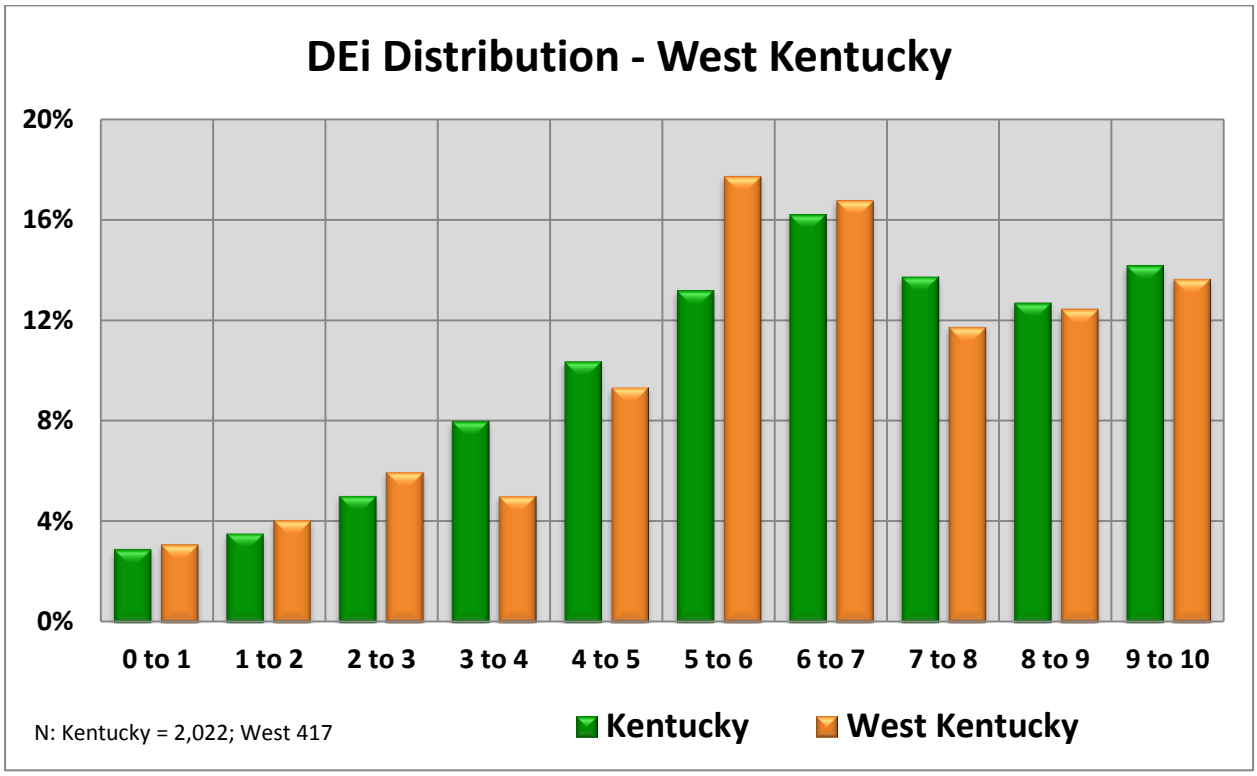
Age Distribution of Adults	West	Statewide
18 to 34 years	21.8%	22.6%
35 to 49 years	19.4%	20.7%
50 to 64 years	20.0%	19.8%
65 years and over	15.4%	13.3%

Utilization by Organizations in West Kentucky

Internet utilization by organizations in West Kentucky is moderately lower than the state average. The overall Digital Economy Index (DEi) for West Kentucky is 6.31 compared to the statewide DEi of 6.41 (based on 458 responses). This ranks West Kentucky fourth out of the five regions. The Purchase ADD, however, has an above average utilization (DEi of 6.51 - based on 166 responding organizations). The West Region's profile of utilization levels from low (1) to high (10), mimics statewide patterns (Figure 5).

Median DEi Score			
Kentucky	***West Kentucky Region***	***Ranking by Region***	**Purchase ADD**
6.41	*6.31*	*4 of 5*	6.51

Figure 4: Range of Internet Utilization by DEi



There are significant differences in how various industries utilize the Internet. One of the most important of these is the size of an organization, which impacts an organization's ability to adopt and benefit from more difficult e-solutions. Smaller organizations have lower levels of Internet utilization as can be seen in the following table:

Figure 5: Internet Utilization by Employment Size: West Kentucky

Organizations: Employment Range	Kentucky	West Kentucky	Sample Size West Kentucky
1 to 4	5.83	5.92	121
5 to 49	6.41	6.21	195
50 to 99	6.80	6.94	36
100 or more	7.38	7.57	32
All Size Ranges	6.41	6.31	394

Smaller organizations have significantly lower DEi, creating a marked opportunity to increase utilization levels. This is particularly relevant since organizations with 1 to 49 employees represent 95 percent of organizations in West Kentucky.

Figure 6: Share of Labor Force by Size of Organizations

Number of Employees	West Kentucky
1 to 19	85.9%
20 to 49	9.1%
50 to 99	2.7%
100 to 499	2.1%
500 or more	0.2%

It is very informative to look at which industry sectors in West Kentucky vary in their Internet utilization levels from state-wide averages and how they compare to the other four regions. The following industries show relative **strength or weakness within West Kentucky** in terms of Internet utilization levels based on DEi and how that sector compares to other regions in Kentucky. The ranking of industries across regions is particularly informative, since this tracks competitiveness and relative performance.

Figure 7: Strong and Weak Utilization by Industry Sectors

Region	Strong (High DEi or Ranking)	Weak (Low DEi or Ranking)
West Kentucky	• Retail Trade • Educational Services	• ***Professional & Technical Services*** • ***Information Services*** • ***Financial & Insurance*** • Manufacturing • Health Care & Social Assistance

The following table summarizes utilization for major industries within West Kentucky (according to DEi scores) compared to the state average, as well as the region's ranking among the five regions.

Figure 8: Summary of Utilization Levels by Industry Sector

Major Industry Category	Statewide	West Kentucky	Rank Compared to Other Regions
Finance & Insurance	7.5	7	5
Information	6.9	6.2	5
Educational Services	6.7	6.8	1
Manufacturing / Processing	6.6	6.1	4
Retail Trade	6.4	6.9	1
Other services (exc. public admin)	6.3	6.6	2
Professional & Technical	6.2	5.3	5
Wholesale Trade	6.2	5.9	3
Construction	5.8	5.7	3
Health Care & Social Assistance	5.7	5.8	3
Public Administration	5.2	5.1	4

Opportunities and Gaps Based on Utilization

The following is a list of industries that show the largest gaps in utilization for West Kentucky, grouped into 2 gap level categories. Everything else being equal, the largest gaps present the greatest opportunity to increase utilization. Prioritization should also consider industry size and growth potential.* In West Kentucky areas that have the greatest gaps in utilization, while also being growth sectors, are: manufacturing (the region's largest sector) and Professional and Technical Services.

Figure 9: Gaps and Opportunities for Increasing Utilization by Industry Sector

Major Industry Category	West	Sector Size - Rank	Growth Expectation*
Manufacturing / Processing	-0.48	1	↑
Health Care & Social Assistance	0.11	3	↑
Retail Trade	0.57	2	↑
Construction	-0.09	5	↑ ↑
Wholesale Trade	-0.3	6	↑
Finance & Insurance	-0.45	9	
Professional & Technical Services	-0.97	11	↑ ↑
Information	-0.71	13	↓
Public Administration	-0.08	n/a	
Gap 1 (0.6 or more below the state DEi)	2		
Gap 2 (0.6 to 0.3 below statewide DEi)	3		

**To assess growth potential, this profile uses projections made by Moody Analytics. The arrows in the right column indicate projected growth or decline. The double green arrows indicate areas with significantly higher growth expectations.*

Barriers to Utilization

Barriers to utilization are those factors that tend to inhibit or prevent effective adoption of Internet-enabled applications. Barriers for organizations in West Kentucky are similar to the rest of Kentucky, with privacy, slow Internet and lack of internal expertise the most frequently cited. Barriers for organizations in the Purchase ADD are very similar to the West region.

Figure 10: Barriers to Adopting Internet Applications and Processes

Barriers to e-Solutions - % Saying Important	West	Statewide
Privacy concerns	**73.4%**	71.4%
Available Internet is too slow	**58.1%**	59.2%
High cost of development/maintenance	**46.5%**	45.8%
Loss of personal contact with clients	**46.2%**	45.1%
Lack of internal expertise and knowledge	**43.3%**	45.8%
Suppliers not ready	**43.0%**	41.5%
Security concerns	**32.5%**	28.7%
Uncertain about benefits	**32.2%**	28.7%
Products not suited to Internet sales	**26.1%**	24.9%
Internal organization resistance	**25.0%**	24.6%

Impacts from Increasing Utilization

Increased utilization by organizations results in increased revenue and job creation. Increasing an organization's DEi by 1.0 is roughly equivalent to adopting two new utilizations, preferably in more sophisticated types of utilizations that tend to be adopted by high utilization organizations. The increased revenues can take one or two years to materialize, but would directly increase regional GDP and have additional indirect and induced effects on the regional economy.

New jobs would also be created from growing businesses. While total job growth is difficult to predict and is not exclusively driven by Internet utilization, e-solutions benchmarking data for Kentucky show that 34.3 percent of new full-time jobs were attributed to commercial businesses' use of the Internet. Results reported by commercial enterprises in West Kentucky were more modest, but still impressive at 33.3 percent.

Figure 11: Job Creation and Internet Use in Commercial Enterprises

Region	Total Employees	New Jobs Created*	New Jobs Attributed to Internet	% of New Jobs Attributed to Internet*	Number of Reporting Establishments
West Kentucky	3,326	415	138	33.3%	81
Kentucky	15,657	1,731	593	34.3%	401

Households in West Kentucky

Utilization of the Internet by households in the West Kentucky is slightly lower than the state average. The median Digital Economy Index (DEi) for households in West Kentucky is 6.22 compared to the statewide DEi of 6.35. Notably, the Purchase ADD has a higher median utilization that both the West Region and Kentucky as a whole. This pattern is similar to utilization levels by organizations, where the Purchase ADD scored higher than both the West Region (of which it is part) and the state.

Figure 12: Utilization by Households: DEi Score and Regional Ranking

	Median DEi Score	Rank	Difference from State	Households in Sample
West Kentucky	6.22	3 (Tied)	-0.13	1030
Purchase ADD	6.47		0.12	296
Statewide	6.35			4,122

Demographic Effects on Utilization

There are a number of factors that contribute to higher household utilization in West Kentucky. With a slightly older and slightly less affluent population, it is no surprise that West Kentucky has households with lower than average computer skills and lower than average utilization. Households in Purchase ADD rated their computer skills to be similar to the West Region. In general, Internet utilization is lower for older age groups and for lower income groups. Utilization levels are also directly proportional to computer skill levels which in turn are associated with older age and lower income groups. However, households in the Purchase ADD have significantly higher Internet utilization than what would normally be expected given the high numbers of seniors and slightly lower than average incomes.

Figure 13: Impact of Age and Income on Internet Utilization

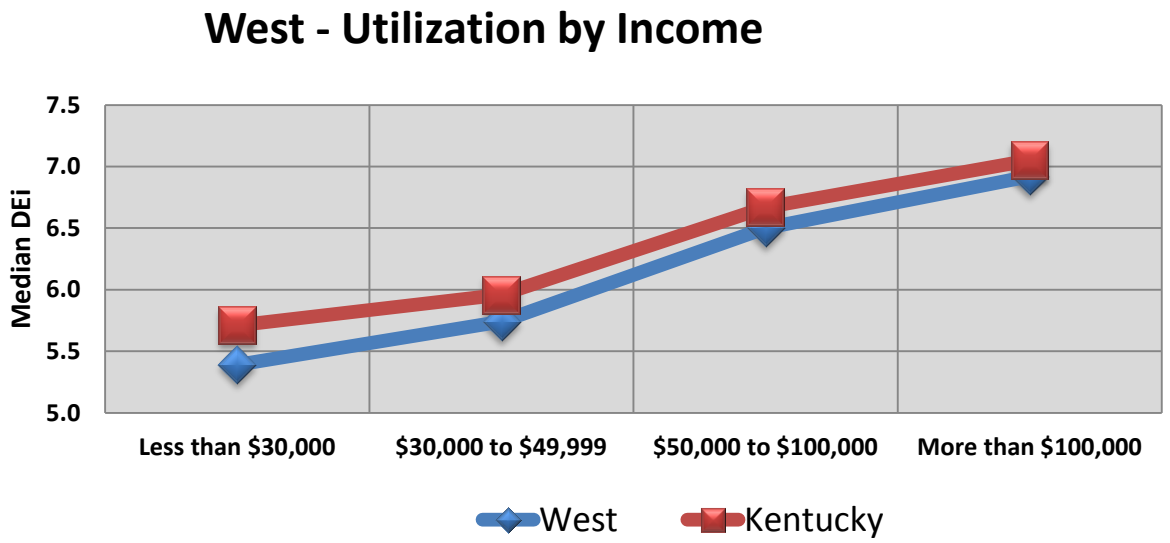
West Kentucky	Household Income			
Respondent Age	Less than $30,000	$30,000 to $49,999	$50,000 to $100,000	More than $100,000
18 to 34	**6.12**	**6.89**	**6.74**	**7.47**
35 to 54	**5.21**	**5.85**	**6.63**	**6.92**
55 to 64	**4.90**	**5.27**	**5.90**	**6.00**
65 years and over	**4.76**	**4.42**	**5.52**	**5.63**

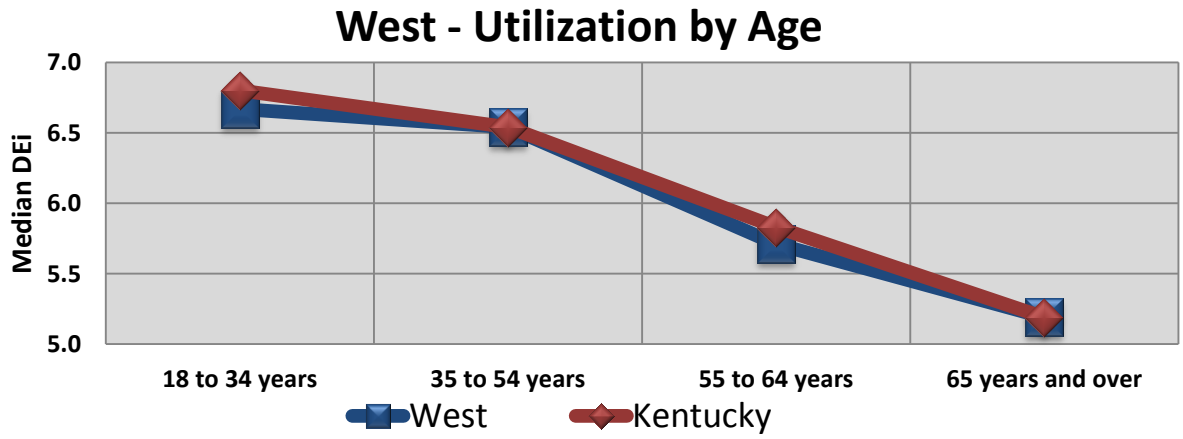
Figure 14: Computer Skill Levels

	Expert user	Use computers with confidence	Know the basics
West Kentucky	22.4%	62.3%	15.0%
Statewide	25.6%	59.9%	14.1%

West Kentucky households face the same statewide issues of relatively low utilization by those over 55, with lower incomes and poor computer skill level. As a factor that can be addressed through broadband support initiatives, targeting computer skill development at these groups is a clear priority and likely to have the greatest impact on increasing utilization and consequently on the ability of households to earn income and access government services.

Figure 15: Internet utilization Levels by Age and Income





Use of Internet for Productivity

In terms of productivity, households in the West region show below average utilization for work oriented activities, including telecommuting, training, and accessing their work place from home. In contrast, households in the Purchase ADD have higher than state averages for using the Internet for home-based businesses, telecommuting and education and training.

Figure 16: Percentage of Households Using the Internet for Productivity

West Kentucky	West Kentucky	Statewide Average	Variance from State Average
Accessing workplace	52.0%	55.6%	-3.6%
Home business	19.5%	20.8%	-1.3%
Teleworking	15.8%	20.8%	-5.0%
Education or training	42.2%	45.9%	-3.7%

	Purchase ADD	Statewide Average	Variance from State Average
Accessing workplace	54.4%	55.6%	-1.2%
Home business	22.1%	20.8%	1.3%
Teleworking	22.5%	20.8%	1.7%
Education or training	46.9%	45.9%	1.0%

Focus on Project Area Priorities

The West Region has identified adoption and utilization as their priority focus, especially among the younger population. This profile provides some insights into the performance of the region in the areas of K – 12 schools and sites for public access to the Internet. Readers should keep in mind that the sample sizes for K – 12 schools and public access sites are relatively small and should be used with caution. Nonetheless, the data on these two priorities areas is suggestive and worth consideration.

K – 12 Schools

Twelve K – 12 schools from the Purchase ADD area and 31 schools from the West region responded to the state broadband utilization survey. The survey included both generic questions to determine general patterns of Internet use, as well as a small number of customized questions for those organizations that identified themselves as educational institutions. On average, schools from the West Region were similar to their peers across the State in their use of generic Internet applications and processes. However, West region schools showed a distinctly higher utilization of Internet applications and process patterns specific to the educational sector. These include such areas as: online delivery of instruction; marketing and recruiting students; and remote data entry. The twelve schools from the Purchase ADD

had a distinctly higher use of generic Internet applications, compared to the average from both the state and the West region. For specialized educational uses, schools in the Purchase area showed a similarly higher level of utilization than the state average, except in the area of online delivery of instruction.

Public Access to the Internet

The statewide survey made an effort to identify sites that provide public access to the Internet through computer terminals and free on-site Wi-Fi networks. Fifty seven organizations stated that they provided such services in the West Region. Twenty four of these were from the Purchase ADD.

What is evident from the reported data is that facilities in the Purchase ADD have more restricted hours than most facilities across the West region and across Kentucky. Admittedly this conclusion is based on a relatively small sample. However, if the data is representative of the situation in the Purchase ADD, consideration should be given to extending hours of public access to evenings and weekends.

Figure 17: Hours of Access to Public Internet Facilities

West Region		
Availability of Public Access Facilities	% of Establishments	# of Establishments
Weekdays	98.3%	57
Evenings	44.8%	26
Weekends	36.2%	21

Purchase ADD		
Availability of Public Access Facilities	Pct. Establishments	# Establishments
Weekdays	100%	24
Evenings	33.3%	8
Weekends	25.0%	6

Kentucky		
Availability of Public Access Facilities	Pct. Establishments	# Establishments
Weekdays	98%	241
Evenings	47%	115
Weekends	38%	95

Appendix VII: Glossary

***Broadband KY* e-Strategy Report:** This report examines how organizations and households in Kentucky differ in their utilization of broadband and where they can look to make improvements. The report shows in detail how different industry sectors and household types compare to each other, especially between and within regions. The report provides insights and hard evidence that allows regions, businesses, and households to assess where they stand. The report provides recommendations on strategies for improving their Internet performance and benefits.

***Broadband KY* e-Solutions Benchmarking Technical Report:** This report presents the results of survey-based research carried out for the Commonwealth of Kentucky. The surveys collected information from businesses, organizations and households on the availability of broadband (high speed Internet access) and its uses, benefits, drivers and barriers. This largely descriptive report results provide insight into gaps and opportunities for increasing broadband utilization by organizations and households. The policy, planning and program implications for Kentucky and its regions are dealt with in a separate report: the *Broadband KY* e-Strategy Report.

Digital Economy Analysis Platform (KY- DEAP): The DEAP has been developed as an online resource that provides clients with access to the data collection results and the ability to customize their analysis across a range of variables, including industry sector or geographic region. The DEAP is accessed online by authorized users. Users are presented with **dashboards** for businesses and for households. Each dashboard is organized around a series of **pages** focused on specific topics, e.g. Connectivity, Utilization, DEi, Impacts, etc. Within each page is a set of predefined **reports** that present a chart and/or table of processed results from the datasets.

e-Strategies: e-Strategies are high level plans for achieving one or more goals related to improved access to and utilization of broadband Internet. e-Strategies define a course of action that is most likely to successful address opportunities, challenges or barriers related. Strategies are usually seen as distinct from detailed action plans which deal with specific issues of "who, what, when and how".

e-Solutions: refers to the integration of Internet technologies with the internal computer-based systems and applications within or among organizations for a variety of operational processes. e-Solutions encompass not only product delivery and payment transactions (e-commerce) but also all processes that may be facilitated by computer-mediated communications over the Internet.

e-Process: uses of the Internet which include internal operational uses, such as supplier coordination, training and teleworking.

e-Commerce: uses of the Internet which include activities related to the sales, marketing and delivery of products and services; and,

Kentucky Digital Economy Index (KY-DEi): The Digital Economy index (DEi) is part of the benchmarking process and provides reference points against which the performance of any individual or group can be compared. The DEi summarizes an organization's or household's utilization of a range of Internet applications and process – 17 for organizations and 30 for households. Based on the number of applications currently being used by an organization or household, a composite score is calculated that

summarizes how comprehensively each organization or household uses Internet-enabled e-solutions. The DEi can be used to compare organizations, regions, or industry sectors.

Utilization refers to the third stage in the broadband development process. The first stage is providing a community, household or organization with access (availability) to the Internet. The second stage is adoption or the process whereby a person or organization starts to actually use the Internet. The third stage is utilization whereby a person or organization uses their Internet connection to create value. Many people and organizations have access and have adopted the Internet, but are relatively ineffective in how they use and derive benefits from the Internet. The field of analysis labeled "utilization" explores patterns of Internet use and how these patterns can be enhanced.