BROADBAND AVAILABILITY AND ADOPTION STRATEGIC PLAN

MARK TWAIN REGION

Developed by

The Mark Twain Regional Technology Planning Team

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MEMBERS OF THE MARK TWAIN REGIONAL TECHNOLOGY PLANNING TEAM

(INSERT MEMBERS NAMES)

ACKNOWLEDGEMENT

The Federal American Recovery and Reinvestment Act (ARRA) passed in 2009 provided funding for the development of broadband infrastructure as well as sustainable broadband adoption efforts, statewide broadband mapping and development of the regional Strategic Plans. Missouri competed aggressively and to-date has won more than $275 million in stimulus funds for its broadband availability and adoption goals.

A portion of this funding was designated for broadband mapping and planning and was provided through the U.S. Department of Commerce's, National Telecommunications and Information Administration's (NTIA) State Broadband Data and Development Grant Program (SBDD). The Notice of Funds Availability (NOFA) that provided the criteria and parameters for receiving funds from the SBDD, had specific requirements for the use of these funds in pursuing broadband planning. These purposes included: the identification of barriers to the adoption of broadband service and information technology services; the creation and facilitation of local technology planning teams; and planning that would lead to the establishment of computer ownership and internet access programs.

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MoBroadbandNow Initiative

MoBroadbandNow was established by Gov. Jeremiah W. (Jay) Nixon in 2009 as a public-private partnership initiative to expand and enhance broadband accessibility and adoption. Gov. Nixon aggressively pursued support from various sources including the Broadband Technology Opportunity Program (BTOP), Rural Utilities Service (RUS) and the American Recovery and Reinvestment Act (ARRA). He regards broadband adoption fundamental to Missouri's future and global competitiveness, in much the same way as the railroad and the interstate highway system were to their historic periods. Gov. Nixon has set an ambitious goal to increase the number of Missourians with broadband accessibility from the initial level of 79 percent to at least 95 percent by the end of 2014.

The initiative's first effort was partnering with broadband providers to identify communities that were underserved or unserved with high-speed Internet within the state. Through a competitive award process, funding was secured to design and build new broadband infrastructure. Missouri broadband providers were awarded $261 million for 19 projects; including additional cash and in-kind support, this investment total is nearly $320 million.

Missourians have already begun reaping the benefits of improved high-speed Internet. In May 2011, Ralls County Electric Cooperative was one of the first ARRA awarded providers to substantially complete construction and offer service to homes and businesses. Other *MoBroadbandNow*-endorsed projects are underway and as a result, more citizens will see faster, reliable connections in the future.

MoBroadbandNow is a state led collaboration with the University of Missouri and private sector partners GeoDecisions and CBG Communications, Inc. The initiative undertaken has seven core objectives including: collecting and verifying data and information; preparing comprehensive state and regional broadband maps; establishing regional technology planning teams; building new and leveraging existing relationships with broadband stakeholders; providing technical assistance; tracking the progress of infrastructure projects and providing transparency, and, convening public forums and community outreach.

The University of Missouri team has produced a series of state and regional maps identifying population density, the number of broadband providers and service coverage, average download speed and topography. Currently, there are more than 100 Internet Service Providers (ISPs) participating in these data submissions.

Missouri has approached broadband planning from a regional perspective in that each of the 19 regional planning teams within the state is developing its own Broadband Strategic Plan. A comprehensive broadband needs assessment was conducted in 2011 collecting residential and business data on accessibility, adoption, affordability, speed and usage. The *MoBroadbandNow* team conducted a statewide residential survey to assess the current Internet and broadband adoption and availability in 2011, whereby more than 76,400 residential surveys were mailed out and approximately 13 percent (9,825) of the surveys were returned and analyzed. This effort represents one of the largest statistical samples on state broadband trends in the country. Additional data, maps and broadband planning information can be found at www.mobroadbandnow.com.

PURPOSE OF THE BROADBAND PLANNING EXERCISE

The State of Missouri is in the midst of a transformative effort to expand the reach of affordable, high speed internet access to 95% of Missourians within five years. This effort involves working to enhance broadband access, create public computing centers, develop sustainable broadband adoption efforts, document broadband availability through comprehensive statewide mapping and enhance Strategic Planning activities throughout the State. These activities are to ensure that expanded broadband infrastructure and services will be available to meet the growing needs of citizens, businesses, non-profit organizations and public institutions.

A critical part of this comprehensive effort is regional broadband planning. The State, through an agreement with the Missouri Association of Councils of Government, has developed 19 Regional Technology Planning Teams (RTPTs), one of which was the Mark Twain RTPT. These RTPTs have the same overall mission: *to advance broadband demand and adoption, and extend broadband service and infrastructure availability, within their region.*

In addition, the planning process should lead to the identification of service availability and gaps, the analysis of problems and opportunities related to broadband deployment, determination of priorities, and resolution of conflicting priorities. The process would also collect and analyze detailed market data concerning use and demand for broadband service as well as facilitate information exchange between public and private sector users. Finally, the planning process would result in regionally-based Strategic Plans that describe the problems to be addressed, the proposed solutions and the anticipated outcomes for each region.

Statewide Goals

In 2010, the State of Missouri created the *MoBroadbandNow* Office to spearhead mapping and planning efforts. The stipulated goals of these efforts are to:

- Bring affordable high speed internet access to 95% of Missourians by 2014;
- Establish a network designed to connect every school district, university, state facility, courthouse, law enforcement center, health facility, and correctional center;
- Bring the benefits of high capacity, advanced fiber optic communications wherever feasible;
- Be open to all interested users and inspire entrepreneurial innovations in business and corresponding economic development; and
- Facilitate the development of affordable broadband to all of our community stakeholders no matter where they live in Missouri.

In order to best implement the planning portion of the initiative, the State understood the importance of local voices who best know the needs of their communities. This resulted in the development of Regional Technology Planning Teams (RTPTs). The RTPTs were established through regional planning commissions to work in partnership with the State and its partners. In this way it would enable a collaborative approach to identify, develop and deploy broadband investments and opportunities within the local communities and regions. Such a collaborative approach would ensure that the investments in opportunities identified, as well as those that would occur in the future, would meet the needs of citizens, businesses and governments. A toolkit was developed to help guide the groups through the process of gathering needs information, Strengths-Weaknesses-Opportunities-Challenges (SWOC) analysis, and strategic planning.

Overview of the RTPT Process

To ensure a collaborative approach that would represent the diversity of the region, the membership of the RTPT was developed to represent local stakeholders from a variety of different sectors such as libraries, health, local government, K-12 education, economic development, etc.

The regional planning process was designed such that the RTPT members would meet several times over the course of approximately 18 months and work both independently and collaboratively in between scheduled Team meetings. The process was twofold, with the first half being devoted to the Needs Assessment. It was designed to gather needs, interests, attitudes and opinions concerning broadband access, availability and adoption from a variety of different communities of interest, including: the residential community, the business community at large, and the various sectors represented by the RTPT members.

The second part of the process was Strategic Planning, where the RTPT analyzed the findings from the Needs Assessment and the SWOC analysis and then developed a Strategic Plan. This Strategic Plan would then include strategic initiatives, directions and an action plan, as well as benchmarks and measurements for success. These elements are to enhance and expand broadband infrastructure and service availability as well as broadband adoption among all the communities of interest within the region. All these Strategic Planning elements are detailed later in this document.

MARK TWAIN REGIONAL OVERVIEW

The formation of regional planning commissions was made possible through the Regional Planning and Community Development Act of 1966. The founding legislation was drafted to assist local units of governments in addressing issues on a regional basis. The Mark Twain Regional Council of Governments was organized in 1968 following the passage of Chapter 251 RsMO by the General Assembly in 1968.

For more than 40 years, the Mark Twain Regional Council of Governments has been providing services to local units of governments. The region encompasses the counties of Audrain, Macon, Marion, Monroe, Pike, Ralls, Randolph and Shelby and the communities that lie within these counties.

The Council is governed by an executive board, which is comprised of two representatives from each county. The executive board's primary purpose is to set policies for the operation of the Council and the development of the region. The Executive Board of the Council, which meets on a monthly basis, consists of nineteen (19) members made up of locally elected officials and members at large.

The Council provides a variety of professional services for communities and counties within the region. Our interests are as varied as our communities' needs. Whether it is securing funds for tree planting or attracting new industries, the Council has been called upon to demonstrate its commitment and desire to enrich the Mark Twain Region. The Mark Twain Regional Council of Governments continually strives to provide a wide range of professional services to its member governments and to address important issues that impact the quality of life of the residents within the region. Regional cooperation is not always easy, but when a group of communities have a common problem to solve or a common opportunity to create, the advantages of regional cooperation are endless.

Demographics

The Mark Twain Region is located in the northeasterly corner of Missouri. The area has strong historical, agricultural, cultural, and natural resources – a diverse, rich, yet balanced place, poised for transformation in the 21st century.

The people of Mark Twain combine traditional Midwestern values, including a strong work ethic, with education and skill attainment. People can live on farms, communities along the lakes and Mississippi River or in urban areas. A rich web of relationships connects the rural areas, where the majority of residents live.

The following chart illustrates the counties and households that comprise the Mark Twain Council of Governments region.

Table 1: Demographic and Economic Profile of Counties in the Mark Twain Regional Council of Governments (MTRCG)

(Please see the next page for remaining counties of the region)

Variables	AUDRAIN	MACON	MARION	MONROE
County Characteristics				
Metro or non-metro county	Non-metro	Non-metro	Non-metro	Non-metro
USDA County Typology: Economic Dependence	Manufacturing	Not Specialized	Manufacturing	Manufacturing
USDA County typology: Federal policy types*	None	None	None	None
Number of community anchors	48	51	41	28
Population Characteristics				
Total population (% of region's population)	25529 (18%)	15566 (11%)	28781 (21%)	8840 (6%)
Population Density (pop per sq. mile)	36.9	19.4	65.9	13.6
% rural Population	42.40%	67.90%	25.10%	100%
% of households with children (age 18 and under)	28.50%	27%	28.40%	25.20%
% white/ Caucasian	89.80%	95.20%	91.80%	95.10%
Median Age	38.5	42.3	39	43.8
% over 65 years	16.00%	19.50%	15.60%	18.70%
Income, Education and employment Indicators				
Median Household Income	$40,899	$37,130	$39,975	$36,950
Percentage unemployed	9.00%	8.40%	8.90%	13.00%
Population in poverty	18.40%	15.10%	16.40%	15.30%
Percentage of high school graduates	42.90%	44.80%	40.80%	46.60%
Total Number of Businesses (CBP, 2009)	581	374	852	194
Total Small Businesses	306	230	467	117
Percentage of small businesses (less than 5 employees)	53%	61%	55%	60%
Sector with most number of employee	Manufacturing	Retail Trade	Wholesale Trade	Manufacturing
Sector with most number of businesses	Retail Trade	Retail Trade	Retail Trade	Retail Trade

Table 1: Demographic and Economic Profile of Counties in the Mark Twain Regional Council of Governments (MTRCG)

(Please see the previous page for remaining counties of the region)

Variables	PIKE	RALLS	RANDOLPH	SHELBY
County Characteristics				
Metro or non-metro county	Non-metro	Non-metro	Non-metro	Non-metro
USDA County Typology: Economic Dependence	Not Specialized	Manufacturing	Not Specialized	Manufacturing
USDA County typology: Federal policy types*	None	PLoss	PLoss	PLoss
Number of community anchors	43	23	49	25
Population Characteristics				
Total population (% of region's population)	18516 (13%)	10167 (7%)	25414 (18%)	6373 (5%)
Population Density (pop per sq. mile)	27.6	21.6	52.7	12.7
% rural Population	50%	97.30%	51.60%	100.00%
% of households with children (age 18 and under)	28.40%	28.50%	29.50%	28.50%
% white/ Caucasian	90.20%	97.30%	91.00%	98.10%
Median Age	39.9	43.4	38	42.3
% over 65 years	15.60%	16.40%	14.20%	19.50%
Income, Education and employment Indicators				
Median Household Income	$37,169	$43,763	$37,537	$37,829
Percentage unemployed	940%	830.00%	1000.00%	870.00%
Population in poverty	17.80%	11.00%	17.70%	14.90%
Percentage of high school graduates	44.10%	46.40%	38.30%	47.40%
Total Number of Businesses (CBP, 2009)	396	195	597	177
Total Small Businesses	221	106	330	114
Percentage of small businesses (less than 5 employees)	56%	54%	55%	64%
Sector with most number of employee	Manufacturing	Manufacturing	Healthcare and social services	Manufacturing
Sector with most number of businesses	Retail Trade	Retail Trade	Retail Trade	Retail Trade

*PLoss= Population loss county

The 2010 Census finds the region with a population of 139,186 with 3,386 businesses operating in the area. The total population of the region represents 2.3% of the state's population.

The following charts illustrate population and household income demographics in the area.

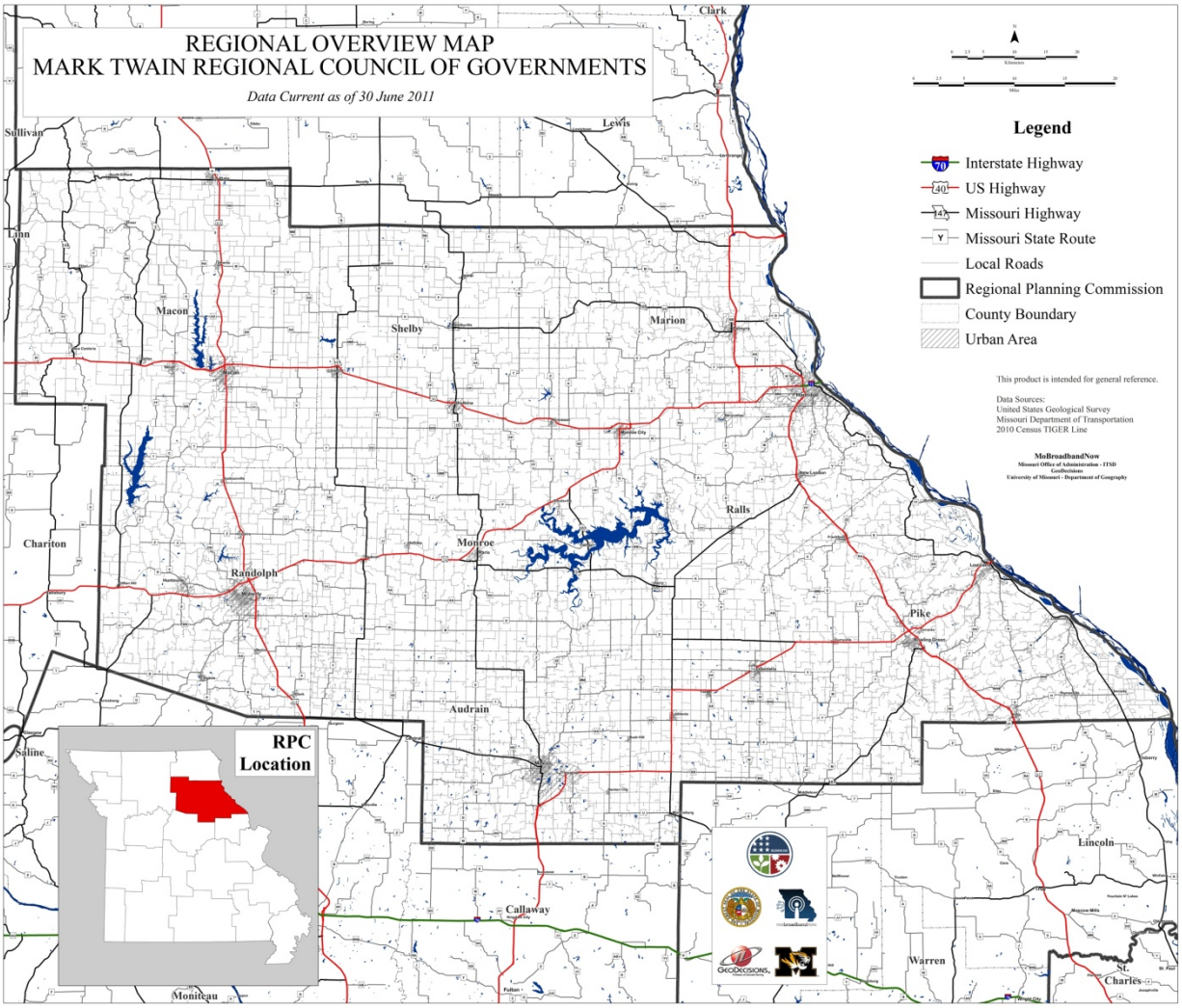

Figure 1: General locational map of the Mark Twain region showing the network of roads and municipalities encountered in this region.

County Profiles

The following maps illustrate key demographic features in the Mark Twain RPC

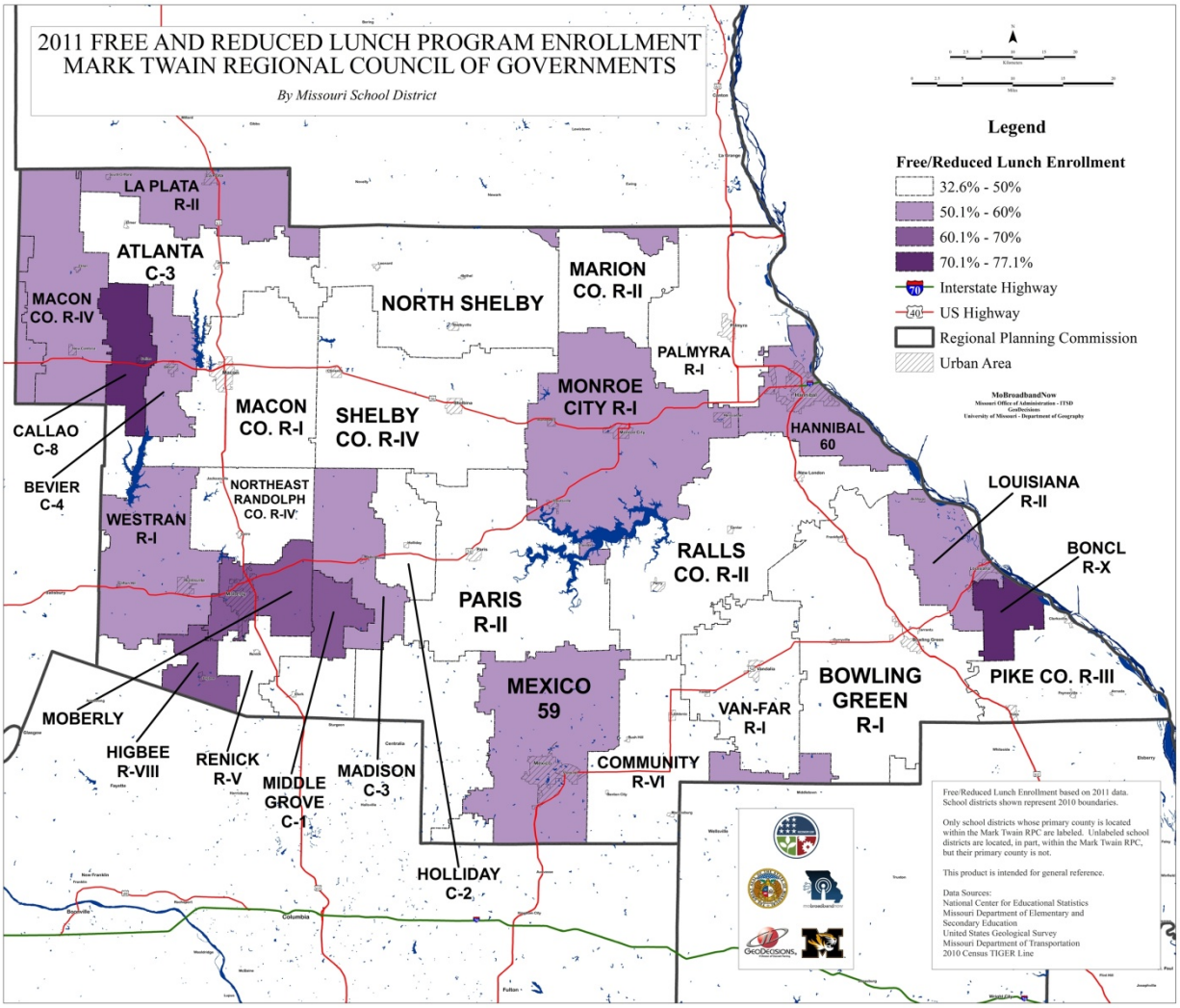

Figure 10: Map showing Free and Reduced Lunch program enrollment within school districts. Darker purple hues mean more students take advantage of the program.

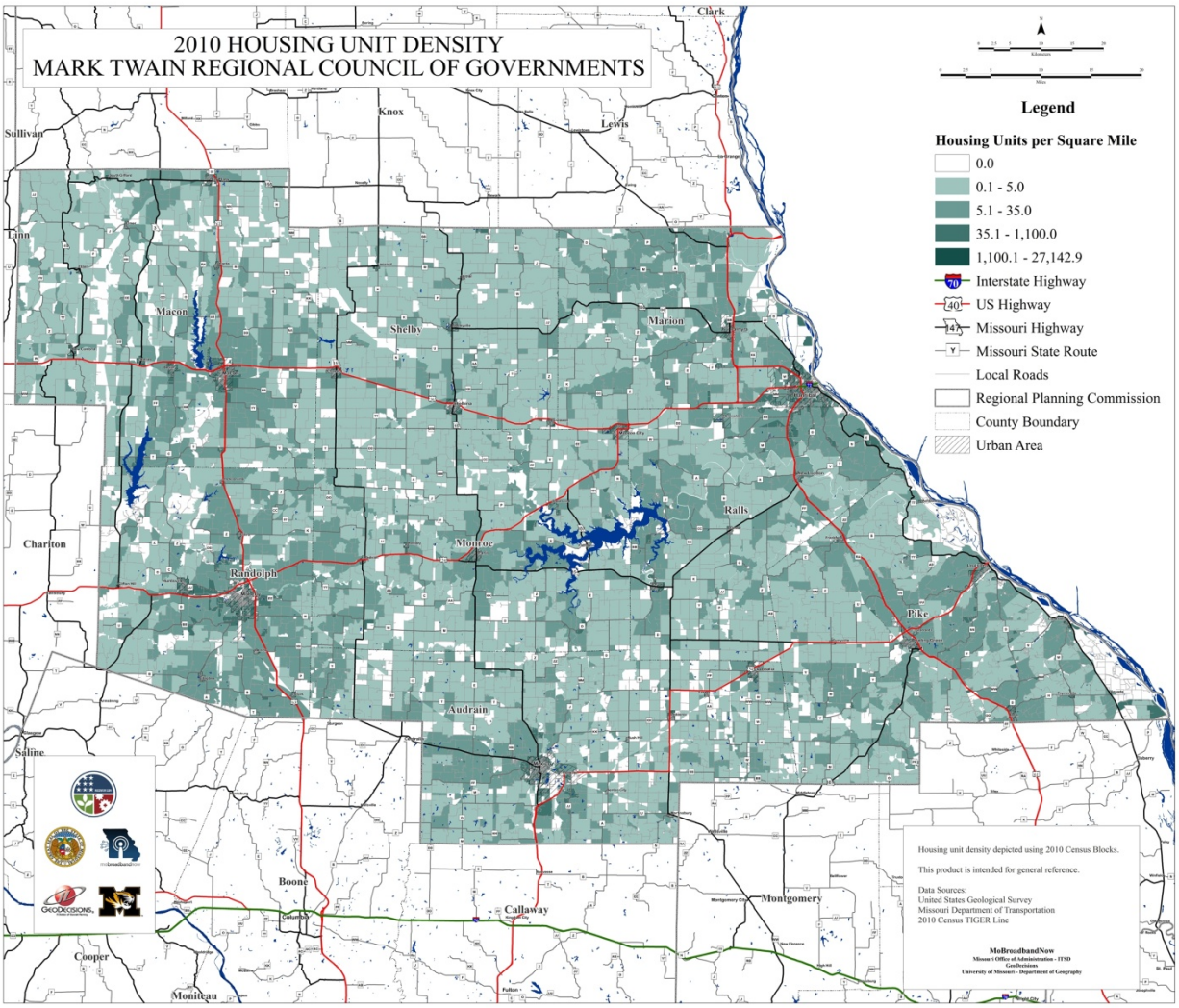

Figure 2: Housing unit density map of the Mark Twain region showing the extent of low density development encountered in this region.

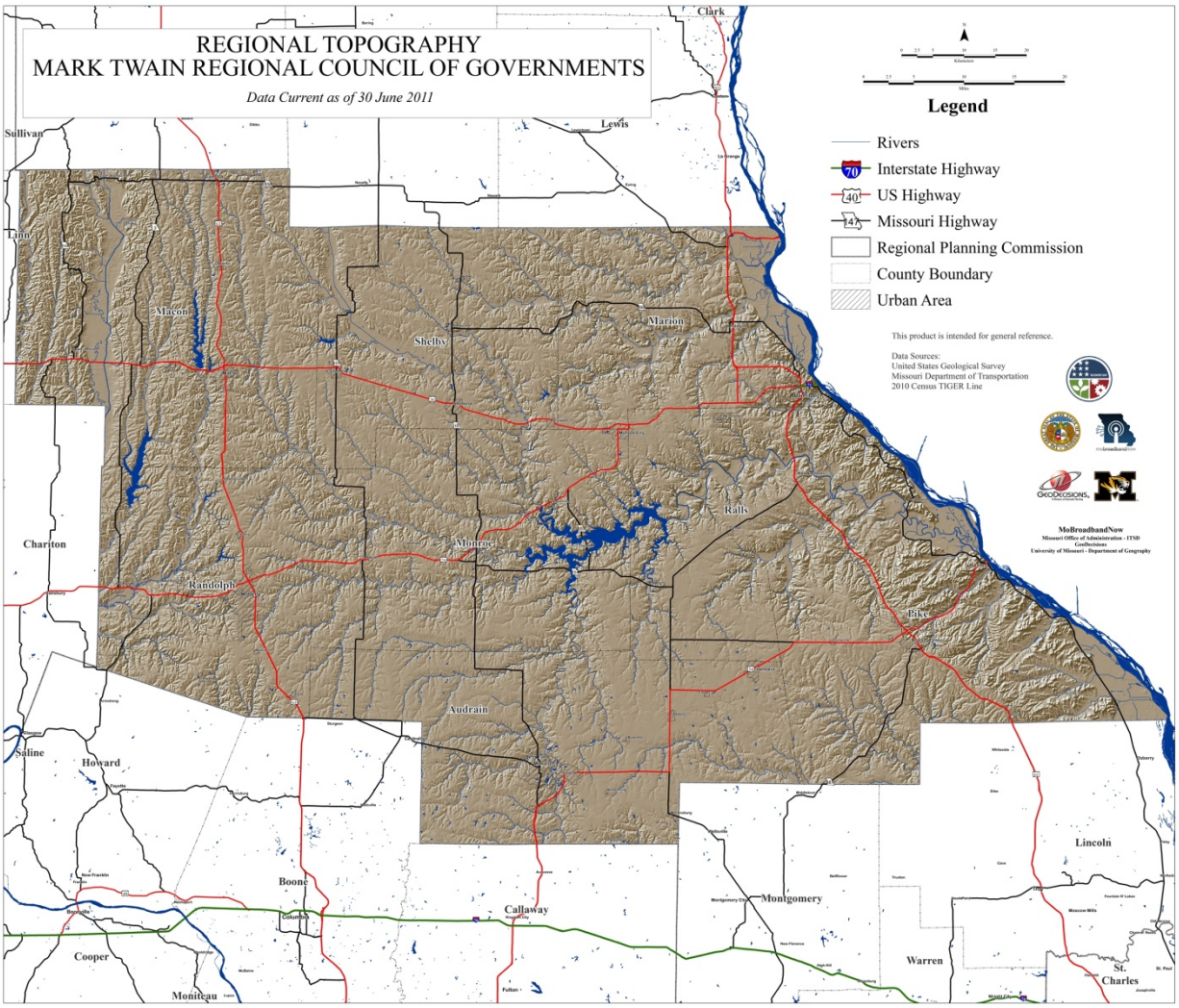

Figure 3: Elevation / relief map of the Mark Twain region showing the extent of surface roughness encountered in this region.

Highlights of Broadband Activity within the Mark Twain Region

Although, as detailed herein, the Mark Twain region faces a number of challenges related to broadband infrastructure and service availability and adoption, there are current and projected activities related to ongoing broadband private sector deployment in the region. The total number of providers within the Mark Twain region that are represented within the current state map (http://mobroadbandnow.com/) is 22 operating under 24 unique business names and includes the broadband providers listed in Table 2. These entities have indicated to the RTPT and / or updated their service maps with enhancements and expansion of their broadband service coverage within the region.

Table 2: Broadband Providers known to be providing services in Mark Twain

Provider	Website
Adams Networks, Inc.	http://adams.net/
Alsat Wireless	http://www.alsatwireless.com/
WildBlue Communications, Inc.	http://www.wildblue.com/
AT&T Communications of Texas, Inc.	http://www.att.com/
AT&T Mobility, LLC.	http://www.att.com/
Cable One, Inc.	http://www.cableone.net/Pages/default.aspx
Cellco Partnership	http://www.verizonwireless.com/b2c/index.html
CenturyTel, Inc.	http://www.centurylink.com/?pid=p_80745140
Chariton Valley Telecom Corp.	http://www.cvalley.net/
Charter Communications	http://www.charter.com/Visitors/Home.aspx
Farber Telephone Company	http://www.ftco.net/
Hughes Communications, Inc.	http://www.hughes.com/Pages/Default.aspx
Kingdom Telephone Company	http://www.ktis.net/
Mark Twain Rural Telephone Company	http://portal.marktwain.net/
Mark Twain Rural Telephone Company	http://portal.marktwain.net/
Northeast Missouri Rural Telephone Company	http://www.nemr.net/
Radio Wire, Inc.	http://www.radiowire.net/
Ralls Technologies, LLC	http://www.rallstech.com/
Sprint Nextel Corporation	http://sprint.com
New London Telephone Company	http://www.tdstelecom.com/Residential/MO/New_London/Internet
StarBand Communications, Inc.	http://www.starband.com/index.html
United States Cellular Corporation	http://www.uscellular.com/uscellular/
Windstream Corporation	http://www.windstream.com/
Deutsche Telekom AG	http://www.telekom.com/dtag/cms/content/dt/en/6908

In addition, there were both middle-mile and last-mile infrastructure grant award winners through the NTIA's BTOP (Broadband Technology Opportunities Program) and United States Department of Agriculture's (USDA) RUS (Rural Utility Service) loan/grant process that received funds and are currently in the process of building additional broadband infrastructure within the region. The key projects underway in the Mark Twain region are the development of middle mile infrastructure by Bluebird Media and Ralls County Electric Cooperative. Both were awarded NTIA grants and secured loans to develop broadband in the area. The deadline for completing the projects is in 2013. Middle mile development will allow last mile bandwidth to be secured at more competitive rates, stimulating further broadband development. Ralls County Electric Cooperative has lit up portions of its new fiber to the user network.

Additional grants were award for public computing centers at Mobley Area Community College. Moberly Area Community College is using grant money to offer 16 free hours of their computer

classes at all of their locations including: Audrain (Mexico), Marion (Hannibal, Palmyra), Ralls (Hannibal), Randolph (Moberly), and Macon (Macon) Counties. More information can be found the *MoBroadbandNow* website. This information is constantly updated as broadband development continues across the state.

Besides this effort, other commercial broadband providers are actively engaged in broadband projects within the region to expand and enhance broadband infrastructure and service availability and adoption as part of their normal business practices. It will be critical to the success of regional projects that the RTPT members and sectors engage these regional providers and to more fully understand their broadband deployment efforts.

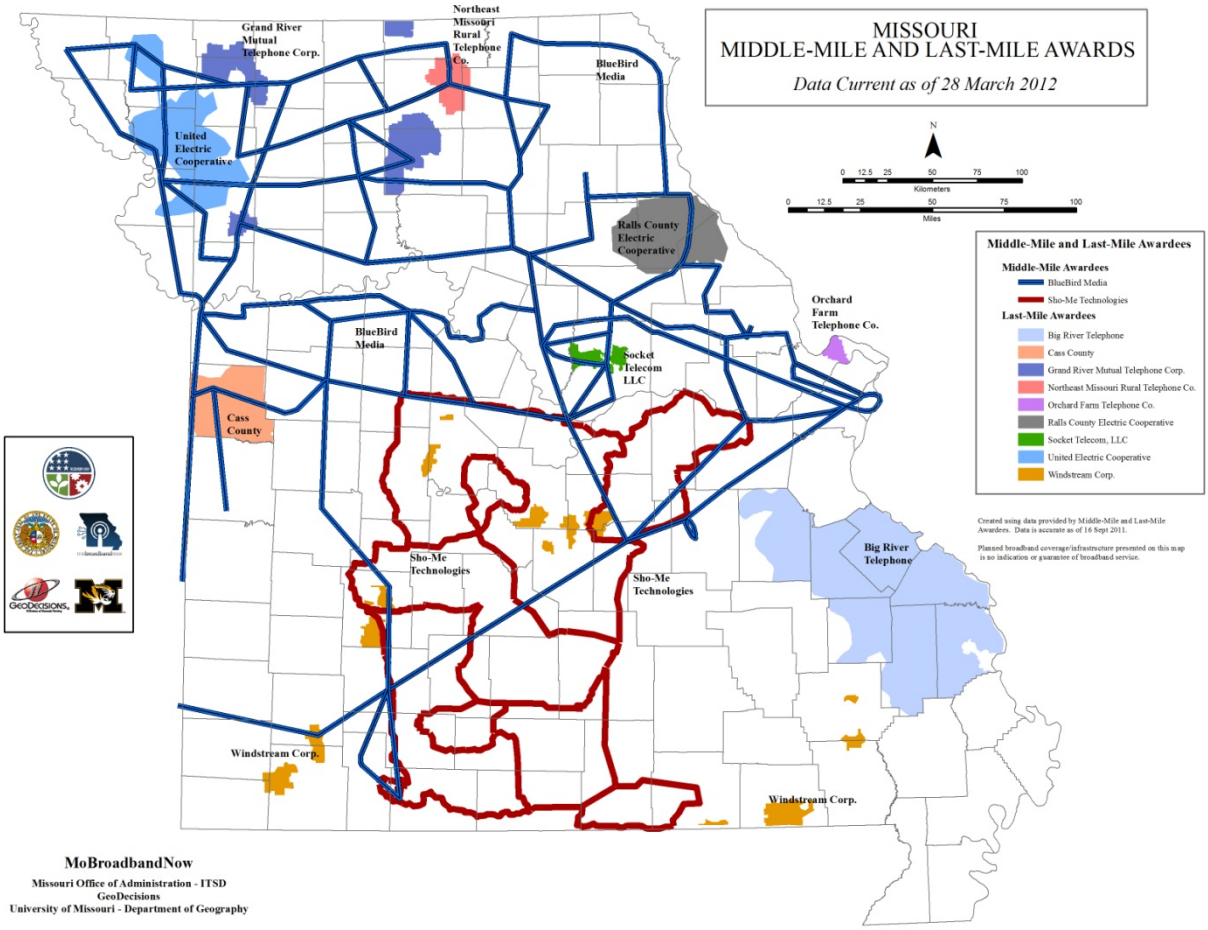

Figure 4: BTOP / RUS initial awardees and projected project service areas.

RESIDENTIAL COMMUNITY NEEDS ASSESSMENT FINDINGS

The Mark Twain region makes up 2.3% of the population of the state. The residential survey was mailed May 2011 to 4000 homes randomly sampled from US Post Office delivery files. The region had 580 returned surveys for a 14% response rate. Of these surveys, a random sample of 400 surveys was pulled which provides us with a margin of error of ± 5 percentage points. The full results of the residential broadband/high-speed internet survey for the Mark Twain region are found in the mark-up document posted on the *MoBroadbandNow* website within the Regional Planning tab.

The most often given response for annual household income was $30,000 (the question had a non-response rate of 36%). The following tables illustrate the responding sample to the residential survey in Mark Twain.

Table 2: Geographic Distribution of respondents in MTRCG

County	Percentage of Respondents	County Population as Percentage of MTRCG's Total Population
Audrain	17%	18%
Macon	15%	11%
Marion	16%	21%
Monroe	12%	6%
Pike	12%	13%
Ralls	8%	7%
Randolph	16%	18%
Shelby	4%	5%

(Data source: MoBroadbandNow – Residential Survey, 2011)

Table 3: Comparison of MTRCG to State responses for some demographic variables

Details	MTRCG Survey Respondents	Statewide Survey Respondents
Percentage rural population	66%	55%
Mean age of respondent	53 years	54 years
Mean Household Income	$ 96,820	$62,505
% of non-white	3%	4%
Less than high school	-	2%
High school	39%	35%
Above high school education	57%	65%
Full time employed	56%	52%
Part time employed	7%	9%
Retired	27%	30%
Have kids in home	33%	36%
Own a house	88%	89%
Mean number of years lived in current community	29 years	25 years

Data source: MoBroadbandNow – Residential Survey, 2011)

The majority of residents (88%) indicated owning a computer. Of those, 62% had owned a computer for more than ten years, showing long-term adoption. For the 12% of respondents who do not own a computer, the main reasons are: 1) They don't want or need a computer, 2) They don't know how to use a computer, and 3) Computers cost too much.

Table 4: Time Line for Computer and Broadband Adoption in MTRCG

Time line	Region		Missouri	
	Computer	Broadband	Computer	Broadband
Less than one year	2%	9%	2%	9%
1-3 years	5%	27%	5%	28%
4-7 years	16%	37%	14%	33%
8-10 years	15%	9%	17%	13%
More than 10 years	62%	12%	62%	13%
Don't Know/ NA	-	6%	-	5%

(Data source: MoBroadbandNow – Residential Survey, 2011)

Eighty-five percent (85%) of computer owners had adopted Internet services. Of those, 10% remained on dial-up. The statewide average is 9%. Additionally, in Mark Twain 12% reported having cable modem supported broadband services which is greater than the state average at 20%, but significantly lower than the 41% national average reported by the National Cable Television Association.

Table 5: Types of Internet services used in MTRCG households (85% of the total 400 households surveyed reported having Internet)

Type of Service	MTRCG Survey Response	Survey response for the State
Dial-up	10%	9%
Satellite Internet service	8%	6%
Cable modem	12%	20%
Cellular Broadband (air card)	3%	4%
DSL	39%	37%
Fixed Wireless	7%	7%
Other / Don't Know/ NR	6%	5%
Percentage with internet	**85%**	**88%**

(Data source: MoBroadbandNow – Residential Survey, 2011)

The largest percentage of those with internet access reported having broadband service with 67% adopting high-speed internet. The most prominent broadband service in Mark Twain is DSL with 39% of broadband adopters utilizing this type of provision.

For the 12% of households with computers that do not have internet access, the three main reasons were: 1) Cost, 2) They do not own a computer (even though these respondents were instructed not to answer this question), or 3) High speed internet service is not available in their area.

The following chart illustrates broadband availability by county in the Mark Twain region. Key areas of concern are in Ralls County (federal funds at work there), Monroe County, Randolph County and Macon County.

Table 7: Availability of Broadband for counties in MTRCG*

County	Percentage of the population that have access to Broadband	Percentage of the total region's population	Percentage of the households that have access to Broadband	Percentage of the total region's households	Percentage of population in MTRCG that have access to Broadband	Percentage of the households in MTRCG that have access to Broadband
Audrain	88.5%	18.34%	89.2%	17.89%	76%	77%
Macon	74.2%	11.18%	72.0%	11.96%		
Marion	96.5%	20.68%	96.2%	21.23%		
Monroe	69.8%	6.35%	62.4%	6.79%		
Pike	63.3%	13.30%	70.5%	12.24%		
Ralls	43.7%	7.30%	39.6%	7.63%		
Randolph	59.1%	18.26%	65.8%	17.43%		
Shelby	97.8%	4.58%	97.2%	4.82%		

*Data source: FCC (National Mapping Project. The regional rates are population (or households) weighted averages. Broadband here is defined as speed combination of Download>3mbps, Upload>0.768mbps.

While approximately 67% of Mark Twain residents with computers access the internet utilizing broadband, this leaves 33% not accessing broadband service and a significant number of these households in rural areas of the region. This coupled with the 15% without internet access at all (12% without computers), leaves a total broadband adoption rate for the region of 66%.

Residential survey respondents asked, "Why did you subscribe to the type of service you have?" The most common reason was "speed" (42%). AT&T, US Cable, Chariton Valley were the three most frequently mentioned providers and the average cost for broadband in the region is $39.92.

It is important to note that 71% of these regional respondents stated that it was *Very Important* or *Important* that all residents of Missouri have access to computers and the Internet.

The following table further illustrates the digital divide as it presents itself in the Mark Twain Region.

Table 8: Digital divide based on types of residency in the MTRCG

Self-Identified type of residence	Computer Ownership	Internet Adoption	Broadband Adoption*	Internet adoption among computer owners	Broadband adoption among those who have a computer	Broadband adoption among those who have the Internet
Mark Twain Regional Council of Governments (MTRCG)						
Region average	88%	85%	66%	92%	71%	77%
Rural	93%	87%	59%	91%	62%	69%
Non-rural	85%	85%	82%	94%	90%	95%
Missouri						
Missouri average	91%	88%	71%	94%	75%	80%
Rural	93%	88%	63%	92%	66%	71%
Non-rural	91%	89%	82%	96%	88%	91%

(Data source: MoBB-ResSurvey, 2011)

*All Internet connections that are not dial-up and satellite based on 2011 survey irrespective of the speed are considered as broadband.

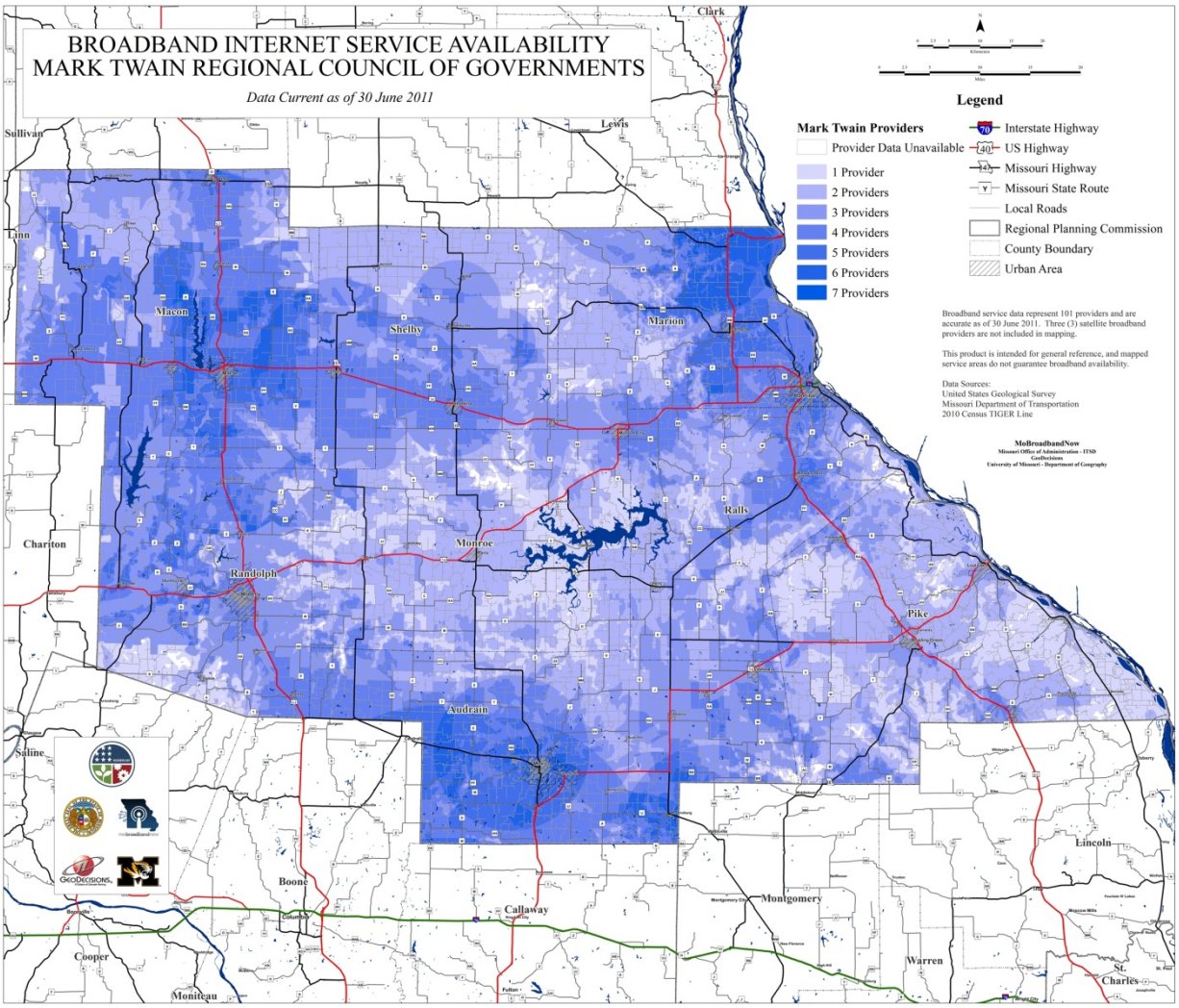

Figure 8: Access shown as number of providers for Mark Twain region. Darker blue hues mean more providers service that area.

Access also relates to other aspects of service beyond just physical access, such as access to choices. Regional respondents when asked about what characteristic is most important for them to have a choice concerning broadband services they ranked *Cost of Service* (80%) as first, second was *Speed of Service* (73%), and third was *Type of Service* (53%). An actual choice in Providers was ranked fourth with 35%.

Much of the region is covered with broadband of speeds of 3 Mbps/1Mbps.

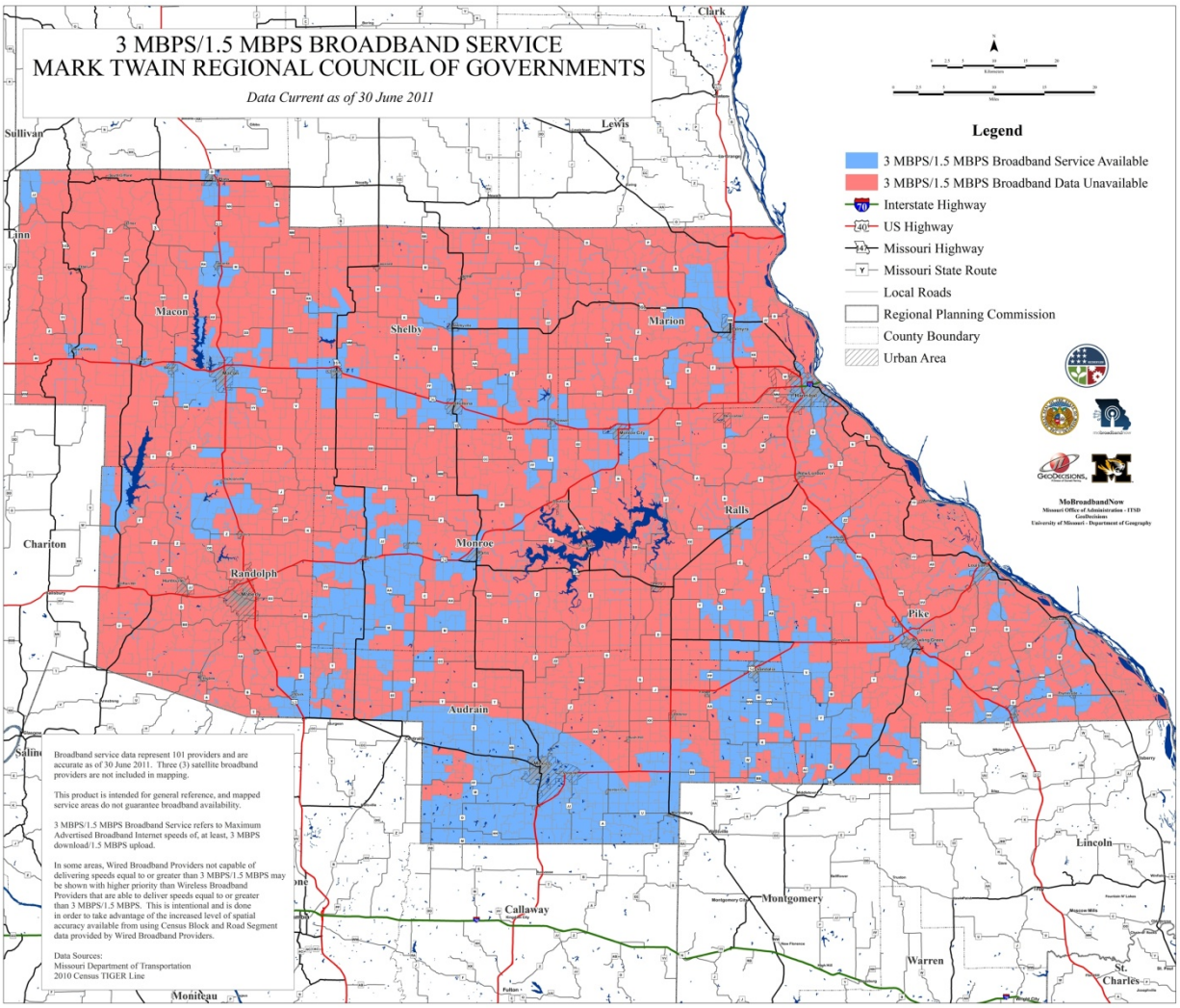

Figure 9: Speed tiers for Mark Twain region. Blue = Provider speeds equal to or greater than 3 Mbps; Red = Provider service unknown or service speeds less than 3 Mbps.

The third most common reason for choosing the current internet service was cost. Specifically, 12% indicated that they chose their connection type and service provider based on cost. Additionally, the number one reason cited by those that do not currently subscribe to internet is the cost of service.

Other reasons for lack of broadband adoption are related to a lack of ownership of computers, access to a high-speed Internet service, and whether the respondent values either, or both, of those items. As mentioned above, there are a handful of residents that don't want or need a computer and then don't access the internet because of the lack of an access device.

Finally, in the Mark Twain region, digital literacy and relevance issues were on par with the rest of state in that 22% of respondents indicated that access to computers and the internet was either *somewhat important* or *not at all important* and an additional 7% stated they *didn't know* if it was important.

Those that had access to the Internet and broadband indicated a variety of applications and uses being used over a week's time frame. The region shows a high degree of Internet use for personal communications, service/product information, online banking, taking a class, and social networking. These are fairly consistent with national trends.

Table 8: Internet use for various activities in MTRCG as compared to Missouri and U.S. averages

Activities	MTRCG Region	Rural Missouri	Non-rural Missouri	Missouri Average	National Average (Pew Center)
Keep in touch with family and friends	86%	89%	88%	88%	--
Look for information about a service/ product you are thinking of buying	81%	86%	83%	84%	78%
Look for health or medical information	62%	70%	68%	69%	83%
Buy something online	60%	66%	62%	64%	71%
Look online for news or information about politics	60%	66%	66%	66%	76%
Use an online social networking site like Facebook or LinkedIn	65%	65%	64%	65%	65%
Do any online banking	64%	63%	66%	64%	61%
Visit your state, region or local government's website	41%	46%	42%	44%	67%
Watch television or other videos	38%	40%	49%	44%	71%
Play online video games	33%	34%	36%	35%	36%
Look online for information about a job	29%	33%	30%	31%	56%
Take a class or do homework	20%	24%	20%	22%	--
Work from home (telecommuting)	22%	24%	26%	25%	--
Contribute to a website, blog or other online forum	21%	21%	24%	22%	32%
Look for information about a place to live	20%	20%	20%	20%	39%
Share something online that you created yourself	16%	19%	19%	19%	30%
Operate or support a home-based business	14%	17%	13%	15%	--
Sell something online	15%	17%	14%	15%	15%

(Data source: MoBroadbandNow- Residential Survey, 2011)

Areas of online activity that have significant differences from the National Average include: seeking health and wellness information, news and information, governmental interaction, watch TV or videos, and sharing something about one's self.

Those that had access to the Internet through a broadband connection were asked to indicate their satisfaction with certain characteristics of their service. The Mark Twain region's main negative characteristic continues to be the *Number of Providers in the Area* with 25% indicating *Very Dissatisfied* although this is lower than the state average. *Cost of internet services* also received 14% *Very Dissatisfied. Speed of the online connection* also received 13% indicating *Very Dissatisfied.* However, the *Ease of Use* has high satisfaction, as does *Reliable access to the Internet.*

Table 9: Satisfaction over their internet services and providers for residential survey respondents in MTRCG

Services	Very* Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Don't Know/NA
Speed of the on-line connection	13% (+2%)	53% (0%)	20% (-2%)	13% (0%)	1% (0%)
Cost of internet/network service	11% (+2%)	39% (-3%)	35% (+3%)	14% (-1%)	1% (-1%)
Reliable access to the Internet	17% (-2%)	61% (+4%)	15% (0%)	6% (-2%)	1% (0%)
Ease of use	21% (-3%)	65% (+3%)	7% (-1%)	6% (+1%)	1% (0%)
Customer Service Representative's knowledge when you call for service	17% (0%)	55% (+8%)	10% (-4%)	5% (-3%)	13% (-1%)
Number of providers in your area to choose from	6% (0%)	25% (+4%)	25% (0%)	25% (-3%)	19% (-1%)

(Data source: MoBroadbandNow – Residential Survey, 2011)

*Figures in the parentheses are the difference compared to state level responses; negative values indicate regional percentages less than the state percentage.

BUSINESS COMMUNITY NEEDS ASSESSMENT FINDINGS

The number of businesses within the six-county Mark Twain region is 3,366 which is 2% of the total number of businesses in Missouri (n=150,892). During the on-line business community survey implementation from March through July 2011, 149 local businesses responded and answered 32 questions about broadband or high-speed Internet services. The majority of businesses responding were in Shelby and Marion counties.

Table 10: Business Reponses and total businesses by counties in MTRCG

County	Percentage of total business survey respondents (n=149)	Percentage of total businesses in MTRCG* (N=3,366)
Audrain	16%	17.3%
Macon	10%	11.1%
Marion	21%	25.3%
Monroe	3%	5.8%
Pike	0%	11.8%
Ralls	1%	5.8%
Randolph	10%	17.7%
Shelby	39%	5.3%

(Data source: MoBroadbandNow – Business Survey, 2011)
*County Business Pattern, 2009 (US Census Bureau)

The responses from the small business community represent the business group that typically has the most issues surrounding broadband availability and adoption. The survey provided a forum for the discussion of this topic and participation was promoted by the RPC, local economic development offices and chambers.

Table 11: Business Reponses by size of businesses

Size of business employment for surveyed businesses MTRCG	Percentage of businesses Surveyed (n=149)		Size of business employment for all businesses in MTRCG*	Percentage of total businesses in MTRCG (N=3,366)
1-4 employees	54.9%		1-4 employees	56%
5-25 employees	23.6%		5-19 employees	33%
26-100 employees	13.9%		20-99 employees	9%
101-500 employees	6.3%		100 and more employees	2%
501 and more employees	1.4%			

(Data source: MoBroadbandNow – Business Survey, 2011)
*County Business Pattern, 2009 (US Census Bureau)

Considering the type of businesses that responded is also helpful. The following table illustrates the responding businesses by sector versus the actual presence reported in the Mark Twain region.

Table 12: Business Survey Responses by NAICs sectors with total businesses by sectors

NAICS	National Business Classification	Percentage of the total business survey respondents of the total in MTRCG (n=149)	Percentage of total businesses in MTRCG* (N=3,366)
11	Agriculture, Forestry, Fishing and Hunting	20.2%	0.30%
21	Mining, Quarrying, and Oil and Gas Extraction	0%	0.45%
22	Utilities	5.6%	0.59%
23	Construction	3.2%	8.20%
31	Manufacturing	7.3%	5.29%
42	Wholesale Trade	0.8%	4.60%
44	Retail Trade	9.7%	17.80%
48	Transportation and Warehousing	1.6%	3.86%
51	Information	1.6%	1.81%
52	Finance and Insurance	9.7%	8.02%
53	Real Estate and Rental and Leasing	2.4%	2.79%
54	Professional, Scientific and Technical Services	7.3%	4.84%
55	Management of companies and enterprises	0.8%	0.36%
56	Administrative and Support Services	3.2%	3.89%
61	Educational Services	4.0%	0.89%
62	Health Care and Social Assistance	11.3%	11.41%
71	Arts, Entertainment and Recreation	4.8%	1.60%
72	Accommodation and Food Services	4.0%	7.61%
Other (other including 81 & 99)	Other and not classified	2.4%	16.00%

*County Business Pattern, 2009

Four percent (4%) of businesses report having no internet access. Of the 96% with internet access, a little more than 89% of businesses' internet connections are broadband. Most of the broadband connections used for business are DSL with 45% of respondents. Note however that 2% of the respondents indicated having dial-up. *This combined with the satellite (9%) implies that 11% - or 1 in 10 responding businesses with internet access – do not report a broadband connection*. Most of those that had dial-up connections reported that high-speed Internet was not available in their area, but they would adopt broadband as soon as it was available. The businesses that are located where broadband is available, but do not subscribe, indicated cost was the barrier.

Table 13: Types of Internet Services Used

Types of Internet connection	Response Percent in MTRCG* (n=149)	Response Percent Missouri (n=1,182)	National Survey** (n=1,329)
DSL	45%	38%	57%
T-1	7%	11%	-
Cable Modem	13%	8%	34%
Fiber to the Premises	7%	8%	7%
Fixed Wireless	16%	10%	8%
Satellite Broadband	9%	8%	5%
Mobile Wireless	7%	5%	23%
Dial-up Line - 56 Kbps or Less	2%	8%	8%
Frame Relay/CIR	2%	1%	-

(Due to the definition of the types of connections used in the national level survey by FCC, the percentages are approximate comparison)
*Percentage does not add up to 100 percent because one business may have more than one type of connection.
Source: **http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db1129/DA-10-2251A1.pdf

When asked how important is a broadband connection to the day-to-day operations of their business, 99% chose either *Very Important* (84%) or *Important* (15%). Additionally, 96% indicated that it would be beneficial to their business if broadband in the region were enhanced. The reasons given for this high response were related to the need for faster speeds at more affordable prices, expansion of their own services to key areas of the region (rural areas, remote job sites), and bring more competition thereby increasing affordability.

While a number of different providers serve the Mark Twain business broadband marketplace, businesses noted that many times only one provider is an option for their business. Forty-three percent (43%) of the respondents indicated that either the business broadband marketplace was not competitive at all, or that there isn't an option suitable for their business (12%). The two (2) largest areas of dissatisfaction were speed of the connection (35%) and cost of the service (23%).

The survey results indicated 70% of business broadband subscribers pay less than $100 per month for their current internet service. An interesting side note is that several of those businesses responding reported not knowing their speed—only that it was too slow for the applications they were running and that the time was costing them productivity. After discussion

at numerous RTPT meetings across the state it became clear the cause was the fact that there was no choice (only a single provider) so it didn't really matter. The business just needed access.

Table 16: Key Business application of Internet/ Broadband

Business Applications	MTRCG Response (n=149)	State Response (n=1,182)	National *	Percentages (n=3,459)
E-mail	98%	82%	To advertise or promote the company	60%
Website applications	62%	56%	To conduct research	7%
File sharing	48%	44%	To sell products of services through the company's website	35%
Banking	69%	54%	To Buy products or supplies	84%
On-line education	40%	34%	To watch video	46%
Business to business functions	38%	35%	To bill or invoice customers	39%
On-line customer support	27%	30%		
Research	50%	43%		
E-business	30%	26%		
On-line appointments	19%	23%		
Monitoring functions (energy, security, etc.)	15%	15%		
Videoconferencing	22%	19%		
Internet telephone	11%	14%		

*****(Data source: MoBroadbandNow – Business Survey, 2011)
Source: http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db1129/DA-10-2251A1.pdf

Overall, lack of broadband service availability and affordable broadband service at business locations is a significant challenge in the Mark Twain region. Those that do have broadband service want faster speeds. Specifically, of the businesses that have not adopted broadband (1 in 10 of those surveyed), the majority indicated affordable broadband was not available or the service wasn't available at all in their area. When asked when they planned to adopt broadband service the majority stated *as soon as it is available*. In regions across the state it was consistently stated that businesses needed to have broadband available not just to the business itself, but to their customer base as well.

SECTOR SURVEY NEEDS ASSESSMENT FINDINGS

Each sector was analyzed individually. Then, as the information was reviewed during the 2nd full RTPT in-person meeting, common themes as well as divergent themes emerged and are profiled in this Report. Major themes are described below.

Common Themes

A number of common themes emerged across sectors related to broadband availability and adoption. The major ones are:

- **Significant areas of the region still need a broadband option;**
- **In areas where there is broadband, many times it is at capacity and the sectors see this as inhibiting potential in the region.**
- **Broadband use to support and grow technology based services in all areas: business, healthcare, libraries, K-12, higher education and workforce development are all seen as critical issues.**
- **Increasing digital literacy through outreach, education, and training. Three critical populations are the K-12 community, senior citizens and those seeking employment or career reinvention (workforce development)**
- **Broadband as it has been deployed to support Libraries and Education is always going to be a regional strength that should be leveraged, maintained, and grown.**
- **Federal mandates are directing broadband infrastructure development within the Health sector.**
- **Technical support and services for e-government, tourism, agriculture, businesses, and other organizations in the community that cannot afford their own network / broadband staff.**
- **Broadband is critical to the success of key operations of each Sector.**
- **All Sectors reported problems created by the lack of robustness on the available broadband networks and adoption with particular attention to rural areas.**

Divergent themes

While many common issues related to broadband availability and adoption were found across sectors as noted above, there were also some divergent themes specific to one or several sectors based on an analysis of the information provided. These included:

- **Lack of training and development opportunities based on sector and the constituencies each serves. Rural libraries, rural economic development, rural workforce development, K-12 schools and libraries with limited broadband and computer availability.**
- **Real-time high-speed access: Workforce development—e-training, certifications, documentation, Healthcare –provision of diagnostics and specialty care, as well as home health care in rural areas. Agriculture –access to critical market and weather information; Tourism—particular concern about hotel and hospitality areas.**
- **Portable, mobile, remote access to the internet is critical to sectors such as: Tourism, Agriculture, advancement of Business, and Energy as well as those dealing with rural services (Social, Professional, and Community).**
- **Particular lack of availability in rural pockets of the region.**

Broadband Service Adoption

The major broadband adoption issues for institutional, organizational and business sectors in the Mark Twain region are:

- **Broadband has been, or is being, adopted for critical operations by every sector profiled.**
- **Common protocols and standards are critical to effective cross-institutional broadband adoption.**
- **Speed, Cost and Choice are continuing barriers to the adoption of broadband.**
- **The use of broadband only fully facilitates service provision within any given sector when it is present throughout the service provision chain.**
- **While a number of sector respondents report sufficient broadband now, all see a variety of enhancements needed in the future to increase the nature, amount, and type of adoption. Where broadband is available and affordable but has not been adopted it is primarily due to the following: Lack of computer ownership; Cost of the service available; Lack of uniform, dependable of connections; Digital literacy relevancy / value gap; Lack of knowledgeable technical staff or services for hire.**
- **Broadband facilitated applications are compromised by the download speeds provided by just meeting minimum broadband standards.**
- **Additional training and instruction is needed.**

Broadband Infrastructure and Service Availability

Although all sectors noted that broadband was available to institutions, organizations and businesses within their sectors, they all noted some type of availability problems. Key availability issues include:

- **Rural areas still face a lack of wireline access.**
- **Lack of broadband availability in critical portions of the "broadband chain" were noted by a number of sectors. For example,**
  - Economic Development—growth delayed because robust broadband not available
  - Healthcare –end user locations disables the provision of tele-health and other on-line medical services and monitoring devices.
  - Higher Education –at remote sites and faculty, employee and student home locations.
  - K-12 Education - creates similar problems to Higher Education, plus communications with parents who don't have access at home. Dependent on stressed services from local libraries for partnering
  - Libraries –at patrons' home locations creates a high demand for library broadband access, which places greater demand on their broadband technology, connections, services, and applications.
  - Local Government –residential access limits the provision of on-line services
  - Small Business / Entrepreneur –at home inhibits the ability to remotely access systems.
  - Workforce Development –limits the use of broadband for online recruiting and matching of employees for efficiency.

- **Lack of competition shortens list of availability options in type, speed, capacity and cost.**

Key Sector Applications of Broadband

All sectors report the use of the most common institutional, organizational and business applications such as a variety of web-site applications, e-mail, monitoring news and weather, on-

line education, research and other common applications. A variety of other applications that provide critical information for different sectors include:

- Training and professional development (multiple sectors)
- Product and service procurement and provision (multiple sectors)
- Tourism—effective operations and interactivity with guests
- Education (Higher Education and K-12 Education)
- Monitoring and telemedicine applications (healthcare)
- Financial transactions (multiple sectors)
- Grants and reporting (Community Services, Local Government, K-12 Education)
- Video Conferencing (only moderately mentioned, bandwidth issues)

SWOC ANALYSIS REGIONAL FINDINGS

The top five (5) strengths, weaknesses, opportunities and challenges as they relate to both broadband availability and adoption are listed below and are provided in more detailed in the Needs Assessment Results Final Report included as an addendum to this document.

Top Five (5) Strengths of the Regional Broadband Environment

1. **There is a substantial broadband user base to build upon and it is a business driver.**
2. **Key NTIA activity at community anchor institutions.**
3. **Strength of tourism, workforce development opportunities, education technology companies.**
4. **The top five (5) vote receiving sectors (Workforce Development, Healthcare, Education, Local Government, and Library), exhibited significant strengths as both sectors and strong users of broadband.**
5. **Well-developed co-op system in the Ralls County area.**

The increase in the number of recent broadband adopters, the use of broadband within interrelated applications, the positive effects on economic development, the presence of a variety of entities in the existing broadband provider community and the highly rated service aspects of these existing broadband providers, should be seen as strengths to be leveraged to pursue expansion of broadband access, adoption and use in the Mark Twain region and to help achieve critical *MoBroadbandNow* goals. This includes such goals as:

- Expanding the availability of high-speed internet access in the remaining areas where needed
- Ensuring access to affordable broadband
- Promoting use by business for entrepreneurial innovations which lead to corresponding economic development, particularly in the area of tourism
- Planning for higher capacity connections to community anchor institutions both in the short term and long term

Top Five (5) Weaknesses of the Regional Broadband Environment

As is seen in many SWOC analyses, weaknesses typically run counter to the strengths, especially where there is a large minority expressing problems, issues or concerns. After review of all of the needs assessment data and the SWOC voting by RTPT members, the following are the top five (5) weaknesses related to broadband in the Mark Twain region.

1. **More than 30% of Mark Twain residents do not have broadband service and in several rural areas that number jumps to 1 in 3 without broadband service.**
2. **Many businesses are highly dissatisfied with connection speed and cost of service.**
3. **Broadband robustness is limiting advancements in technology.**
4. **Consistent with the above, many necessary applications cannot be effectively, efficiently, or uniformly implemented when there is a lack of robust broadband and a lack of internet and digital literacy.**
5. **Economic development, healthcare, education and library utility in the area is hindered where there is a lack of broadband and/or hardware to access the internet.**

Clearly, the weaknesses noted above significantly inhibit the ability to achieve *MoBroadbandNow* goals in the region, including:

- Enhancing economic opportunities (business, healthcare and energy) and workforce development
- Developing further institutional connections and providing digital literacy to constituencies in the Mark Twain region
- Increasing affordable high-speed internet access to all within the region
- Providing better and more equitable services to the region's citizenry

Top Five (5) Opportunities Concerning the Regional Broadband Environment

As strengths are leveraged, and ways and means are devised to overcome the weaknesses, there will be a number of opportunities to advance and enhance broadband availability and adoption within the Mark Twain region. The top five (5) opportunities noted during the SWOC analysis for the Mark Twain region include the following:

1. **A high value is placed on internet access and broadband within the region**
2. **Those without broadband want it and have shown a willingness to pay for the service**
3. **Those that have broadband want more choice as a driver for speed capacities, vendor choice and improved reliability**
4. **Certain sectors were seen as providing significant opportunities for broadband in the Mark Twain region as a whole (Tourism, Workforce Development, K-12, Higher Education)**
5. **Broadband development is associated with positive growth in all sectors**

It is evident that the opportunities noted above, if successfully pursued, would support all of the *MoBroadbandNow* goals that have been developed.

Top Five (5) Challenges in the Regional Broadband Environment

Similar to weaknesses running counter to strengths, there are multiple challenges to taking advantage of the opportunities listed, as well as leveraging the strengths and overcoming the weaknesses in the Mark Twain region. The top five (5) challenges are listed below.

1. **Balancing cost and speed (affordability) is a significant inhibitor to expansion in broadband adoption**

2. **Provider coverage and choice – especially at different speed tiers of service is a significant hurdle to achieving equity of service within the region. Key concerns expressed about the few remaining rural areas of the region without broadband**
3. **Technology / Computer / Broadband literacy is a significant need**
4. **Key sectors are seen as facing challenges within the region that impact their ability to provide services, including providing broadband services to others. These include tourism, workforce development, healthcare, local government, K-12, higher education and libraries**
5. **Technology / Computer / Broadband continuing enhancement is a significant need**

The top five (5) challenges described above create concern related to every *MoBroadbandNow* goal. This heightens the need to define Strategic Directions and Initiatives that will address these challenges.

Strategies to Increase Broadband Availability and Adoption in the Mark Twain Region

After review of all the findings gleaned from the Mark Twain region Broadband Needs Assessment and other associated information concerning broadband availability and adoption in the region, the following are the strategic directions developed by the RTPT to enhance broadband availability and adoption in the Mark Twain region. These strategic directions emanate from the need to resolve a number of issues identified during this process, as summarized in the previous sections.

The strategies discussed below are divided into two major categories: Availability and Adoption. Each strategy is discussed beginning with goals and **short-term objectives** (those that can be achieved within the first year of the Strategic Plan's implementation), continuing with **intermediate-term objectives** (2-5 years after Plan implementation) and then **long-term objectives** (5+ years after Plan implementation). Then the Plan discusses the policies, action items and implementation plan, as well as the financial, human, organizational, technical and training/education resources to achieve the goals. This is followed by implementation timelines and benchmarks to measure progress and degree of success.

Availability Goals

There are two major goals to increase availability of broadband in the Mark Twain region. They are:

1. The Mark Twain region currently has several counties that do not meet the Governor's broadband goal of 95% availability. The key concern is expanding broadband service area to these areas.
2. The second key concern is that broadband capacity is lacking where there is currently broadband access, such that individuals and businesses have access to:
    - Multiple providers
    - Multiple technologies
    - Multiple tiers of access, up to and including the highest levels of individual and business access envisioned for the future in the National Broadband Plan (*up to*

100 Mbps provided to residents and up to 1 Gbps or more provided to any businesses that desire such speeds).

The strategies and elements to implement these goals are described in detail below.

1. *Expand Broadband Availability so that ALL HOUSEHOLDS in the Mark Twain Region Have Affordable Access*

Short-term objectives (1st & 2nd year)

a. **Work with providers to design initiatives to expand broadband where there is currently only dial-up or satellite available –** Although all existing providers in the Mark Twain region should be involved in this effort, a review of current broadband availability maps, as well as the location of a high percentage of dial-up and satellite internet users from the residential survey shows that it would be initially beneficial to work with those serving the remaining rural areas noted as unserved or underserved. . In particular, working with providers serving the following counties (in order of priority): Ralls, Randolph, Monroe, Pike, Marion, Macon and Shelby.

b. **Inventory of publicly owned towers or privately owned towers and taller objects that could possibly be used to expand availability.** This should include MoDOT, MTNF, MDC, Highway Patrol, and other groups.

c. **Inventory state and local government planning, zoning, rights-of-way, or construction rules and regulations.** The inventory should be examining and collecting how these laws and rules could potentially impact build out or be an incentive to expanding broadband access.

d. **Inventory of Community Anchor Institutions.** Discovery of their current plans and projects regarding increasing broadband access, speed, etc. The State can provide an initial list to the group from which it can follow-up and seek to build partnerships or leverage these plans. At a minimum, these CAIs should participate in the computer reclamation and digital literacy programs being sponsored by the region and promote these activities within their organizations.

e. **In Year 2 begin to implement the design initiatives and build partnerships as discussed and agreed upon in Year 1.** Also, begin looking at other areas that the most recent maps show as not having broadband availability.

Intermediate-term objectives (3rd 4th & 5th year)

a. **In Years 3 through 5 –** Continue to expand broadband to all within the region, including any remaining design initiatives and then moving forward to complete a provision of full broadband within the region as soon as feasible within the five year planning horizon.

Long-term objectives (6+ years)

a. **Maintain and expand broadband networks to reach 100% availability in the Mark Twain region, its counties, and municipalities.**

Policies

a. **It is already stated as a policy that broadband be available to 95% or more of the population statewide.** Consistent with the discussion above related to the

provision of basic broadband service, similar incentives should be begun by focusing on the unserved areas and providing them with at least basic broadband service availability. This is not only a regional and statewide initiative, but a national initiative. Providers, for example, should be able to tap in to the Connect America Fund (CAF) program to help accomplish this. The Mark Twain Broadband Development Program should work with providers regionally (as well as the State working at a statewide level) to assist providers in any way feasible to access such funds.

Additionally, the State has supported the activities of MoBroadbandNow and other Missouri awardees of NTIA and RUS funds. All of the infrastructure being developed with these funds should be assessed to expand broadband availability to 100% within the five year planning horizon.

Action Items/Implementation Plan

Short-term objectives (1st & 2nd year)

a. **RPC Broadband Development Program works with all providers, especially the providers discussed above, to develop design initiatives during the short-term.**
b. **Necessary funding and support is also obtained during Year 1 of the initiative.**
c. **Complete inventory of publicly owned towers or privately owned towers and taller objects.**
d. **Complete inventory of state and local government planning, zoning, rights-of-way, and construction rules and regulations.**
e. **Review inventory of Community Anchor Institutions and look for partners and potential collaborations.**
f. **Broadband system new-build and expansion efforts begin in Year 2 and continue until availability meets demand (ongoing).**

Intermediate-term objectives (3rd 4th & 5th year)

a. **Broadband system new build and expansion efforts continue until 100% availability is achieved by the end of the 5 year planning horizon.**

Long-term objectives (6+ years)

a. **Broadband availability is maintained at the 100% level and capacity is increased as discussed below.**

Resources Needed

a. **Financial**
    - **Until designs are chosen, it is not known exactly how much funding will be needed within the Mark Twain region.** This includes both Capital funds and the incremental operational cost that will be required to support the expanded networks. Detailed figures should be developed during Year One of the design phase, first for the targeted unserved areas described above and then for others, to determine costs to achieve the 100% level by the end of the five year planning horizon. These should be

determined in Year One and agreement reached both at the regional and state level on the appropriate level of funding needed. Then funds can be procured and the build initiated.

- **Grant and other funding source application development –** The region and the State should stand ready to support the providers in obtaining CAF funding (where pertinent), USF funding (until it is no longer available) and other infrastructure development funds to support the infrastructure builds designed.

b. Human

- **There will be a variety of human resources needed, some which are factored into other activities, such as administrative and operational human resources at the State and regional level.** A number of human resources will also be needed at the service provider level in order to design and build the network expansions.

c. Organizational

- **Similar to the above, organizations involved will include the State, the RPC, service providers, and public / private groups and organizations operating in these local jurisdictions.**

d. Technical

- **Primary technical resources will come from the service provider, including the design and engineering of the infrastructure expansions to achieve the levels of broadband availability within the timelines discussed above.**
- **There will also need to be some technical resources at the State and local level to evaluate the plans of the service providers.**

e. Training/Education

- **No additional resources are needed in this category, beyond those already described above for educating those on the utility of the broadband services that will be made available to them.**

Timeline/Benchmarks

a. Year 1 – Design of infrastructure expansions to provide service to the unserved in the targeted areas described above.
b. Year 1 - Complete inventory of publicly owned towers or privately owned towers and taller objects.
c. Year 1 - Review inventory of Community Anchor Institutions and look for partners and potential collaborations.
d. Year 1 – Procurement of funding to implement the build.
e. Year 1 & 2 - Complete inventory of state and local government planning, zoning, rights-of-way, and construction rules and regulations.
f. Year 2 – Build out infrastructure to provide services to those targeted areas.
g. Year 2 – Design any additional expansions to achieve needed connectivity.
h. Year 2 – Seek funding to support expansion to the needed connectivity, so that it is achieved by 2014.
i. Years 3 through 5 – Design, secure funding and build infrastructure to provide 100% availability.

2. *Expand Broadband Capacity throughout the Mark Twain Region*

Short-term objectives (1st & 2nd year)

a. **Design capacity expansions where they are most feasible –** For example, where plans are already on the drawing board, where it requires only swap-outs of equipment, in high density areas where return on investment is relatively quick and the indicated need for higher speeds, redundancy and competitive services is high.
b. **Focus on areas that Speed is lagging (not capable of supporting the applications desired).**
c. **Begin expansions of capacity and documenting in Year 2.**

Intermediate-term objectives (3rd 4th & 5th year)

a. **Continue capacity expansion in Years 3 through 5 -** Such that high levels of service (up to 100 Mbps) is available to residents and up to 1 Gbps is available to businesses in all areas with a non-rural population density (urban, suburban, incorporated areas, etc.).
b. **In Years 3 through 5 –** Expand competition so that all areas with higher capacity also have multiple providers (more than 2) and multiple technologies (multiple wireline and wireless providers). This should provide the competition desired by residents and businesses, as well as provide viable opportunities for redundant and business continuity connections when needed. Such a competitive environment should also have a competitive market affect on pricing and incorporation of new technologies in order to stay competitive.
c. **This also should include expansion of technologies that were heretofore not available to certain segments of the population, even those in relatively populated areas.**

Long-term objectives (6+ years)

b. **Continue capacity expansion efforts until everyone in the region has access to up to 100 Mbps for residential and up to 1 Gbps for businesses, including access to multiple technologies and multiple providers.**

Policies

a. **Capacity expansion is perhaps the most critical area where consensus policy-making needs to occur.** For example, providers have noted during the assessment and planning process that they believe that some areas will either not support broadband expansion (because the perceived value of broadband is not high enough to make the return on investment viable) or will not support competitive providers, because there is only a marginal return for a single provider.

However, this dynamic significantly changes if the need and desire for adoption increases, based on the adoption spurring efforts detailed above. Additionally, if more services are available for both residential and business, the price/value comparison will move in a higher price direction, thus supporting the

development of competing providers with multiple technological solutions, the ability to provide redundant circuits, providing fixed as well as mobile (portable) access, etc. and other characteristics which have shown to positively increase the amount of income expended on broadband services and related hardware applications.

Accordingly, it will be important for the federal government to continue to pursue the goals and objectives in the National Broadband Plan, which target, as an outcome, available, high capacity, competitive, affordable, broadband solutions for all. It is also important for the State to emulate these pursuits and establish statewide policies, including incentives, to spur availability such that it is ahead of, or at least consistent with, an increasing computer/internet/broadband adoption rate. A significant problem would occur if adoption is spurred, but broadband is not available. This has shown to cause significant consternation and subsequent abandonment of adoption efforts by individuals that face lack of availability.

Action Items/Implementation Plan

Short-term objectives (1st & 2nd year)

a. **RPC Broadband Development Program works with all providers, especially the providers discussed above, to develop capacity-enhancing initiatives during the short-term.**
b. **Necessary funding and support is also obtained during Year 1 of the initiatives.**
c. **Begin capacity expansion efforts in Year 2.**

Intermediate-term objectives (3rd 4th & 5th year)

a. **Continue capacity expansion efforts begun in Year 2 until all non-rural areas have multiple competing providers offering multiple technological solutions, with up to 100 Mbps for residents and up to 1 Gbps for businesses by the end of the 5 year planning horizon.**

Long-term objectives (6+ years)

a. **All Mark Twain region residents and businesses have access to multiple, high capacity broadband within the region, then within each county, then possibly within each municipality.**

Resources Needed

a. **Financial**
    - **Similar to the above, it is not yet known what the financial implications are of development of higher capacity, competing provider and technology options, until such options are designed and return on investments evaluated.** It is known, that while competing options may cause initial reductions in price, thus initially reducing revenues, ultimately, if the need that has been defined herein is met, such options will expand the market by adding consumers, and expand the market by increasing the revenue per household or business, including instances where both business and residential consumers are choosing

multiple providers (based on meeting fixed and mobile access, redundant and higher capacity needs for both work and residential applications).

It is likely that expanding capacity will be significantly cost efficient in a number of cases such as expanding the capability of current cable modem based DOCSIS 3.0 solutions to provide greater capacity for residents and businesses, or where line extensions can be expanded from the core (for example to expand DSL and/or cable wireline competition in areas where either one or the other could expand from their existing network to provide competitive services), or where technology can be repurposed (bringing in 4G wireless technology to supplant 3G and then, rather than obsolescing the 3G equipment, being able to repurpose it for areas that currently lack mobile broadband availability).

All of these options will need to be designed and evaluated. Where the return on investment is viable, these should be the first areas to see an expansion in capacity.

b. Human

- **Coordinating resources will need to be done at the State and regional level, to ensure that this "enhanced capacity" goal continues to be on the radar screen.** Additionally, providers will need to allocate personnel to focus on this as part of their Intermediate and long-term planning**.**

c. Organizational

- **Capacity expansion will be a significantly beneficial effort, but it must come on the heels of critical efforts to provide service to the unserved and underserved.** However, some of the resources of both the State's *MoBroadbandNow* Office as well as the RPC's Broadband Development Program need to be devoted to this effort, because it serves a critical need as well. Specifically, as capacity, technology and competition are expanded in an area, they continue to help open up greater opportunities for economic development and expansion in all sectors.

d. Technical

- **Similar to the above, while some technical resources will be needed at the State and local level to evaluate the plans of the service providers, most of the technical resources will come from the provider community itself.** This will include not only operational, design and engineering personnel, but also research and development personnel at both the State, regional, and local level in partnership with corporate personnel.

e. Training/Education

- **Resources will be needed in this category to provide information on the benefits of enhanced access (faster speeds, new and additional applications, expanded use of portable technology, the need for redundant operations, etc.).** The need for education and training should factor in again to the Intermediate to long-term planning efforts of both the

service provider community and the State and regional broadband programs.

Timeline/Benchmarks

a. **Year 1 –** Design initiatives to take advantage of expansion that is either currently on the drawing boards or could be done in a relatively short order with a known, reasonable return on investment.
b. **Year 2** – Implement these capacity expansion efforts, as well as beginning designs to bring expansions and capacity to the entire region.
c. **Years 3 through 5** – Focus on expanding capacity, multiple providers and technology options to those that currently only have a primary or two providers.
d. **Years 5+ -** The long-term planning horizon should see 100% of the region with three or more providers, fixed and mobile, with residential capacity up to 100 Mbps per home and business capacity up to 1 Gbps per business.

Adoption Goals

There are three major overall broadband adoption goals. They are:

1. Increase broadband/internet, computer/access device ownership among the 6% that do not have a computer or other device for connectivity (smart phone, tablet, gaming station)
2. Increase computer/technology/internet literacy in key populations of homes with children and senior citizens
3. Increase access to affordable broadband/internet

Each adoption goal is discussed from beginning to end below.

1. *Increase Access to Affordable Broadband/Internet*

Short-term objectives (1st & 2nd year)

a. **Expand public access availability to computers and the internet –** This will mean expanding both the capacity of internet/broadband at existing locations as well as the number of devices at these locations and support for those that seek to utilize public access.
b. **Explore regional educational facilities with computer labs and high-speed internet connections for after-hours programs –** There are within the region several libraries, K-12 schools, government facilities, as well as 2 and 4 year higher education institutions that have existing computer labs that could be made available to the public after hours. In most cases the computers and systems were purchased through tax dollars from the community and through some creative scheduling and partner-building could address a portion of the access issue.

Intermediate-term objectives (3rd 4th & 5th year)

a. **Continue to expand public access, including to new locations** – This would mean placing public access computers in locations where they currently aren't, including potentially social service agencies, Chambers of Commerce (for businesses to use), non-profits, community centers, businesses in remote areas

that have high-speed internet access but surrounding residents do not (to primarily support their employees and end-users), and other such locations.

b. **Develop and expand a low cost, basic broadband access throughout the region –** *Experience indicates that the price point for such access has to be reduced to approximately $9.95 per month (the current cost for a number of dial-up circuits, as well as the cost of Comcast's basic broadband service "Internet Essentials").* Experience indicates that when affordability is the broadband adoption inhibitor, this price point will attract adopters. For both efforts, the success should begin to be measured halfway through the planning horizon, and then again at the end of five years.

Long-term objectives (6+ years)

a. **Based on the 5 year benchmark measurement, make decisions to sustain, reduce, or expand public access and basic broadband provision efforts to ensure 95% access and adoption or greater.**

Policies

a. **Regarding public access –** Much work is being done by the Missouri Department of Higher Education based on its receipt of NTIA BTOP funds to develop public computing centers. This results and lessons learned from this work should be leveraged to fine-tune plans to enhance existing and expand public access computing locations.
As discussed below, expansion will also depend upon other available funding. Significant funding is available through grants, and is anticipated to be going forward, as well as through partnerships with organizations like ***One Economy***. These opportunities should also be leveraged to enhance and expand the level of public access needed to reach the 95%+ level of adoption.

b. **Regarding basic broadband/internet access cost -** Two policies need to be pursued at the State level. First, the State should consider incentives, favorable tax policies, etc. for those providers that indicate that they will offer such basic access through the planning horizon and beyond. Similar to Comcast's *Internet Essentials* program, the State may want to place some conditions on such access to ensure that it targets those most in need. If financially feasible though, it should be available to everyone (since some internet adopters clearly perceive that dial-up is enough, even when broadband is available. Their inhibitor is primarily their current price/value comparison).

Action Items/Implementation Plan

Short-term objectives (1st & 2nd year)

a. **For Public Access Computer Centers**

- Inventory an evaluate existing centers for expansion, ensure that the public computing centers are part of the computer reclamation program and have laptops/tablets as part of their inventory for a potential "loaner" program
- Determine items needed for expansion (hardware/software, personnel support, space, etc.)
- Seek partners for development of new centers

b. For Basic, Low Cost Broadband Access

- Work with providers to determine how to implement low cost access
- Determine parameters needed

Intermediate-term objectives (3rd 4th & 5th year)

a. For Public Access Computer Centers

- Begin and continue to expand existing centers
- Determine hardware/software, etc. needed for development of new centers
- Develop and continue to expand new centers

b. For Basic, Low Cost Broadband Access

- Implement initial basic access in targeted locations
- Expand initial offering throughout the region

Long-term objectives (6+ years)

a. For Public Access Computer Centers

- Make decisions to sustain, reduce or expand public access based on the 95%+ adoption benchmark

b. For Basic, Low Cost Broadband Access

- Continue basic service provision if needed to maintain broadband adoption levels

Resources Needed

a. Financial

- **Expand public access computers –** This will require financial support for new hardware/software and replacement over the planning horizon as well as additional personnel support costs, especially for new locations. The exact amount of funding support will depend significantly on the amount of expansion made, as well as how much capability is implemented in new locations (i.e., number of devices, amount of broadband capacity accessed, number of support personnel to assist users, etc.)
  Accordingly, for planning purposes, we have projected the following unit costs:
  - $1,000 per hardware/software package
  - $15.00 per square foot of operational space
  - $150.00 per month for broadband connection capacity expansion
  - $50,000 in loaded personnel cost for support at new locations; $25,000 at existing locations
- **Region-wide, low cost broadband internet access tier –** This will depend upon the incentives provided. Some estimates indicate that this is the true cost of providing basic broadband service, once a system is established as a going concern, without profit and without placing money in reserve for enhancements and expansion. Likely provision of this service will need to be negotiated with the service provider industry and be based on verifiable income data, such as the federal free or reduced lunch program.

- **Lab monitoring costs –** If access to labs can be granted there would normally be a paid position to monitor those lab settings so that no inappropriate behavior or damage to the labs takes place.

b. Human

- **Similar to the above, coordination will be needed at the RPC level to help design and implement expansions of existing public access computing locations as well as partner with other organizations to develop new locations -** Additionally, there will likely need to be additional, trained, skilled, personnel to support the public's access to the computing and application resources.
- **Development of a basic broadband tier region-wide –** There will need to be resources at the State level to develop incentives as well as resources at the local level to work with the local providers to implement such a service, as well as promote it throughout the region. Additionally, service providers will need to allocate resources to interface with the State and the RPC, as well as provide outreach to those that would qualify for the program.
- **Lab monitoring -** This position could be paid minimum wage if they just monitor or a higher hourly wage if they provide computer and user support and training during those periods.

c. Organizational

- **The central focus would be the Broadband Development Program at the regional office, as well as specific resources at the State, including the *MoBroadbandNow* Office as well as, most likely the PSC, the Department of Economic Development, and others who would help establish the incentives to spur the provision of basic broadband service.** Additionally, resources would be needed at each of the current organizations that provide public access to computers, internet and broadband as well as partner organizations. These same entities may be involved, as indicated above, in educational and training functions since access to hardware/software will be needed for those functions as well.
- **Memorandum of Agreement / Understanding for shared access–** A document would need to be drafted between the organization with the facility and the city or county that it is to provide access for that outlines use, hours, etc of the arrangement.

d. Technical

- **Expansion of Public Access Computing –** Technical resources will be needed to install new hardware/software, as well as train support personnel (and potentially users) and maintain the equipment. Lesson plans for digital literacy training have been fully developed around the country and should be implemented in Missouri.
- **Concerning the basic level of broadband access -** Service providers should anticipate heightened service support, since many who will take the lowest tier of service will be broadband users for the first time.

e. Training/Education

- **As indicated above, part of the support personnel function for Public Access computers would be to educate users on the use of both the hardware and software resources at the public access locations.** Additionally, service providers should anticipate additional education and training support, including materials and personnel for first time broadband users.

Timeline/Benchmarks

a. Expand public access availability to computers and the internet

- **Year 1 –** Both existing and new public access computing locations are targeted for expansion and development. Also, initial discussions occur with service providers to establish a basic broadband tier of service.
- **Year 2** – Existing locations are expanded to provide greater access to public computers, broadband and related applications.
- **Year 2** – Initial access to basic broadband service is provided and contributes to a rise in broadband adoption. 30% of the Mark Twain region currently has not adopted broadband, but there are a number of factors besides affordability contributing to this. Accordingly, a rise of between 2 and 5% per year in broadband adoption due to availability of a low cost broadband tier would be seen as significant.
- **Years 3 through 5** – Additional public computing centers are made available as demand requires. The basic broadband tier of service is offered to all throughout the region. Broadband adoption increases such that it reaches 95% levels by the end of year five.
- **Year 5+ -** Public Access computing centers are maintained as well as basic broadband service to sustain 95%+ broadband adoption levels.

b. After-hours computer program –

- **Year 1** – the program is put into place, with lab monitors funded / assigned and after-hour hours posted to the public by the end of Year One.
- **Year 2 through 5** – The program expands computer access approximately 2% per year until it hits 95% in the Mark Twain region by the end of year five. Lab monitors gain skill sets in use and application of computing and high-speed internet support.
- **Year 6 plus** – Computer access through the after-hours program is leveled off and being sustained.

2. *Increase Computer / Technology / Internet Literacy*

Short-term objectives (1st & 2nd year)

a. **Increase the perceived value of computer ownership and use, internet access and broadband access –** As a first objective, engaging every sector (Educational, Workforce Development, Local Government, Healthcare, etc.) in a regional (supported by a Statewide) campaign to show the citizen-based value of access devices, internet access and broadband for all segments of the population. Ongoing work and collaboration within the region in libraries, public safety, education and healthcare should provide some foundation for an assessment and gap in computer and digital literacy. This will help raise awareness and understanding of the technology's utility in each individual's life (home, work, recreation, education, etc.) and have the consequential effect of increasing value. Once ownership and access are seen as valuable, individuals currently without computers, internet access and/or broadband will be more willing to make price/value decisions based on their personal understanding of the cost/benefit. This outreach and educational campaign should begin with the inception of the Strategic Plan and ramp up during the first year. Several initiatives around the country can be used as role models for this work.

Intermediate-term objectives (3rd 4th & 5th year)

a. **Continuation and heightening of the outreach campaign –** Evaluation of the campaign's efforts should be made after the end of the first year and the campaign adjusted to better reach target audiences (at the outset, target audiences include: lower socioeconomic households, households with children in the home, elderly residents, and rural residents).

b. **Enhancement of existing and development of new computer / technology and internet / broadband literacy programs –** Based on the response to the regional outreach effort, existing programs (such as those being established in workforce training and development locations: K-12 Schools, Libraries, Local Government and Healthcare) should be expanded to focus on the individuals that respond to the outreach campaign. Additionally, other programs can be developed (in conjunction with the broadband providers, Chambers of Commerce/economic development offices, educational entities, libraries, private businesses, governments, at the RPC location, etc.) to help fulfill the need.

   At the outset there should be three types of interwoven training:

   - Computer literacy and use training in identified community anchor institutions that is targeted to at risk populations
   - Internet access training, especially broadband, and
   - Application training, from basic to advanced, depending upon the level of the trainee (several resources have been developed nationally that can be offered at no charge)

   This should begin with expansion of existing programs in year two and ramp up to programs region wide, with a variety of partners by the end of year five. Such programs can level-off, or even be reduced, once attendance begins to drop, indicating that residents and business representatives are sufficiently trained.

Long-term objectives (6+ years)

a. **Sustain the level of outreach needed to maintain the highest possible (95%+) perceived value of computers, internet and broadband within the region**
b. **Sustain the level of training needed to ensure that all that desire such training receive the level that they need to sustain their desired quality of life** - Also in working with business and industry, ensure that the level of training remains high to both retain and attract knowledge and information-based businesses.

Policies

a. It will be important for the State to both support and draft design templates for outreach campaigns that can then be tailored locally, to heighten the perceived value and enable individuals and businesses to make reasonable cost/benefit, price/value comparisons. The desired outcome is increasing computer, internet, and broadband technology literacy and use in at risk populations.
b. There should also be incentives given to non-profits, businesses, educational and public sector entities to expand current educational and training programs in this area, or to start-up new educational and training programs.

Action Items/Implementation Plan

Short-term objectives (1st & 2nd year)

a. **Within the first 6 months of year one -** Develop a Statewide template and local outreach plan and associated materials
b. **Within the first 6 months of year one -** Establish a list of educational/training partners, inventory those programs, and work with those that can enhance and expand their programs.
c. **From 6 months to 1 year -** Implement the outreach plan through partnering with those that currently educate and train in this area, as well as new partners (business, healthcare, industry, community services, etc.) that would find benefit in outreach to its workforce and client base.
d. **From 6 months to 1 year -** Structure plans to enhance and expand existing programs.

Intermediate-term objectives (3rd 4th & 5th year)

a. **Continue outreach efforts**
b. **Expand existing programs –** Expand the start-up training programs with additional participants who have responded to the literacy outreach program.
c. **At the end of 2nd year** – Evaluate both the literacy outreach efforts and the expanded training efforts.
d. **In years 3 through 5** – Adjust these programs based on the outcome of initial efforts to better target outreach; continue sustainment and expansion of successful existing programs and plan for and implement new programs.

Long-term objectives (6+ years)

a. **At the end of year 5 –** Evaluate all efforts to-date

b. Change to a sustaining mode if 95% of residents and businesses indicate that they are sufficiently trained or are able to access training when needed to advance their skills.

Resources Needed

a. Financial

- **Outreach Programs –** Funding will be needed at both the State and regional level to: develop a template; tailor it locally; work with existing and potential partner organizations; develop outreach materials; and publicize training and education programs. Funding will also be needed to sustain and expand these efforts as needed over the planning horizon, as well as continually evaluate and modify these efforts as needed.

  It is recommended in the first year, full-time staff at the State and local level be responsible for the outreach efforts with supporting operational material and resources. Accordingly, an estimated $100,000 should be allocated for this in year one ($50,000 at the State level and $50,000 at the regional level).

  For years 2 through 5, this could drop to $50,000 annually ($25,000 at each level).
- **Training and education programs –** These are the foundation of adoption spurring programs, and as such, will take significant financial resources to implement, especially initially.

  On a regional level, expanding existing programs (as referenced above) could potentially take from $250,000 to $500,000, which would need to be sustained for both maintenance and expansion purposes through the Intermediate-term. Evaluation can be made at the end of year five to see if such budgets could be reduced.
- **Grant availability –** The existing boards responsible for workforce development should be approached with the idea of garnering support both in terms financial and staff support. There are also a variety of short-term educational grants that are available from foundations, educational associations, other non-profits (such as ***One Economy***), and the federal government. Additional ones are anticipated. One resource to start with is ***One Economy*** which has recently been tapped by the FCC to lead its "*Connect 2 Compete*" initiative. As such, funding for grant writing resources will be critical. Such grant writing funding should be seen as an ongoing expense until at least 95% levels of training/education have been obtained.

b. Human

- **Outreach Programs –** Regarding outreach, human resources will be needed, including both those at the State and regional level that have a background in education, training and marketing communications. Again, the existing grants nationally and locally may be able to help the region get this activity established. It is anticipated that this will require a full-time job for at least the first few years of the planning horizon.

- **Training and education programs** – This will require trained educators, as well as "train the trainer" personnel. Some of these positions will be pre-existing and will handle expansions in attendance at their existing programs, such as our local libraries and universities. Other programs and classes at new locations will need to be established, perhaps doubling the number of educational/trainers at some existing locations and adding new ones at other locations. *We also look to the broadband providers in the area to support these objectives, such as Comcast has rolled out in other states with its "Internet Essentials" classes*. Once the results of the outreach are known, the exact education/training workforce needed over the length of the planning horizon will need to be more finitely determined. This may also adjust the initially proposed budgets under financial resources.

c. Organizational

- **Similar to the above, we anticipate that coordination will be needed at the RPC level under a continuing regional broadband enhancement program -** Beyond this, every partner organization will need to coordinate with the RPC, specifically those involved in the outreach and education training effort. It would also be wise to establish at least a virtual (by electronic means of meeting and communication) *Education and Training Committee* which involves chief administrators of the training components of healthcare organizations, Chambers of Commerce/economic development offices, large businesses and industry, School Districts, the local universities, the Libraries, broadband providers government affairs staff, local governments etc.

d. Technical

- **Potentially additional hardware/software to support the training and education efforts, as well as additional or expanded broadband connectivity at training and education locations will be needed.** If funds are provided for new hardware/software, it is likely that existing locations that have been set up for training to-date can be expanded. Where that is not feasible, classroom/training room design work may be necessary.

e. Training/Education

- **It would be useful to develop a tailored curriculum which would focus on the specific issues of the Mark Twain region –** This should include computer / internet / application / broadband skills that are highly valued and utilized in workforce development; similarly, skills that are either highly used in current industry and manufacturing within the region, or those industries that are desirous of either relocating to the region or those that it would be beneficial to attract to the region, such as knowledge / information-based businesses; skills that are needed to support the healthcare and tourism industry, such as highly graphic intensive and interactive web design to attract tourists and vacationers; and others. This

curriculum could be developed as a template at the statewide level and then tailored regionally.

Timeline/Benchmarks

b. Outreach

- **Outreach efforts designed and implemented by the end of year 1.**
- **Outreach efforts evaluated and modified by year 2.**
- **Outreach efforts continuing and measured for success in years 3, 4 and 5.**
- **Outreach efforts evaluated for level of continuation for years 5+**

c. Training/Education

- **Partners for both expansion of existing programs and development of new programs determined by the end of year 1.**
- **Expansion of existing programs by the end of year 2.**
- **Addition of new programs by the end of year 2 as well as evaluation of existing programs.**
- **For years 3 through 5 –** Evaluation of existing and new programs
- **At the end of year 5** – Evaluate at what level the program should be continued

3. *Increase Broadband / Internet, Computer / Access Device Ownership*

Short-term objectives (1st & 2nd year)

a. Create regionally based computer reclamation and redistribution/repurposing efforts – Efforts should be made locally, most likely supported by a Statewide campaign, to have institutions, businesses and homeowners give old and/or unused computer/access devices to be reclaimed, repurposed and redistributed to those that desire such devices, but can't afford them. The two key populations are homes with children on the free lunch program and the elderly population. Special considerations should also be given to rural residents. Ideally, computers and hardware devices would be recycled to a central location where they would be repurposed. Residents, libraries, local governments and businesses would apply to receive them at no or low cost. Where efforts already exist, seek to support and expand such efforts. Consider partnering with national efforts to complete this objective.

Intermediate-term objectives (3rd 4th & 5th year)

a. Continue reclamation, redistribution/repurposing efforts as a going concern

b. Develop and implement a mechanism to provide low cost tablet computers – It has been projected that as time increases, tablet computing devices will become the primary means for non-work access to the internet (as well as the preferred means of portable work-related access to the internet), and also the easiest device to learn and use effectively. Accordingly, there should be a significant push within the two to five year planning horizon to develop low or no cost tablet distribution to those that desire computer/access devices, but do not have access

to them. These might be connected to initiatives in K-12 textbooks, higher education distance learning, healthcare monitoring and rural programs.

Long-term objectives (6+ years)

a. **Ensure access to all those within the region that desire computers but don't have them through continuation of the efforts started previously -** This should include provision of devices to all those that desired computer/access device ownership at the beginning of the planning horizon, plus those that subsequently desired such devices based on the efforts under other adoption goals, concerning an increase in computer literacy as well as in the perceived value of computing devices.

Policies

a. **Statewide Campaign and Incentives –** To support local efforts, there should be a statewide outreach campaign to encourage computer reclamation, redistribution and repurposing efforts. This can include incentives to businesses, institutions, governments, and homeowners. It can also include involvement in national, non-profit or private sector sponsored initiatives, such as ***One Economy***, to distribute low cost computing devices, again focusing on devices such as tablets as time progresses.

Action Items/Implementation Plan

a. **Short-term objectives (1st & 2nd year)**
   - Inventory existing businesses, schools, technical colleges, four-year institutions, universities and libraries that could possibly play a role in either providing access to a lab or refurbishment of donated computers.
   - Outreach to homes, businesses and institutions to recycle computing devices. The free lunch program, senior social services, services for the disabled could all be potential starting places.
   - Establish a central recycling location in the Mark Twain region, potentially including sub-regional drop-off locations at each county seat
   - Test, repair, and repurpose such units to create an inventory through possible partnership with technical schools or computer departments / classes.
   - Develop an application process and begin distribution.
   - Partner with providers to offer digital literacy and low-cost services for program participants.
   - Assess needs for small business development use of the Internet

b. **Intermediate-term objectives (3rd 4th & 5th year)**
   - Measure the success of the first year effort, revise procedures and processes as necessary and expand the program.
   - Begin and expand the program to procure and develop an inventory of tablet computers and link the program to key applications in education, healthcare and e-government.
   - Revise the application process to determine the best distribution of tablets versus other computing devices.

- Measure progress on an annual basis, revise procedures and processes as necessary.
- Near the end of the five years, determine whether both processes are necessary, or whether it is feasible to distribute repurposed or new tablets at no or low cost so that only one program needs continuation.

c. Long-term objectives (6+ years)

- Measure the success of the project. If it is determined that everyone in the region that desires a computer has one, then down scale efforts as needed.

Resources Needed

a. Financial

- **Computer reclamation/redistribution/repurposing –** The best success in this area has been achieved through a combination of volunteer efforts and monetary support. Specifically, space typically can be donated for both the drop-off points and the main recycling center, including Chamber of Commerce locations, educational facilities, social service agencies etc. for drop-off locations, and excess space at industrial / manufacturing locations for the main recycling center. Volunteer resources, as explained below, can often be enlisted for transporting devices to and from drop-off locations, as well as to home-bound residents.

  Monetary support is typically needed for personnel needed to coordinate and manage the program, as well as technicians to repair and reclaim computing devices. Monetary support is also needed to set up the capital equipment needed to support repair and reclamation operations.

  Although this cost would need to be significantly refined as detailed operational plans are developed, a good starting point would be to estimate approximately $200,000 in monetary support needed in year one, with $100,000 per year needed in years two through five and then funding budgeted as needed for years five plus.
- **Tablet computer procurement and distribution –** It is likely that both commercial tablet computer vendors and programs such as One Economy will seek to distribute low cost tablet computers at a price point of approximately $100. Application typically needs to be made to these programs at the point at which they are available, but the Strategic Plan can be utilized to demonstrate the need. Assuming that such programs will be subsidized, but not at no cost, potentially 1,000 units could be budgeted starting in year two and continuing through year five, totaling $100,000 per year for this program. At the end of year five, it can be determined whether additional support is needed based on the level of increase in computer penetration in the region.
- **Available grant funding** – There are continual funds available to provide capital support. Part of the organizational resources recommended in this Plan include, grant writing support. Wherever feasible, such funds should be applied for and accessed to defray the cost described above.
- **Support for the RPC** – Since the Plan, as described further below, anticipates that the RPC will continue in its broadband development role

by establishment of a **Regional Broadband Development Program**, there will need to be support from the State for this function. A large scale estimated cost would be approximately $25,000 per year for someone at the RPC to oversee and coordinate all the efforts described below.

b. Human

- **Computer reclamation/redistribution/repurposing** – As discussed above, the human resources needed for this program include:
  - Volunteers for transport and receipt of devices at drop-off locations, as well as "word of mouth" outreach
  - Paid administrative and technical personnel to coordinate outreach efforts, interface with the RPC and State and oversee technical repair and reclamation operations
  - Paid technical staff to perform the repairs
- **Tablet computer procurement and distribution** – Paid administrative staff will need to be put in place, most likely combined with that for the program above, to seek out and apply for available programs, and then administer distribution of the computers. This person would also coordinate with institutions to help distribute such devices (such as through K-12 schools to parents in households that have no computing devices)

c. Organizational

- **Computer reclamation/redistribution/repurposing** – This program most appropriately would fall as a subprogram of the overall Mark Twain Broadband Development Program. The most feasible way to administer such an overall program, including oversight of the efforts detailed further below, would be to house the program under the auspices of the current RPC.
- **Tablet computer procurement and distribution** – Similarly, this part of the computer ownership enhancement program would be administered overall under the RPC.
- **Available grant funding** – Similar to the above, the RPC's Broadband Development Program would administer this function, including receipt of funds.

d. Technical

- **Computer reclamation/recycling/repurposing** – Technical support will be needed here in the form of technicians to repair and certify the reclaimed computers.
- **Tablet computer procurement and distribution** – Technical support will be needed here to specify the computing devices and supply information to grant writers.

e. Training/Education

For all efforts under this adoption goal, training and education in computer literacy will be needed to ensure the best utilization of the devices distributed. This is covered in the next goal.

Timeline/Benchmarks

a. Computer reclamation / recycling / repurposing and Tablet PC procurement and distribution –

- Year 1 – the program is put into place, fully funded and distributing PCs by the end of Year One.
- Year 2 through 5 – The program expands computer ownership approximately 2% per year until it hits 95% in the Mark Twain region by the end of year five. A device capable of accessing the internet is the first hurdle to broadband adoption. We estimate that 10-15% of the overall population does not have hardware in place for access the internet from home.
- Year 5 Plus – Computer ownership is sustained and is increased if feasible (experience indicates that 100% of the population may never own a computing device, based on lack of perceived value despite all computer ownership-spurring efforts).