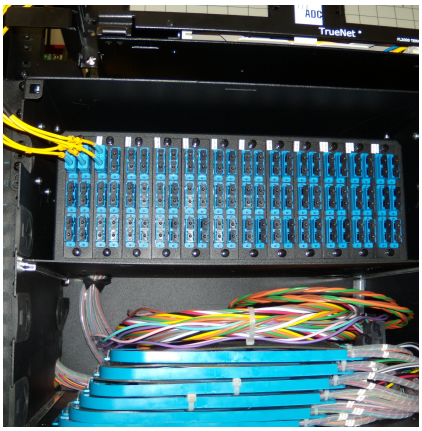

Broadband Recommendations

Prepared for Washington County, Maryland

JULY, 2013

DESIGN NINE
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Executive Summary

Following the announcement of the OneMaryland fiber backbone being built through Washington County, a task force was convened to develop a strategy for determining how to leverage this significant new infrastructure investment. This report provides a series of strategies and activities to help get more and better broadband in the region. Increased affordability and availability of broadband delivered services has the potential to increase job creation in the county and the city, help retain existing businesses, and improve the region's ability to attract new businesses and entrepreneurs.

While most city and county residents and businesses have access to copper-based "little broadband" services with bandwidth in the range of 1-20 megabits/second, many other cities and towns in the country (more than 130, according to Broadband Communities magazine) have already made the leap to fiber-based "big broadband" with a minimum bandwidth of 100 megabits/second and many of those communities are now "Gigabit Cities" with a standard residential and business connection of 1,000 megabits (one Gigabit).

Local leaders might reasonably ask, "Why does anyone need a Gig of bandwidth?" The value of a Gig fiber connection is about the future, not the present. It is about preparing citizens, businesses, and the community to be able to compete for jobs and businesses over the next five to thirty years, with future-proof infrastructure that will support FUTURE needs.

If the region wants to stand still economically, then it can stay with its current copper-based telecom infrastructure, effectively freezing economic development where it is today. But if the community wants to grow economically, retain businesses, create jobs, attract entrepreneurs, and bring new businesses, the Gigabit connection becomes a critical part of a forward-thinking economic development strategy.

There is a growing trend of more people working from home, in two distinct groups. Throughout the United States, there are established business professionals who want to run a business from their home, but they require business class broadband services in residential neighborhoods. There are also growing opportunities for residents to work full-time from home, and to qualify for these jobs, reliable and affordable broadband must be available.

The trend of increasing energy costs is already making long commutes to work more expensive for Washington County residents. Work from home options have the potential to substantially reduce or eliminate commuting costs, and can reduce the number of residents who have to travel to jobs located outside the county.

Washington County and the City of Hagerstown have an excellent quality of life, a relatively low cost of living, fine small towns, and superb recreational activities. The area is also located

within reasonable distances of the major urban areas of Washington, D.C. and Baltimore, Maryland. Widespread availability of business class broadband has the potential for accelerating economic development while maintaining the great quality of life and without the risks of over-urbanization.

Over the next thirty years, the businesses, residents, and institutions of Washington County will spend, very conservatively, more than $3.6 billion on telecommunications services (voice, video, and data). This estimate (see the table below) is based on current average expenditures, and does not consider what is expected to be rapid growth in new kinds of services (e.g., telemedicine, tele-health, IP-based security applications, video on demand, online games, and many other emerging business applications and services). If these future services were included as part of the financial projection, the total spent on telecommunications in the Washington County and the City of Hagerstown would probably exceed $5 billion (over 30 years).

Washington County 30 Year Telecom Expenditure Analysis			
	Households still on dial-up	Households with "little" broadband cable modem/DSL/ wireless	Households with no Internet
Total households	56,386		
Total businesses	10,044		
Household Percentage	5%	73%	22%
Number of households	2,819	41,162	12,405
Average monthly telecom expenditures	Local phone: $25 Long distance: $25 Cable/satellite TV: $65 Dial up Internet: $20	Local phone: $25 Long distance: $25 Cable/satellite TV: $75 Broadband Internet: $45	Local phone: $25 Long distance: $25 Cable/satellite TV: $65
Annual cost/household	$1,620	$2,040	$1,380
30 year expenditure	$137,017,980	$2,519,100,936	$513,563,688
Total residential expenditures	$3,169,682,604		
Total expenditures[1]	**$3,645,134,995**		

[1] Business, schools, institutions, and government costs estimated conservatively at 15% of residential expenditures. Source: Mediamark Research, Inc.

The most evident recommendation that emerges from this study is that if the County is to meet its longer term economic and community development goals, wider (universal) access to broadband services with a wide choice of services at affordable price points must be available to institutions, businesses and homes.

The fundamental challenge for the County is to ensure that businesses, government, and residents have a modern, twenty-first century digital transport system. In the twentieth century, communities devoted much time and effort to the development of transportation systems needed to support growth in jobs and commerce. These transportation systems included railroads, highways, and airports. The Internet has rapidly changed the fundamental nature of many kinds of products and services--whole industry segments no longer need the same kind of transportation systems.

As an example, the Kindle, an ebook reader and tablet computer being sold by Amazon, is getting rave reviews, and Amazon has released a version its Kindle book reader software for the iPhone, the iPad, and other tablet devices. The surging popularity of this new book reader suggests that we may be seeing the beginning of the end of the era of the book as we know it--a paper-based item. As devices like the Kindle mature, books will become less expensive and more accessible--if book users have affordable access to a broadband network.

The Internet is a transport system that is making many other information transport systems obsolete. First it was music; vinyl records and CDs are not about the music itself, they are simply a transport system to get the music to the buyer. Video stores are on the way out, as Netflix and Blockbuster, by using the Internet, are making the video cassette and DVD transport system obsolete. Newspapers are beginning to collapse, as the news-PAPER is just a transport system for reporting the news itself. The recent sale of the Washington Post to Amazon (the maker of the Kindle) suggests a potential transformation in the news business.

The news and journalism business, like the music and movie business, will survive and even prosper, but the underlying business models are collapsing because we don't need four different transport systems: one for music, one for movies, one for news, and one for books. The old-style analog telephone and TV "transport systems" are not needed either. So there is a total of six separate telecom transport systems we no longer need. A single, modern, shared broadband transportation systems handles all of those products and services efficiently and at very low cost.

And that's why every home and every business needs a high performance broadband connection; without it, residents and businesses of Washington County might as well be living in 1400--before books, before newspapers, before any information distribution systems existed.

A recent study (Render, March, 2013) indicated that for those under the age of 35, 70% are accessing video programming through over-the-top (OTT) video services such as Netflix, Hulu, Amazon and iTunes. ***About half of this group have never purchased programming from a cable TV or satellite provider.***

A shared digital transportation system will not do away with private sector providers--these firms are vitally needed to continue providing the services they already offer--telephone, video, news, Internet access, business class services, and other residential and business services. The focus of this study has been to analyze the potential for the region to collaborate on the development and deployment of a modern, world class digital transport system that will meet the needs of the region's world class businesses for the next twenty to thirty years.

In the past several months, we have spoken to and received comments from a wide variety of area businesses, residents, educational institutions, local governments, and civic organizations. The Washington County region has significant assets and advantages. These include:

- Excellent quality of life – Abundant possibilities for rural living and a historic Main Street in Hagerstown and other towns in the county (unlike many suburban communities) can be an economic development attractor, especially for self-employed businesspeople and entrepreneurs.
- Excellent recreational activities – The area has superb outdoor recreational activities, including extensive hunting opportunities, hiking, and other outdoor opportunities.
- Rich history – The region has a rich set of traditions and history dating back to the early 1700s that adds historical interest to the county and enhances the quality of life.
- The county has an unusually large amount of private fiber passing through it--more than most other similar areas. This is currently an under-used economic development tool. Some investment is needed to make access to this fiber more widely available to the business community.
- The OneMaryland backbone passing through the county is also a strategic advantage that will require additional investment to get affordable access to the business community.
- Downtown Hagerstown has tremendous potential to attract younger people, start up businesses, and entrepreneurs if affordable Gigabit fiber services are more widely available in the core downtown area, including some of the residential areas of downtown (for live/work opportunities).

Commuting costs in the region due to energy increases will encourage more work from home and business from home activities. Traffic and commuting patterns will change, and these shifts in commuting patterns may suggest different budgeting strategies for community infrastructure improvements and investments. As fuel prices continue to rise, a slow but steady increase in the number of home-based jobs and businesses is being driven by the corresponding increase in the cost of commuting. But home-based workers and businesses will require more than the current residential broadband services; business class broadband will become increasingly important as the area's small towns, neighborhoods, and rural roads transition to daytime business districts.

Residents and businesses are increasingly content creators, not just content consumers. This shift in locus of content development also means that both residential neighborhoods and existing commercial areas of the region require much higher performance networks with symmetric bandwidth to accommodate content creation.

Demographic changes must be considered; if the city and the county want to attract and retain young people, consider the following data from a Fiber To The Home Council report (March, 2013):

- Among young people under 35, 54% of males are "very interested" in advanced broadband services, and 44% of females are "very interested" in advanced broadband services. In this age group, over 65% are "very interested" in working from home.
- In the over 54 age group, one third of men and women are interested in advanced broadband services, and over half want to use HD video calls.
- 11% of fiber to the home users have a home-based business.
- Fiber service is ranked as the number one factor influencing a home purchase if the buyer already has fiber at their current residence. Fiber is ranked as the number two home buying factor if they do not have fiber service now.
- Fiber connected homes are perceived as being worth $5,000 to $6,400 more than an equivalent home without fiber.
- Because of the increase in home-based businesses due to fiber availability, fiber can create as much as $1.1 million in new business revenue to the community for every 1,000 homes passed by fiber.

World class broadband infrastructure will be necessary to maintain the County's attractiveness as a great place to live.

When local governments undertake a study of broadband infrastructure, a key question should be:

"What is the benefit if government invests in broadband infrastructure?"

And the inverse question should also be asked:

"What happens if we don't make strategic broadband investments?"

OUTCOMES OF STRATEGIC LOCAL GOVERNMENT INVESTMENT	OUTCOMES OF LEAVING IT ENTIRELY TO THE PRIVATE SECTOR
Increased competitiveness with other cities and regions that have made broadband investments and have driven down the cost of Internet and voice services for businesses and residents.	Communities with shared broadband infrastructure are seeing increased economic development activity and increased business attraction success.
Better prepared to attract businesses and jobs to the area.	The region is at an economic disadvantage without a strategy to ensure than affordable high speed broadband is in place as a business attraction and business retention tool.
Cities and counties that have made investments have seen the cost of telecom services sharply reduced, keeping more money in the community and freeing up business funds for expansion and jobs creation.	Residents and businesses will continue to pay more for voice, TV, Internet, and other broadband services.

OUTCOMES OF STRATEGIC LOCAL GOVERNMENT INVESTMENT	OUTCOMES OF LEAVING IT ENTIRELY TO THE PRIVATE SECTOR
A long term strategy of "fiber everywhere" gives rural areas of the county better educational opportunities and improved access to jobs. Fiber service in rural parts of the county will also attract entrepreneurs and business people who want to work from home.	Rural areas of the county will continue to see population outflow, loss of younger workers and families, and diminished educational opportunities.
Aggregation of the marketplace for telecom services via shared community infrastructure attracts more providers and helps keep prices for broadband services lower.	Private sector providers will continue to "Balkanize" the region, with higher prices and more limited bandwidth options because of limited competition.

Next Steps

Next steps include:

- Read and review the three reports (Needs Assessment, Cost Estimates and Mapping Report, and this report).
- Identify key ideas and concepts that may be important to future economic development initiatives.
- Meet with elected and community leaders to discuss these key ideas and concepts in more detail.
- Consider developing an RFI to solicit private sector partners for a public/private partnership.

If leaders and stakeholders believe that telecom and broadband investments are needed to support the long term goals of the County, the current broadband task force should be directed to move the effort forward. Key recommendations include:

- The two local governments must play a key leadership role to bring Gigabit fiber services to the area.
- The city and the county should not compete with the private sector. All broadband services should be sold directly to customers by existing and new private sector service providers.
- It is essential to bring "anchor tenants" into the planning work to help aggregate demand, including health care providers, K12 schools, higher education, and major employers.
- Development of a modest collocation facility in Hagerstown to provide a common, affordable meet point for all public and private fiber, including the OneMaryland backbone. This is a critical starting point for the effort.

- A regional broadband authority or a public/private partnership can be used to create the permanent oversight and leadership needed for the effort. Most jobs associated with the effort can remain in the private sector.
- Modest pilot projects like fiber in downtown Hagerstown and key economic development zones represent a low risk first step to enable improved economic development opportunities.
- Work with existing services providers – Washington County has both local, regional, and national broadband service providers. It is likely many businesses would see their Internet and/or telephone costs decline by getting a fiber connection to an service provider using shared community broadband infrastructure (as much as 40% to 70% decline in prices have been seen in other communities).
- Make modest investments in basic telecom infrastructure – The city could accelerate economic development, especially in downtown Hagerstown, by modest investments in duct and fiber. Downtown buildings with fiber connections will be seen as very desirable, especially for professional businesses (e.g. law offices, medical offices, accountants, etc.).
- When water, sewer, and road improvement projects are undertaken by the City and the County, telecom duct and/or fiber cable should be considered as part of the project.
- Include public safety, rescue, and first responder communications needs in the planning effort. Nationwide, public safety voice/radio communications are being upgraded to support improved access to Internet data services and to digital voice radio systems. Public safety radio and data needs should be incorporated into the long term broadband planning effort to reduce costs for local government and to improve public safety communications.

A vision for the project might be worded as follows:

By 2017, any resident or business in Washington County and the City of Hagerstown that wants it will have access to affordable, high performance Gigabit broadband services that will support any and all jobs, business, professional, medical, educational, and personal activities.