

Carroll 2030

The **BEST** way to
PREDICT your
FUTURE is to
CREATE it

-Abraham Lincoln



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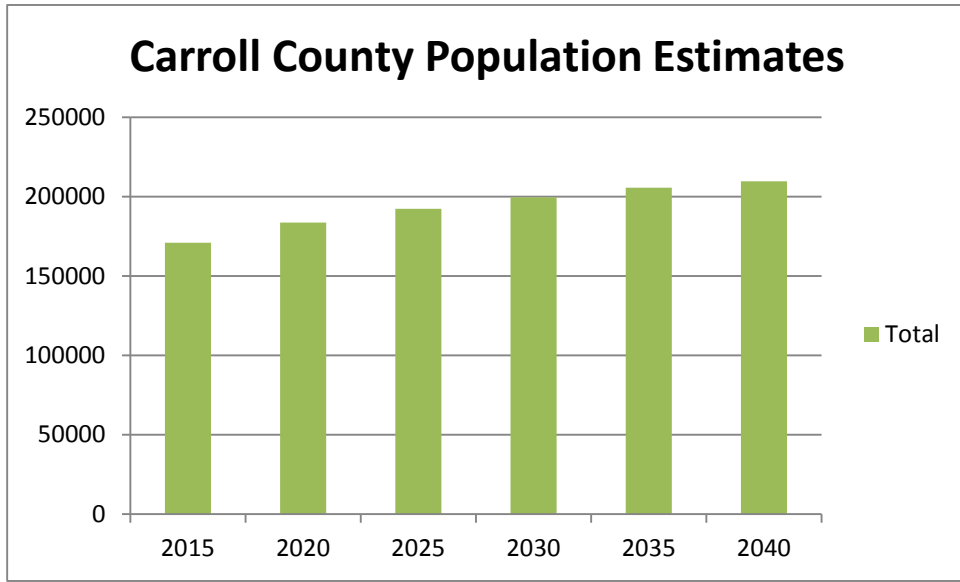
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“Never doubt that a small, group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.”

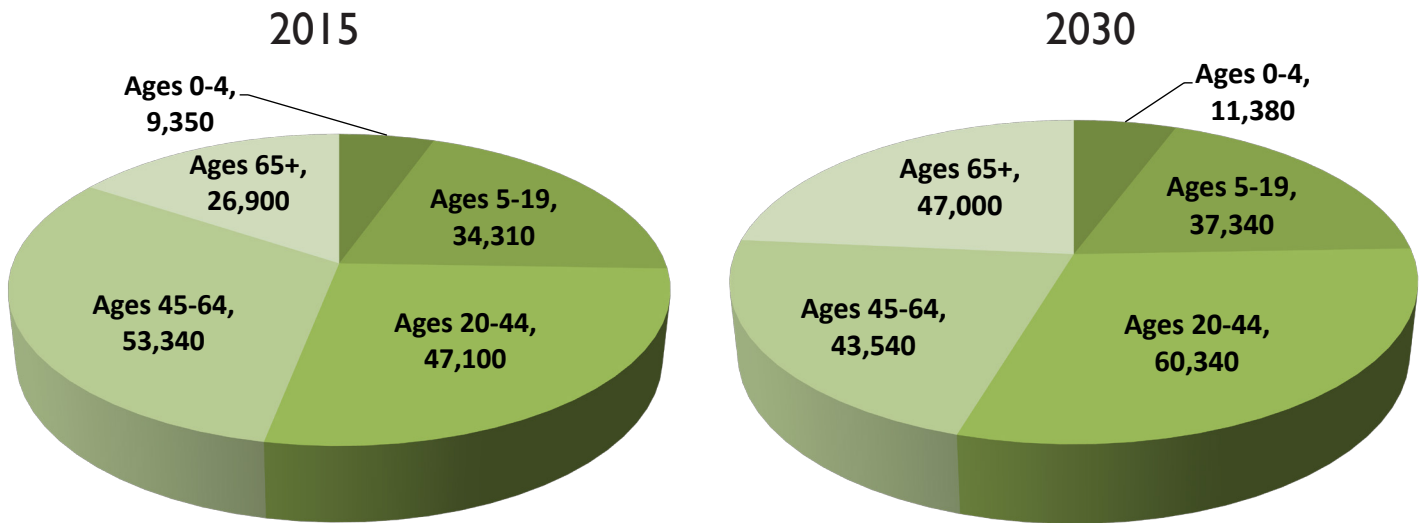
-Margaret Mead

Assumptions



Data Source: <http://planning.maryland.gov/MSDC/County/carr.pdf>

Population Estimates by Age Maryland Department of Planning



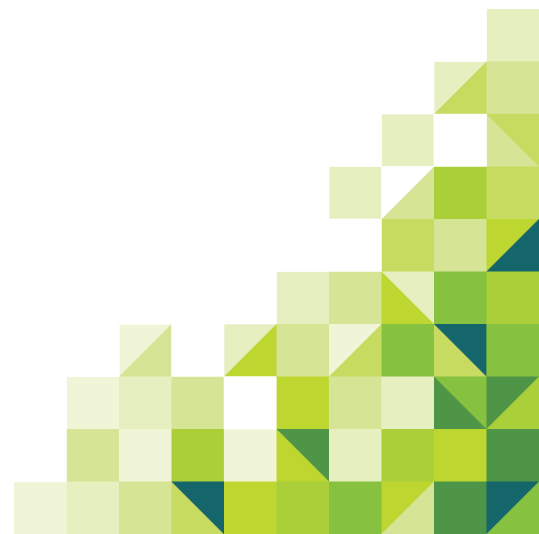
- Ages 0-4**
- Ages 5-19**
- Ages 20-44**
- Ages 45-64**
- Ages 65+**

Data Source: <http://planning.maryland.gov/MSDC/County/carr.pdf>

Top Priorities Introduction

“Big breakthroughs happen when what is suddenly possible meets what is desperately needed.”

-Thomas L. Friedman



Technology Infrastructure

What Will it Look Like?

A major Carroll 2030 priority is access to low-cost or free broadband services for all Carroll County residents and businesses. In a recent survey of the Chamber of Commerce membership, 95% of respondents stated that broadband access was *Important* or *Very Important* to businesses located in Carroll County and key to attracting new businesses. Based on the recognized importance of broadband access today and in the future, what will Carroll County's technology infrastructure need to look like in 2030 to make this a reality?

Low cost or free access to high-speed Internet service must be available to all Carroll County residents and businesses regardless of economic situation or geographic location. To provide this access, the County will need to complete the full vision of the Carroll County Public Network and continue to expand this vision as new technologies emerge. The most important aspect of this is for the county to create the infrastructure, environment, and climate that will enable private businesses to provide low-cost services to businesses and residents of Carroll County. Having a broad infrastructure that will support existing and emerging technologies is the key.

Specifically, the county will need to continue to work with a network engineering firm to expand the existing fiber network to reach under- and non-served areas of the County. Expansion of the fiber network backbone will allow new and developing technologies to be utilized. There are technologies available to extend the network wirelessly to areas that cannot be reached by fiber due to distance or geography. For instance, a Wireless Regional Area Network could be set up by a third-party utilizing fiber connected towers to reach areas such as Lineboro and Silver Run.

When designing the County's fiber network, the members of the Carroll County Public Network (CCPN) were forward thinking in building the network to meet not only the needs of their agencies (Carroll Community College, Carroll County Government, Carroll County Public Library, and Carroll County Public Schools), but also the future needs of the private sector. The Department of Economic Development is completing the process of providing Carroll County businesses access to the County's fiber if their business requires secured high-speed connectivity. Businesses who wish to utilize the fiber will be responsible for the connection from their building to the County's fiber splice point and lease fees for the use of the fiber. For those businesses that have multiple locations or home offices outside of the county, state, or nation, fiber will provide them with high-speed access to centralized data and services. See the Carroll County examples on page 13 for how this could benefit two types of businesses.



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How Do We Get There?

To provide county-wide access for businesses and residents, Carroll County will need to continue its investment in this network infrastructure and fund the technologies that will allow future enhancements and developments. We recommend that the County begin setting aside \$4 million per year in the Economic Development Infrastructure Investment Fund to cover the current maintenance of the network and the design and construction of the expanded network. When combined with the many State and Federal grants that are available for this type of project, the network expansion can be constructed with a modest investment from the County.

A portion of the Economic Development funds should be used to provide matching grants that will help local businesses connect to the fiber network. The funds should also be used to extend the fiber network to all current and future business parks as an incentive for businesses to locate or stay in Carroll County. The network engineering firm that is managing the fiber network for the County would be able to assist businesses with connecting to the fiber network.

Companies that currently provide Internet services within Carroll County will be able to lease the County's fiber to provide access to their services for those that are not currently reached by their networks. In addition, this expanded network will allow local companies and entrepreneurs to create businesses that provide the "last mile" service to business and residential customers.

As the local network is expanded, the County will need to negotiate Internet services with multiple vendors to provide robust and redundant Internet access. By providing Internet access as part of the fiber leasing agreement, businesses will save money by sharing an Internet connection instead of paying another third party for their own service.

The Benefits

All businesses, residents, educational institutions, and governments located in Carroll County will benefit from this investment in a fully connected County.

- The digital divide that separates the haves and have-nots will be reduced.
- Accessibility to services for those who are home-bound or have limited mobility will be improved.
- A fully connected citizen-base will result in better educated citizens. Everyone will have the opportunity to access online services, learning opportunities, and informational resources.
- As the County and local municipalities expand their online services, residents and businesses will be able to make more payments and submit applications without in-person mediation. This results in a savings of time, money and resources to the governmental agencies and those who use their services.
- Carroll County will be more attractive to businesses looking to locate in the mid-Atlantic region.
- Businesses will be able to expand their online presence to better serve their customers, and those with multiple locations will realize savings and efficiencies by connecting their locations and sharing resources.

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The Costs

The costs associated with creating a connected Carroll County will not be insignificant, but the leasing of fiber to businesses will eventually offset the ongoing costs and result in positive income for the County. We are estimating that an ongoing investment of \$30 - \$40 million over this time period will realize the goal of connecting the entire County. Given the potential public safety benefits of this network, federal and state grants may be able to offset a considerable amount of this cost. The following outlines a few of the major costs associated with this project:

- A network engineering firm will be needed to expand the network build. They will also recommend the equipment to be used. This firm may also provide the ongoing maintenance of the network.
- A significant amount of equipment to provide wireless access and to connect the wireless network to the fiber network will need to be purchased. The County will be able to take advantage of state and federal contracts to significantly reduce the overall cost of the equipment.
- The County will need to invest in a physical infrastructure to support the provision of wireless services by third-party vendors. Towers will need to be constructed in some areas of the County, which may also require the purchase of land or right-of-ways.
- Maintenance of the network will be key to providing robust and consistent service to the businesses and residents of Carroll County. Maintenance of the network and the physical infrastructure will be an ongoing cost.
- Internet Services provided by third party vendors will be necessary to provide access beyond the borders of Carroll County. These access fees will be an ongoing cost.

Revenue Generation

The County will be able to leverage the existing and proposed fiber network to increase revenues by leasing the fiber to businesses. The revenue generated will pay for the ongoing costs of operating and maintaining the network. The towers that will be built to support wireless services in the County will be leased to Internet service providers and Cellular service providers, resulting in significant revenues.

Current Real-World Examples

Google has built a fiber network in the city of Kansas City, Kansas/Missouri. All residents have access to basic Internet service in their home with no monthly charge, but do pay for installation. For \$70/month, residents get Gigabit Internet access, and for \$120/month they receive Gigabit Internet access and Google TV service. This is a significant savings over what the residents of Carroll County currently pay for these services with 20 times more bandwidth than is currently available from any Internet Service Provider in Carroll County.

Google continues to build fiber in the Kansas City area and has begun work to install fiber in Austin, Texas and Provo, Utah. To learn more about the Google Fiber Project, visit <http://fiber.google.com>.

The West Virginia University has installed a Wireless Regional Area Network (sometimes called a White Space network) to provide Internet service to its students within a range of 6 miles. This technology utilizes open TV station frequencies to provide a service that is able to propagate over hills and around obstacles such as trees. To learn more about the success of this installation, visit <http://venturebeat.com/2013/07/09/this-university-uses-empty-tv-channels-to-deliver-super-wifi-for-miles-and-thousands-of-students/>.

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Two Potential Carroll County Examples

National company

The corporate headquarters of a local business is located in New York City. By providing fiber access to the corporate headquarters, this company will be able to reduce local data costs by utilizing the County's fiber to route their traffic to Owings Mills and then up the Northeast corridor to New York City. The company can also take advantage of lower Internet service costs by utilizing the ISP service that the headquarters location already subscribes to rather than their own more costly local ISP service.

This approach results in a substantial monthly cost savings and will also allow the company to efficiently and securely extend their private network from New York to Carroll County.

Local multi-location company

A local business has a dozen locations around Carroll County and also delivers some of their products to homes and businesses. By connecting all of the physical locations to fiber and routing their traffic back to the corporate headquarters, they could more efficiently run their business and reduce costs. Point of Sale (POS) software can talk back to a central database to track sales and the corporate office could also push changes to all POS machines without having to manage this on a machine-by-machine basis. As items are checked out at the register, the system could automatically look at current stock and notify the central buyers to re-stock.

Local delivery information could be handled via the wireless network. The employee can automatically send the amount of product delivered on site to the central billing system so the sale can be logged and the bills automatically generated and sent out via email.

The cost for phone service could also be dramatically reduced by installing a central telephone system and a single shared telephone line. All satellite offices could use the fiber infrastructure to place and receive calls using the central system, and a phone call between locations would be as simple as dialing a phone extension.

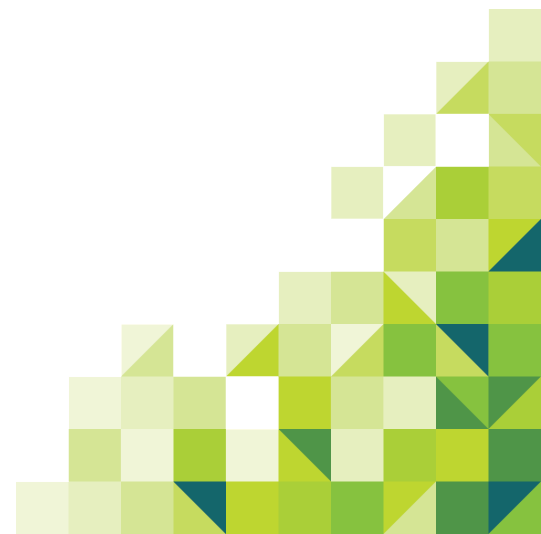
These two examples show that there are many ways that a fiber and wireless network that covers the entire geographic area of Carroll County can help businesses to become more efficient, productive and profitable.

Summary

Since the 1950s, the nation has invested in the interstate highway system. Carroll County has often lamented the lack of interstate highway access as limiting economic growth. Carroll County has recently invested in a fiber network that has the potential to greatly expand economic growth within the County. A continuation of this infrastructure development to help the County's businesses and residents become better connected, will realize a return on the initial investment and aid economic development. Businesses in Carroll County will gain a competitive edge and remain competitive in the future through a shared investment in our technology infrastructure. Like the fiber network project, this next phase is designed to build the County's capacity to "grow" by building an environment for future positive impact.

Drafted for Carroll 2030 by Bob Kuntz, IT Manager, Carroll County Public Library and Gary Davis, CIO, Carroll County Public Schools.

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Additional Resources & Acknowledgements

Additional Resources

Please visit <http://vision.carr.org> for additional resources.

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