

Louisa County Broadband Project

Stage 1 Implementation

Frequently Asked Questions

1. Please define some commonly used terms.
 - a. Infrastructure: Used to transfer data between points (towers, end users, etc.).
 - b. Fiber: Physical cabling in the ground or on poles to transmit information on the infrastructure, with very high speed and capacity.
 - c. Backbone (or backhaul): Primary linkage on the network that handles the bulk of the traffic (Like an interstate between the 10 towers, whereas connections to smaller local towers and homes are like secondary or back roads). The backbone may consist of either fiber or wireless radio technology connecting one point (tower, building, etc.) to another.
 - d. Wireless: May consist of the following types of radios:
 - i. Point to point: Aimed specifically, higher power, used to connect the network at the backbone or tower to tower level. Very high capacity for throughput.
 - ii. Broadcast: lower throughput, provides a wide radius for reception. Used to transmit signal from one point (e.g. a tower) to many points (e.g. homes). Typically used for the “last mile” to transmit end user capable internet.
 - e. Towers
 - i. Infrastructure: May be constructed up to 199’ without lights. The 180’+ level is optimal for wireless point to point backbone connectivity, in order to avoid tree canopy and topographical variances. These towers may also be used for broadcast wireless end user internet.
 - ii. Neighborhood/individual: May be up to 100’ in height. May be used to receive point to point signals from infrastructure towers, and also to broadcast wireless user-capable internet.
2. What does the initial investment fund?
 - a. The initial investment of roughly \$1.15M would fund the design (including finalizing the exact location), construction, and communications equipment for 10 towers in the County.
3. Can we use existing towers instead of building new ones?
 - a. Possibly, but probably not in place of new ones. Using space on towers the County does not own could reduce the County’s ability to impact low pricing to end users. The design phase of the project will identify the exact location of the towers, as well as the possibility of using existing infrastructure. Also, the backbone equipment will ideally be at the 180 foot level in order to ensure that it can communicate over topography and the tree canopy. Towers could be leased, but this does not help broadband providers who would wish to collocate on those same towers.
4. What about the radio system upgrade? Where does that stand, and are there opportunities to share tower space?
 - a. Absolutely. The County contracted a radio system consultant, who has completed an assessment of the County’s needs. Findings indicate that replacement radio system equipment can cover the County at the 90% level using: three radio towers

currently in use; one which used to be utilized; and a shared tower in neighboring Fluvanna. These findings are expected to be presented in January 2016.

5. Will the proposed 10 towers assist in emergency communications for Fire/EMS/Sheriff's Office needs?
 - a. There is a potential that these locations may be used to provide additional "hot spot" access to mobile data. During emergencies, the cellular networks, both voice and data, become overloaded quickly. Having at least ten more locations where deputies or EMS personnel can pull up will allow continued connection with dispatch. The radios used for this are a different frequency from the cellular telephone networks.
6. What will go on the 10 towers?
 - a. Backhaul equipment, initially. This allows the towers to communicate with one another, thus establishing the backbone for data to travel on the network. On each tower, space will be reserved below the backhaul equipment for private providers to locate their equipment for either local or relay purposes.
7. Are we sure that private providers will locate on the towers?
 - a. While it should not be construed as a guarantee, the Authority has received a letter of intent from one provider in the County to locate on every tower. Other providers have indicated interest as well.
8. Will the entire County get end-user internet from the initial investment?
 - a. Not without private provider involvement. Those within a radius of roughly 3 miles from each of the 10 towers would have access to internet service IF private sector providers place broadcast wireless equipment on the towers. It should be noted that not all private provider equipment has a three mile range (there are lower power units with smaller ranges). Also, topography can impact coverage – there may be cases where someone five miles from a tower gets coverage where someone a mile from a tower does not.
9. How many housing units could receive coverage off the first 10 towers?
 - a. According to U.S. Census data, there are about 16,900 housing units in the County in 2014. Based on very rough estimates, the first ten tower locations could cover about 9,500 (56%) of these units. It should be noted that some within these coverage areas may already have acceptable internet or may not want/be able to afford access. In the past, 25% adoption rates (over 5 years) have been used to forecast usage.
10. So how do residents who don't live within 3 miles of the first 10 towers get internet?
 - a. One of the following:
 - i. Resident establishes "Line of sight" to one of the 10 towers, which is necessary. This may be accomplished by putting a point to point receiver on a home, or by erecting a smaller monopole tower to achieve the necessary height. These towers are not free, but groups of users or communities may join together to install one and the necessary equipment for their area.
 - ii. The County (or another provider) installs additional towers, either infrastructure or individual, to facilitate further access.
11. What would (ii) above cost?
 - a. The installation of an individual/neighborhood pole can be in the \$1,000-4,000 range, depending on height and other factors. Neighborhood monopoles are made possible by distribution towers as proposed in phase 1.

12. How could we ensure that those not within a 3-mile radius of a tower get comparable pricing to those closer to towers?
- a. Having lease agreements with ISPs will allow some influence on pricing structures. It is unlikely that an ISP would charge different rates for customers. If the ISP were to fund all or part of a neighborhood distribution pole, the connected citizens may be charged extra to pay back the provider's local expense.
13. Will Louisa see residential/economic growth from the development of broadband?
- a. Any answer to this question is highly speculative. The County has been growing at a rate of nearly 30%¹ over the past 10 years, so residential growth is already occurring. It is entirely possible that broadband deployment will facilitate economic growth, but the nature and benefit of that growth could vary widely in terms of value to the County and citizens.

A number of sources, including the U.S. Department of Agriculture² and the International Telecommunications Union³ cite many benefits of broadband availability. However, other sources are more cautious in their stance. A recent Forbes magazine article⁴ questions the link between increasing speed and economic growth, and a 2010 study⁵ by the California Institute of Public Policy states:

"The economic benefits to residents appear to be limited. Our analysis indicates that broadband expansion is also associated with population growth and that both the average wage and the employment rate...are unaffected..."

Given the challenges associated with forecasting such impact, but the benefits to current citizens are worthy of note:

- Educational access for school age children (online homework, electronic textbooks, etc.)
- Telecommuting/telework – reduces commuting costs but also keeps citizens here in Louisa more, which has an economic multiplier effect.
- Increased access to commerce
- Telemedicine availability, which will increase in popularity in coming years.

¹ U.S. Census data

² (Stenberg, et al., 2009)

³ (Katz, 2012)

⁴ (Worstell, 2012)

⁵ (Kolko, 2010)