Strategic Analysis of Fayette County Broadband Opportunities

The Lexington-Fayette Urban County Government (LFUCG) commissioned this study to understand the challenge of meeting broadband needs in the rural areas of Fayette County, and to develop cost estimates and potential strategies for meeting those needs. CTC evaluated the County’s current broadband supply and demand, and potential approaches to filling that gap—through public–private partnership, middle-mile fiber, or a fiber-to-the-premises (FTTP) network.

Businesses in the rural areas of Fayette County have very limited broadband connectivity options, and service providers have no active plans for widespread deployment. A major reason for the lack of service is the high cost of buildout in low-population-density areas; the cost of network construction in the County is nine times higher than the cost of construction in Lexington.

To illustrate LFUCG’s options, CTC’s engineers undertook two system-level design and cost estimation efforts for networks in the Fayette County area of the LFUCG:

**Middle-Mile Fiber Network** – This fiber would connect 62 large farms and County facilities (“priority sites”) selected to illustrate potential end users, would pass more than 230 of the largest farms and equine-related businesses, and would serve as a core platform—enabling future deployment of wireless or direct fiber connections to homes, businesses, and farms.

- The capital cost of constructing this infrastructure would be more than $11 million—about $182,000 per priority site served or $38,700 per site passed (not including the cost of a drop connection or lateral fiber from the street to the building being served).

- In our analysis, the network would be financially sustainable if each of the 62 target sites were to purchase a gigabit Dedicated Internet Access (DIA) service at $3,200 per month.

**FTTP Network** – This scenario includes the construction of both middle-mile backbone fiber and last-mile fiber to reach all homes and businesses in the County.

- The capital cost to build this fiber would likely exceed $43 million, in addition to the cost of constructing fiber from the street to the buildings being served at each location.

- In our analysis, the FTTP network would only be financially sustainable under unrealistic assumptions: The LFUCG would need to secure a $35 million grant, issue a $13 million bond, earn high levels of dark fiber lease revenues, and sign an agreement with a retail provider that would pay the LFUCG a high per-passing fee.

The middle-mile strategy is without question costly—but it entails less risk, both in its size and with respect to potential demand, than the FTTP strategy. It is worth considering as a substantial step toward addressing the broadband challenge in the Fayette County area of the LFUCG.

We would not recommend construction of FTTP in the County area unless significant grant funding became available, or the largest farms and businesses were willing to make significant capital commitments to fund the initial buildout.
Summary of Fayette County Survey Results

In early 2017, CTC conducted an online survey in partnership with LFUCG and the Fayette Alliance. The survey aimed to identify potential interest among key Fayette County businesses in the middle mile model considered in this report. With the help of the Fayette Alliance, representatives of 47 of the “priority” farms were identified and invited to participate in the survey.

- In total, 26 of the 47 stakeholders responded, representing a 55 percent response rate
- Thoroughbred farms accounted for 85 percent of survey respondents; the remaining 15 percent of respondents own sport horse farms or related businesses
- 96 percent of respondents currently have a contract with an internet service provider (ISP) or telecommunications provider for data connectivity services
- When asked about their top uses for their data connections, responses such as email, large file transfer, banking and financial services, and streaming were most often cited
- Most farms’ primary internet connections are digital subscriber line (DSL), wireless, or fiber
- 62 percent of respondents do not have a back-up or secondary broadband connection
- Most respondents’ connections are less than 100 Mbps (download)/50 Mbps (upload)
- 25 percent of respondents pay $1,000 or more per month for broadband; 21 percent pay $50 to $99 per month, and 17 percent pay $200 to $299 per month
- Respondents indicated a gap between the importance of many aspects of their existing service and their satisfaction levels with those service aspects
- 91 percent of respondents replied that they were either potentially interested or very interested in purchasing services on a new high-speed network, if it were to be constructed
  - When queried about how willing or unwilling they would be to pay a monthly fee for access to 1 Gbps carrier-grade Ethernet transport and internet access service, most respondents indicated that they were less likely to purchase service as the price rose
  - A follow-up question asked whether they would be willing or unwilling to pay a monthly fee for access to the same 1 Gbps service if they were charged a $20,000 hook-up fee; most respondents were very unwilling at all price points, but at the $2,800 per month price point, 28 percent indicated they were somewhat willing to very willing