Introduction

The pandemic certainly has shown a spotlight on the have-nots of broadband access in our county and resulted in businesses, government entities and school districts spending enormous amounts of unplanned funds to provide service to many of their workers and school families.

The abundance of federal and perhaps state funds to support broadband expansion across Texas and the nation begs a plethora of questions of where do we, in Williamson County, need to expand or improve broadband? Who does this expansion, schools?, vendors?, public-private partnerships? What kind of service works where? What will it take to support the new goal of 100mbits download, 10mbits upload minimum speeds? How can the costs be recovered? What about the affordability of monthly subscriptions for this utility's service?

Planning for extending access to broadband across the county requires that we first start with understanding our local broadband technology assets knowing where access to it is today, in what form, and at what cost. Further, we must evaluate how access can be extended to those homes and businesses currently without access but desiring it. Finally, we must organize our skilled citizens to assist in raising the technical skills in those without them to fully embrace the vibrant and necessary technology for their future.

The desire to extend broadband to the under-served and un-served not only promotes healthcare, education and public safety, but extends the potential for economic development beyond the heavily populated southern half of our county.

Understanding Our County

County's demographics

In summary, we expect the 2020 Census numbers to put Williamson County over 600,000 residents with over 50% of the adults with at least some college. Williamson County covers about 1,135 square miles.

Households and businesses currently in the county:

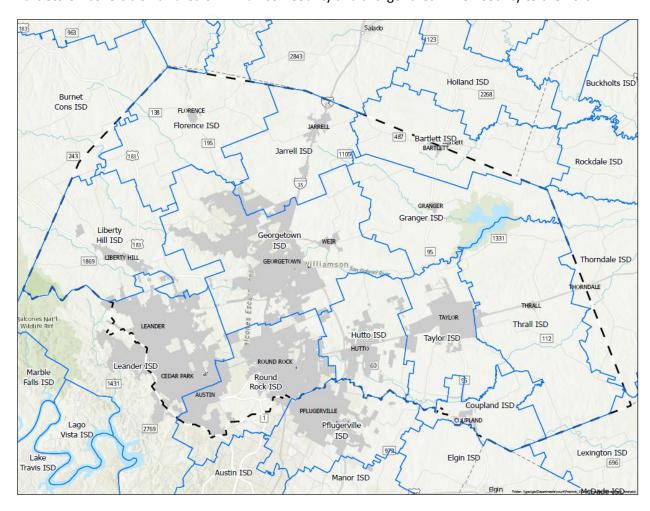From Williamson Central Appraisal District's January 1, 2021 data:

	Structures	Units
Homes	173,607	173,607
Condo	8,527	8,527
Townhomes	609	609
Mobile Homes	5,688	5,688
Multi-family	295	55,040
Duplex	2,011	4,022
Fourplex	224	896
Commercial	7,418	

More data in **Appendix A**

Independent School Districts within the County:

Coupland ISD	Leander ISD
Florence ISD	Liberty Hill ISD
Georgetown ISD	Round Rock ISD
Granger ISD	Taylor ISD
Hutto ISD	Thrall ISD
Jarrell ISD	

Bartlett ISD covers a small area of Williamson County and a larger area in Bell County to the north.

More data in **Appendix B**

Internet providers with claims to service somewhere within the County (may not be all):

AT&T
BAR CANS
Cellnet Wireless & Satellite
CenturyLink
Charter/Spectrum (Cable Internet)
Comcast Wireless
En-Touch Systems
Erf Wireless (Fixed Wireless)
Farm-to-Market (Fixed Wireless)
Frontier Communications (DSL)
Grande Communications
Heritage Broadband (Fixed Wireless)
Heritage Broadband (Liberty Hill)
HughesNet (Satellite)

NextLink Internet
Rise Broadband (Fixed Wireless)
SimNet Wireless Rural Internet (Round Rock)
SOS Communications (Fixed Wireless)
Suddenlink
Telco Data
TexasData Wireless Internet (Fixed Wireless)
Verizon & Verizon Business
Viasat (Satellite)
VTX Communications (Fixed Wireless)
Western Broadband (Fixed Wireless)
Xfinity (Comcast)
Zochnet (Fixed Wireless)

More data in **Appendix C**.

Broadband Analysis Sought

While 25/3MB is still considered minimum speed for "broadband", use today is really setting 100/10MB as the new level needed by most. With that in mind, we recognize 25/3 as the only cost-effective solution in some cases. The targeted desired speed in proposed fiber solutions would therefore be 100/10

1) Identify resources of broadband within the county today including FiberLocator graphics and identifying data.
   a. Identify who may have excess capacity and may be willing to lease
2) What residents don't have access to broadband because: a) no connectivity, b) financially can't afford it, or c) lack digital access to available connectivity?
3) What residents are not using broadband technology and applications but could be? Is it failure to adopt or no interest?
4) Obtain sufficient sample points of internet speeds in homes and businesses within census blocks at numerous times per day for a length of times in days to be statistically sound to extrapolate speed(s) across a census block. (dongles on routers with remote monitoring, use of apps such as TestIt from National Association of Counties performed by residents, etc.). Provide survey responses.
5) What broadband assets are identified in the county and what broadband infrastructures are available to residents currently? Especially identify:
   a. Homes and businesses <3MB upstream
   b. Homes and businesses <25 downstream
   c. All areas served by DSL
   d. Areas containing low-income housing
   e. Homes or businesses not connected today but could be within 10 days of an order to a vendor
6) Where are improvements needed to provide countywide coverage for law enforcement, fire, and emergency management (perhaps rural community hotspots)?
7) Propose technology solutions, such as fixed wireless, underground fiber, fiber hung in armored conduit on electric poles, etc., that could be implemented in targeted new service areas.
8) Estimate the rough order of magnitude costs for providing services to identified homes, businesses, and region (equipment, cost of fiber by the foot for the "last mile" to home or office, towers, etc.).
9) Provide regional maps of current communities, homes and businesses needing improved or new support. Provide graphics in format compatible with Esri application and in PDF form.

Goals to be Supported by Broadband Study

Goal 1

Attract broadband investment in all classes of services and infrastructure to expand coverage in the County, with a particular focus on expanding services into un- and under-served areas of the county, through significant analysis of current broadband support, lowering costs, reducing administrative and procedural barriers, and targeted grant incentives, while increasing the awareness of the benefits of such investment in the County to all residents and investors and improving digital equity.

Goal 2

Leverage current investments made by existing public/private entities to provide broadband to help stimulate shared infrastructure investment to benefit towns, utilities, and other public and private users within the County.

Goal 3

Improve broadband and cellular coverage in rural areas of Williamson County for public safety and first responders, as well as improved medical support with telecommunications and increase economic development opportunities.

Goal 4

Attract investment in all classes of broadband service and infrastructure (last-mile, backhaul, towers and other

distribution infrastructure).

Goal 5

Support ubiquitous access to internet and high-speed broadband services for all students to back continuous learning past in-person to beyond the classroom. Able residents in general, to have access to medical support, banking, job applications and the connectivity for life's activities in general no matter where they live. Allow businesses to fully support commerce with on-line presence, access to on-line banking, ordering and other levels of business support requiring broadband access. Finally improve connectivity for first responders across the county.

Goal 6

Through this analysis, lower costs & risks for broadband expansion for vendors, reduce administrative costs and, using federal and state incentive programs to support expansion, reduce costs for end-user monthly subscription fees as the digital divide is just not urban-rural but of income and race.

Deliverables

Reports

- Validate all providers of broadband in the county and type of technology and if wireline connectivity, identify form: copper, coaxial and fiber optics (may vary by region).
- Spot validation of advertised download and upload speeds of existing vendors in the county.
- Recommendation of current federal and state opportunities for the different solutions at the time of analysis such as the Rural Digital Opportunity Fund, RDOF, e-Rate (schools), NTIA sources, etc.
- Summary of homes & businesses, especially student homes within an ISD without broadband, without Internet subscriptions, without computers/tablets. Identify any clusters for each of the deficiencies.

Spreadsheets

- Viable technology solutions for rural, communities and neighborhoods with un- or underserved broadband support. Support with graphics of the areas (below) showing commercial and residential buildings. Provide rough average cost per home or business for each viable technology solution.
- Estimated cost by technical solution to extend broadband to student homes without it by proposed type(s).

Graphics

- All maps should be in Esri .gdb (file geodatabase) or .shp file formats with preference of .gdb.
- Shape files of county by Census block color coded to indicate % homes/buildings with 25/3 broadband support
- Shape files of county by Census block color coded to indicate % homes/buildings with 100/10 broadband support.
- Shape files of county by Census block color coded to indicate a) no connection to broadband, b) no subscription to broadband service.
- Graphical images of rural, communities and neighborhoods with un- or under-served broadband support to support spreadsheet data (above). Include identified homes and commercial businesses.
- Mapping of student homes by ISD without broadband to the home, without Internet subscriptions at the home, without computers/tablets at the home.
- Birds-eye views of un- and under-served areas with homes & businesses denoted and suggested solutions (tie to spreadsheets).

Examples of Deliverables in **Appendix D.**

Technical Documentation and Acronyms defined in **Appendix E.**

Texas Governor Abbott acknowledged on Twitter that "Broadband access is not a luxury; it is an essential tool that must be available for all Texans."