



**TEXAS BROADBAND  
DEVELOPMENT OFFICE**

# Texas Broadband

## Leon County

March 2025

Technical Assistance Program  
Report Draft



Texas Comptroller  
of Public Accounts

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# 1 Executive Summary

**Purpose:** The Broadband Development Office (BDO) has established the Technical Assistance Program (TAP) to provide additional resources to communities that need help with broadband planning. TAP will aid local governments and communities by providing assistance to identify local broadband development opportunities and prepare for forthcoming state and federal funds.

All Texas counties that lack the necessary capacity for broadband planning were eligible to participate. Leaders of a county's Broadband Planning Committee (BPC), as verified by the committee's certification with the BDO, were eligible to apply. Thirty-two counties were accepted into the program and will have direct access to broadband planning and consulting services at no cost.

The BDO has contracted Cobb, Fendley and Associates to provide broadband planning and consulting services for TAP. These services are awarded at the county-level to augment local governments and communities' capacities to better prepare for local opportunities, including forthcoming state and federal funds.

This summary and report are on behalf of Leon County, Texas. A kickoff between the project team and the county occurred in August 2024. This report was finalized in March 2025.

**PLEASE NOTE:** The National Broadband Serviceable Location Fabric is a common data set of all residential and business locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is called a Broadband Serviceable Location (BSL), and the definition of a BSL is determined by the Federal Communications Commission (FCC). The Fabric is the foundational location database that is being used across several government programs, including National Telecommunications and Information Administration's (NTIA) Broadband Equity, Access, and Deployment Program (BEAD), the FCC's Broadband Data Collection, National Broadband Maps and more. CostQuest is the official contractor and provider of the National Serviceable Location Fabric data. Data used within this report was obtained from CostQuest and is Version 4 as of Dec. 31, 2023. Version 4 data was the expected data source for the Texas BDO's BEAD Challenge Process at the time of this writing. Please be aware that internet service providers (ISPs) may have continued construction and implementation of new service locations since Version 4, and the data within may be outdated by the time this report finalizes. Please conduct continuing conversations with potential partners to see where changes may have been made.

## Stakeholder Identification and Outreach

**About:** This service entails performing a deep analytical dive into a county's demographics to identify its unique needs and characteristics. It offers outreach services through the organizing and executing of stakeholder outreach events and strategies that provide inclusive opportunities for potential stakeholders. This service is considered foundational in the broadband expansion process.

**Key Takeaways:** The county's low population density is a challenge for broadband connectivity and infrastructure buildout. Residential areas and small businesses have the greatest need for internet connectivity, ideally with expanded fiber. The cost of internet services must be made more affordable for the county's residents. Resound Networks has Rural Digital Opportunity Fund (RDOF) award areas in the county. This federal funding is expected to provide fixed wireless broadband service with an anticipated completion date in 2029. Finally, a segment of the Brazos Valley Council of Governments BVCOGNET fiber ring provides internet services for rural health care facilities, schools and businesses in Leon County.

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**Recommendations:** Despite efforts to contact a wide range of stakeholders ranging from government officials, educational institutions, public libraries, and community anchor institutions, constraints related to time, it is recommended to further extend outreach (see Appendix A) to facilitate ongoing dialogue and gain deeper insight into community needs and collective goals. Given the county’s low population density and the significant need for improved broadband access, further outreach is recommended to gain a more comprehensive understanding of connectivity challenges and potential solutions. Expanding engagement to residential areas and small businesses will help assess current service limitations and identify demand for fiber infrastructure while also addressing affordability concerns by exploring funding or subsidy opportunities to lower broadband costs for residents. Additionally, collaboration with BVCOGNET should be strengthened to assess how its existing fiber ring, which currently serves rural healthcare facilities, schools, and businesses, can be leveraged to expand connectivity to additional unserved and underserved areas. Aligning these efforts with local and regional broadband planning initiatives will help maximize the impact of existing infrastructure.

**Report Location:**

- Section 2 **Error! Reference source not found., Stakeholder Identification** **Error! Reference source not found..**
- Section 3, Outreach.
- Appendix 9.1, Data Sources For Demographic and Census Related Information.
- Appendix 9.3, Recommended Organizations for Extended Stakeholder Outreach.

**Asset Mapping**

**About:** This provides mapping services by locating identifiable broadband assets within the county. This collection of data begins with integrating data that may have been previously collected in local studies, followed by adding layers of available data identified by engaging with local strategic partners like regional ISPs and public institutions. An Asset Map locates any relevant and identifiable broadband infrastructure that may be a valuable resource in developing and executing a community’s broadband goals.

Asset Mapping does not have its own report section but is, however, included throughout the report as needed. Any notable mapping takeaways or recommendations are within other sections of the report.

**Report Location:**

Section 0, |

- [Gap Analysis and Community Needs Identification](#)
- Appendix 9.2, Asset Mapping Sourcing.

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### **Gap Analysis and Community Needs Identification**

**About:** This service provides an analytical approach to measuring the gaps between a county's existing infrastructure and local broadband goals. This includes identifying solutions for addressing issues with broadband access, as well as identifying current public policy standards and practices that can be implemented to promote local investment in broadband expansion.

**Key Takeaways:** There are various gaps that relate to affordability, adoption, access, rurality and infrastructure readiness. Potential solutions will vary accordingly based on the various presented factors and the route the county takes moving forward. There are potential solutions presently in place in terms of serving the unserved or underserved through Rural Digital Opportunity Fund (RDOF) as Charter and Nextlink have obligations to serve Leon County. Additionally, the BVCOGNET infrastructure is a great first step in providing access to the many areas of broadband need, especially with the need being sparse and spread out.

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**Recommendations:** In terms of the specific areas of need seen within the county, as seen primarily within Exhibit 12 and Exhibit 23, Unserved Areas (Purple Squares): Locations lacking broadband service that meets minimum standards. The map indicates 4,881 unserved BSLs, accounting for 85.2 percent of the total unserved/underserved BSLs in Leon County, in which 2,029 are expected to be covered by various funding sources. Additionally, Underserved Areas (Green Squares): Regions with broadband access that do not fully meet connectivity needs. The map highlights 848 underserved BSLs, representing 14.8 percent of the total unserved/underserved BSLs in the county.

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### **Report Location:**

Section 0,

- [Gap Analysis and Community Needs Identification.](#)
- Appendix 9.1, Data Sources For Demographic and Census Related Information.

### **Public Private Partnership (P3) Identification and Analysis**

**About:** This service identifies potential opportunities for local public jurisdictions to establish formal partnerships with private providers. This includes evaluating all applicable business models that suit local broadband goals, identifying the potential risks involved and facilitating Requests for Proposals for partnering opportunities.

**Key Takeaways:** One entity does not have to own, operate and maintain all five components (**Right of Way (ROW), Middle Mile Network Infrastructure, Last-Mile Network Infrastructure, Operation of the Infrastructure and Customer Service**) of a network – that is not usually the case. Typically, there are several participants from both the public and private side involved in the ownership and operations of these components. Once a broadband infrastructure opportunity has been identified, community leaders should begin to define their degree of desire in assuming responsibility for financially or operationally within such a venture. If private sector partners could be involved, the public agency’s intentions are important to better tailor their outreach to the private sector via a formal channel such as a Request for Expressions of Interest (RFEI). There are five main components that can be delineated between a private and public partner that indicate level of responsibility:

- Full Municipal Broadband.
- Publicly Owned, Privately Serviced.
- Hybrid Ownership.
- Private Developer Open Access.
- Full Private Broadband.

**Recommendations:** Throughout the county, there is a wide variety of ISP coverage that makes it hard to define select prominent ISPs throughout the entire region. Most solutions should likely include the fiber implemented by BVCOG in their BVCOGNET infrastructure. However, there is a visible cluster of Valor Telecommunications of Texas (Windstream) in the central region of the county, and there are also visible clusters of Brazos Wi-Fi in the northern section of the county, for other potential partners. It would make sense to discuss any High-Level Designs (HLDs) for unserved and underserved addresses in proximity to these ISPs with the closest ISP(s).

Please see Section 5.2.1 Potential Partners in Leon County, on page 39, for more detailed information.

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#### Report Location:

- Section 5, P3 Identification and Analysis.
- Appendix 9.4, P3 - Request for Expression of Interest (RFEI).

#### Workforce Development Strategy

**About:** This service identifies and engages with organizations that support the local development of broadband workforce solutions. It includes the development of strategies that aim to leverage workforce development opportunities with existing local resources and expertise.

**Key Takeaways:** The broadband workforce referenced throughout this report includes 43 occupations identified by the NTIA, Continuum Capital and the Texas Digital Opportunity Plan. For this analysis, these 43 occupations have been grouped under three categories. These include 18 occupations within **Construction, Installation and Support**, 10 occupations within **Skilled Technicians** and 15 occupations within **Project Designers and Specialists** – all with various education and work experience requirements. Leon County has experienced a loss of population over the last decade, impacting their overall workforce. The county currently has some job offerings in broadband-related occupations, with only 16 of the 43 broadband occupations representing 10 or more jobs in the county.

**Recommendations:** Recommendations for improving the broadband workforce in Leon County center on five areas: **collaboration, alignment, awareness, diversification and funding**. Collaborating with ISPs to understand in-demand occupations, skills and training credentials in real time is among the most important steps in building the broadband workforce. This real-time industry information would support the alignment of training curriculum with in-demand skills across workforce development entities, leading to industry-recognized credentials sought by local employers. Raising greater awareness and exposure to the quality career opportunities in the broadband industry is another essential broadband workforce development strategy. Increased awareness can also help to diversify talent pipelines and ensure broadband career pathways are accessible. Finally, identifying and pursuing public regional, state and federal funding resources to scale and sustain broadband workforce development programs will be essential to any broadband workforce development strategy.

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See Section 6.4 Strategic Recommendations, on page 59, for more detailed information.

#### Report Location:

- Section 6, Workforce Development.

#### Digital Opportunity Strategy and Needs Identification

**About:** This service looks beyond the accessibility of broadband by working to identify a county's gaps in the usability of the county's broadband services (i.e., the skills and technology necessary to operate them). It leverages stakeholder outreach and engagement as well as data collection methods to pinpoint a county's needs. Additionally, this service will identify actionable items that can be taken within the county in pursuit of achieving its broadband goals.

**Key Takeaways:** According to the FCC, three core pillars must be addressed to bridge the digital divide and achieve digital opportunity: **availability, affordability and adoption**. It is recommended that counties develop a more robust digital opportunity plan to further identify digital inclusion gaps for addressing these needs. The digital opportunity plan can be developed at a regional level since the partnership between counties can solidify a networked system for residents to tap into. There are several programs for the county to consider applying for or partnering with on an application. These include the

following programs administered through the Texas BDO, U.S. Department of Agriculture (USDA) and NTIA. There are a range of factors for consideration, including match requirements, eligible areas, partnership agreements and other key criteria. These funding opportunities include the State Digital Equity Capacity Grant Program, the Digital Equity Competitive Grant Program, the Broadband Equity, Access, and Deployment (BEAD) Program, Texas Proposition 8: Broadband Infrastructure Fund Amendment, CDBG Colonia Fund – Construction, CDBG Community Development Fund, USDA ReConnect (Future Rounds), USDA Distance and Telemedicine and USDA Community Facilities.

**BEAD Grant Recommendations** (See Section 7.5.1 Broadband, Equity, Access, and Deployment Program Summary, on page 65, for more detailed information)

- (1) The county should consider applying for the Just Transition Fund (JTF) funding to support a BEAD application.
- (2) Leon County should participate in the BEAD challenge process in December 2024 to review the accuracy of locations and Community Anchor Institutions (CAIs).
- (3) For the broader BEAD application, the county should partner with a provider that can serve the eligible BEAD locations in the county.

**Digital Opportunity Recommendations** (See Section 7.9 Digital Opportunity Strategy Planning, on page 70, for more detailed information)

- (1) The county should adopt a Digital Opportunity Strategy to address adoption and affordability challenges specific to covered populations in the county.
- (2) The county or an eligible entity should apply for the Digital Equity Capacity Grant to fund digital adoption programs in the community. Some of the relevant eligible entity types in this county under this grant include the county (political subdivision of state), nonprofit entity, community anchor institution or a partnership.
  - a. The county should consider working with the libraries across the county to prepare an application for this funding program as these entities are local to the county and can be key connectivity hubs for programs such as device access and digital literacy.

#### **RDOF Coordination Recommendation**

- (1) Engage with the providers building out RDOF areas in the county regarding the timeline for the buildout to better understand the deployment technology and buildout timeline.

#### **Report Location:**

- Section 7, Digital Opportunities Strategy and Needs Identification.
- Appendix 9.5, Digital Opportunity Definitions.
- Appendix 9.6, Digital Opportunity Roadmaps.

#### **Network Design Assessment**

**About:** Also known as a High-Level Design, this service provides solutions that serve commercial, residential and public facilities where they are most needed, where gaps are identifiable and in a way that aligns with local broadband goals. This includes developing high-level network designs that provide different idealized county solutions and providing continued guidance throughout the network development process.

**Key Takeaways:** Understanding the current landscape of middle- and last-mile providers in Leon County is essential. Whatever direction the county takes regarding P3 will impact any Network Designs that occur. Each potential partner will have their own idea for how this should be done. However, for a

general recommendation based on existing infrastructure and current pricing, within Appendix 9.7, Network Design Assessments the approximate fiber areas and applicable costing are shown.

**Recommendations:** The HLDs aim to connect all unserved and underserved BSLs within Leon County. Additional connections, like those for community public access points (CPAs), could be included in a secondary design if necessary. Key factors influencing the project timeline include partnerships, network design definitions, contractor bidding, material shortages and agreement terms.

The HLDs utilize buried fiber and Gigabit Passive Optical Network (GPON) architecture with cabinets in each designated area to cost-effectively connect underserved addresses. Alternative solutions, like point-to-point connections, may be necessary for remote addresses, but costs are not included due to topography and distance variables. These HLDs serve as tools for discussions with P3 providers to explore options for BSLs and other areas of need. Please see Exhibit 52: HLD Areas for Leon County on page 74 for a visual representation of the areas of need.

**Report Location:**

- Section 0,

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- Network Design [Assessments](#).
- Appendix 9.7, Network Design Assessments.

## 2 Stakeholder Identification

### 2.1 Stakeholder Identification

The stakeholder identification portion of the report is to perform a deep analytical dive into a county's demographics to identify its unique needs and characteristics. Additionally, the team developed a robust contact list of key stakeholders based on demographic research. Key stakeholders were identified and included residents, businesses, government agencies, service providers and community organizations. The stakeholders represented in this broadband study can address the diverse needs, concerns and perspectives of those affected by, or invested in, broadband expansion. Engaging stakeholders early in the process not only promotes inclusivity but also helps to leverage local knowledge and expertise, ensuring that the current state of broadband is accurately captured and proposed recommendations are practical and effective.

### 2.2 Demographic Research

Demographic research is a critical component of this study because it provides insight into the community's characteristics, needs and behaviors. Understanding key demographic factors such as population density, age, income levels and digital literacy helps inform where infrastructure investments are most needed and how broadband services can be effectively deployed. This data allows for a more targeted and equitable allocation of resources, ensuring underserved communities gain access to reliable internet services. Additionally, demographic insights guide future demand projections, enabling more strategic planning for scalable and sustainable broadband infrastructure development.

#### 2.2.1 Population and People

The total population of Leon County in the decennial census of 2020 was 15,719.<sup>1</sup> According to the 2023 American Community Survey 5-year estimates, the median age in Leon County was 44.3 years. Comparatively, the median age in Texas was 35.9 years. When looking at population by age and sex, the largest group within the county is male, and 60 to 64 years old, as shown in Exhibit 1.

When looking at race and ethnicity in Exhibit 2, the largest demographic of the county is non-Hispanic White.

Exhibit 3 shows that between 2012 and 2023, the percentage of people who had completed at least high school stayed the same. However, the percentage of those who had completed some college or an associate degree decreased from 2012 (36.3 percent) to 2023 (32 percent). Finally, the percentage of those who completed their bachelor's degree or higher also decreased from 2012 (1.5 percent) to 2023 (0.8 percent).

Also, 7.9 percent of the population in the county speaks a language other than English at home. Around 92.1 percent of the county speaks English only (Exhibit 4). Around 22.5 percent of the population lives with a disability (Exhibit 5).

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<sup>1</sup> U.S. Census Bureau. (2023). RACE. Decennial Census, DEC Redistricting Data (PL 94-171), Table P1. Retrieved October 15, 2024, from <https://data.census.gov/table/DECENNIALPL2020.P1?g=050XX00US48043>.



**Exhibit 1: Population Distribution by Age and Sex, Leon County**

Leon County, Texas	Percent Male	Percent Female
Under 5 years	5.90%	4.70%
5 to 9 years	5.20%	5.70%
10 to 14 years	8.30%	6.80%
15 to 19 years	5.90%	7.50%
20 to 24 years	3.40%	4.90%
25 to 29 years	5.70%	5.20%
30 to 34 years	5.20%	4.80%
35 to 39 years	6.50%	3.50%
40 to 44 years	5.00%	7.30%
45 to 49 years	5.20%	5.10%
50 to 54 years	5.10%	4.90%
55 to 59 years	4.80%	7.00%
60 to 64 years	10.20%	8.80%
65 to 69 years	9.70%	9.00%
70 to 74 years	4.50%	4.40%
75 to 79 years	4.40%	3.70%
80 to 84 years	3.10%	4.00%
85 years and over	1.90%	2.70%

Source: U.S. Census Bureau, U.S. Department of Commerce. (2023). Age and Sex. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0101.

**Exhibit 2: Race and Ethnicity, Leon County**

Label (Grouping)	Leon County, Texas
Total:	15,719
Hispanic or Latino	2,446
Not Hispanic or Latino:	13,273
Population of one race:	12,798
White alone	11,659
Black or African American alone	921
American Indian and Alaska Native alone	54
Asian alone	111
Native Hawaiian and Other Pacific Islander alone	6
Some Other Race alone	47
Population of two or more races:	475

Source: U.S. Census Bureau. (2020). HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE. Decennial Census, DEC Demographic and Housing Characteristics, Table P9.

**Exhibit 3: Age by Educational Attainment, Leon County**

Leon County	2012	2023
<b>Age by Educational Attainment</b>		
<b>Population 18 to 24 years</b>		
Less Than High School Graduate	20.30%	24.60%
High School Graduate (Includes Equivalency)	42.00%	42.30%
Some College Or Associate's Degree	36.30%	32.30%
Bachelor's Degree Or Higher	1.50%	0.80%
<b>Population 25 Years And Over</b>		
Less Than 9th Grade	7.80%	6.30%
9th To 12th Grade, No Diploma	11.00%	7.40%
High School Graduate (Includes Equivalency)	35.60%	38.30%
Some College, No Degree	25.60%	24.70%
Associate's Degree	5.80%	6.30%
Bachelor's Degree	9.80%	10.80%
Graduate Or Professional Degree	4.30%	6.20%
Percent High School Graduate Or Higher	81.20%	86.30%
Percent Bachelor's Degree Or Higher	14.10%	17.10%

**Exhibit 4: Languages Spoken at Home, Leon County**

Languages Spoken at Home	Leon County
Speak only English	92.10%
Speak a language other than English	7.90%
Spanish	7.30%
Other languages	0.60%

Source: U.S. Census Bureau, U.S. Department of Commerce. (2023). Language Spoken at Home. *American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1601.*

**Exhibit 5: Percent with a Disability Estimate, Leon County**

Census Variables	Total Estimate	With a Disability Estimate	Percent With a Disability Estimate
Total civilian noninstitutionalized population	15,978	3,602	22.50%
SEX			
Male	7,839	1,639	20.90%
Female	8,139	1,963	24.10%
RACE AND HISPANIC OR LATINO ORIGIN			
White alone	12,804	2,882	22.50%
Black or African American alone	1,151	333	28.90%
American Indian and Alaska Native alone	107	42	39.30%
Asian alone	32	0	0.00%
Native Hawaiian and Other Pacific Islander alone	0	0	-
Some other race alone	894	84	9.40%
Two or more races	990	261	26.40%
White alone, not Hispanic or Latino	11,678	2,599	22.30%
Hispanic or Latino (of any race)	2,569	476	18.50%
AGE			
Under 5 years	856	0	0.00%
5 to 17 years	2,799	308	11.00%
18 to 34 years	2,666	300	11.30%
35 to 64 years	5,857	1,297	22.10%
65 to 74 years	2,224	833	37.50%
75 years and over	1,576	864	54.80%

Source: U.S. Census Bureau, American Community Survey (ACS) 5-Year Estimates, 2023

The following is a collection of the most recent data provided by the BDO's Digital Opportunity Plan,<sup>2</sup> the NTIA's Digital Equity Act Population Viewer<sup>3</sup> and the U.S. Census.<sup>4</sup> Compared with the state of Texas, Leon County has a higher percentage internet coverage for individuals with English proficiency, veterans and low-income households than the statewide share. The county's median household income was nearly 32 percent lower than the state's in 2023, yet the median cost per month for internet plans is approximately the same as the statewide median cost. Furthermore, households in Leon County had an approximately 6 percent higher share of one or more devices with high-speed internet subscription than statewide, and approximately 6 percent lower share of households with a smartphone only and high-speed internet subscription (non-exclusive to the Covered Populations).

<sup>2</sup> Texas Digital Opportunity Hub. (n.d.). <https://www.digitalopportunityfortexas.com/interactivetdop>

<sup>3</sup> U.S. Census Bureau, National Telecommunications and Information Administration. (n.d.). Digital Equity Act Population Viewer. <https://mtgis-portal.geo.census.gov/arcgis/apps/webappviewer/index.html?id=c5e6cf675865464a90ff1573c5072b42>

<sup>4</sup> Bureau, U. C. (2024, October 21). U.S. Census Bureau homepage. Census.gov. <https://www.census.gov/>

#### Exhibit 6: Covered Populations, Leon County

Covered Populations	Texas	Leon County
Veterans	6.1%	8.8%
Poverty	13.7%	14.4%
Individuals Living With Disabilities	12.7%	22.5%
With A Language Barrier	27.0%	20.2%
Racial Or Ethnic Minorities	61.1%	23.9%
Age 65+	13.8%	23.6%
Incarcerated	0.7%	0.2%
Population In Households Lacking Fixed Broadband Availability	7.2%	38.1%

Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates; United States Census Bureau. (2019). Digital Equity Act Population Viewer, Texas Digital Opportunity Hub

#### Exhibit 7: Leon County, Household Income and Internet Costs

Geography Name	Median Income	Median Cost of Internet Plans for the Geography
Leon County	\$43,392	\$79.50/mo.
Texas	\$63,826	\$79/mo.

Source: Texas Digital Opportunity Survey (2023)

#### Exhibit 8: Share of Households with a Smartphone Only (2021)

Geography Name	Type of Device and Internet Service	Households	Share of Households
Texas	One or more devices with High-Speed Internet Subscription	8,936,897	87.28
Leon County	One or more devices with High-Speed Internet Subscription	5,682	92.6
Texas	Smartphone Only with High-Speed Internet Subscription	1,302,444	12.72
Leon County	Smartphone Only with High-Speed Internet Subscription	454	7.4

Source: Texas Digital Opportunity Survey (2023)

#### Exhibit 9: Low-Income Individuals by Estimated Totals for Leon County (2012-2022)

Geography	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Leon County	23%	22%	22%	19%	19%	21%	21%	23%	25%	25%	24%
Texas	28%	29%	29%	28%	27%	26%	26%	25%	24%	23%	23%

Source: U.S. Census Bureau, U.S. Department of Commerce. (2012 - 2022) American Community Survey S1701 | Poverty Status in the Past 12 Months

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## 3 Outreach

### 3.1 Outreach Strategy

The objective of the outreach strategy outlined in this report was to engage key stakeholders identified in Section 2 and facilitate a constructive dialogue with community members regarding broadband needs, priority areas and their long-term vision for the community. The team engaged a diverse group of stakeholders, including local government entities, ISPs, community organizations and health care institutions, to gather critical insights into existing service gaps, challenges and future expansion plans. A well-executed outreach approach promotes collaboration, builds stakeholder support and contributes to the development of a comprehensive and sustainable broadband plan that addresses the community's specific needs, while advancing digital opportunity and fostering economic growth.

During the outreach process, the stakeholder team took a two-pronged approach to engagement by first providing a questionnaire beforehand and then engaging in a discussion regarding their experience and needs with broadband services in the area. The contents of the questionnaire were developed with the intention of gaining a greater understanding of the current state of broadband and tailored to fit the public/private nature of the institution being interviewed.

#### Key Takeaways:

- Power outages are common for at least one day of the month, especially in the city of Oakwood.
- The sparsely populated nature of the county is a problem for connectivity.
- Residential areas and small businesses in the county require reliable internet connectivity the most, ideally with expanded fiber coverage in these locations.
- Internet services are currently too expensive for residential communities.
- Private sector ISPs can help build out and meet the demands.
- Resound Networks has RDOF award areas in the county. This federal funding is expected to provide fixed wireless broadband service with an anticipated completion date in 2029.
- A segment of the Brazos Valley Council of Governments BVCOGNET fiber ring provides internet services for rural health care facilities, schools and businesses in Leon County.

#### Stakeholders

Below is a list of stakeholders that were contacted for this study. The entities contacted for outreach range from public organizations or public servants, private entities, educational institutions such as Independent School Districts (ISDs), medical institutions and ISPs.

#### Exhibit 10: Leon County Stakeholders

Type	Title/Position	Entity/ Organization	*Contact Made	Survey Complete/ Meeting Held
Government	Commissioner Pct. 1	Leon County	Y	N** (To be filled out by Judge Ryder)
Government	Commissioner Pct. 2	Leon County	Y	N** (To be filled out by Judge Ryder)
Government	Commissioner Pct. 3	Leon County	Y	N** (To be filled out by Judge Ryder)
Government	Commissioner Pct. 4	Leon County	Y	N** (To be filled out by Judge Ryder)



Type	Title/Position	Entity/ Organization	*Contact Made	Survey Complete/ Meeting Held
<b>Government</b>	County Judge	Leon County	Y	Y
<b>County Staff</b>	District Clerk	Leon County	N	N
<b>County Staff</b>	County Sheriff	Leon County	N	N
<b>County Staff</b>	Emergency Management	Leon County	Y	N
<b>School</b>	Superintendent	Leon ISD	Y	Sent to IT Director
<b>School</b>	IT Director	Leon ISD	Y	Y
<b>Government</b>	Mayor	City of Centerville	Y	N
<b>Government</b>	Mayor Pro-Tem	City of Centerville	Y	N
<b>Government</b>	Councilmember	City of Centerville	Y	N
<b>Government</b>	Councilmember	City of Centerville	Y	N
<b>Government</b>	Councilmember	City of Centerville	Y	N
<b>Government</b>	Councilmember	City of Centerville	Y	N
<b>City Staff</b>	Public Works Director	City of Centerville	N	N
<b>City Staff</b>	City Secretary	City of Centerville	Y	N
<b>School</b>	Superintendent	Centerville ISD	Y	N
<b>School</b>	IT Director	Centerville ISD	Y	N
<b>Government</b>	Mayor	City of Buffalo	Y	N
<b>City Staff</b>	City Secretary	City of Buffalo	Y	N
<b>Government</b>	Councilmember	City of Buffalo	Y	N
<b>Government</b>	Councilmember	City of Buffalo	Y	N
<b>Government</b>	Councilmember	City of Buffalo	Y	N
<b>Government</b>	Councilmember	City of Buffalo	Y	N
<b>School</b>	Superintendent	Buffalo ISD	Y	N (declined to participate)
<b>School</b>	It Director	Buffalo ISD	Y	N (declined to participate)
<b>Government</b>	Mayor	City of Jewett	Y	N
<b>Government</b>	Mayor Pro-Tem	City of Jewett	Y	N
<b>Government</b>	Alderman	City of Jewett	Y	N
<b>Government</b>	Alderman	City of Jewett	Y	N
<b>Government</b>	Alderman	City of Jewett	Y	N
<b>Government</b>	Alderman	City of Jewett	Y	N
<b>City Staff</b>	Chief of Police	City of Jewett	Y	N
<b>City Staff</b>	Fire Chief	City of Jewett	Y	N
<b>City Staff</b>	City Secretary	City of Jewett	Y	Y (appointed to fill out for City Council & Mayor)
<b>City Staff</b>	Chamber of Commerce	City of Jewett	Y	Y
<b>Government</b>	Municipal Judge	City of Jewett	Y	N
<b>Government</b>	Mayor	City of Leona	N	N
<b>Government</b>	Councilmember	City of Leona	N	N



Type	Title/Position	Entity/ Organization	*Contact Made	Survey Complete/ Meeting Held
Government	Councilmember	City of Leona	N	N
Government	Councilmember	City of Leona	N	N
Government	Councilmember	City of Leona	N	N
Government	Councilmember	City of Leona	N	N
City Staff	City Secretary	City of Leona	N	N
City Staff	Fire Chief	City of Leona	N	N
Government	Mayor	City of Marquez	Y	N
Government	Mayor Pro-Tem	City of Marquez	Y	N
Government	Alderman	City of Marquez	Y	N
Government	Alderman	City of Marquez	Y	N
Government	Alderman	City of Marquez	Y	N
Government	Alderman	City of Marquez	Y	N
City Staff	City Manager	City of Marquez	Y	Y (appointed to fill out for City Council & Mayor)
Government	Brazos Valley County Government	Leon County	Y	Y
Government	Judge of Anderson, Cherokee & Leon Counties	Cherokee, Anderson, & Leon County	N	N
County Staff	County Extension Agent	Leon County	N	N
Government	Mayor	City of Oakwood	Y	Y
City Staff	Office Manager	City of Oakwood	Y	Y
School	Superintendent	Oakwood ISD	Y	N
School	IT Director	Oakwood ISD	Y	N
Government	Brazos Valley County Government	Leon County	Y	Y
BDO Committee	Broadband Committee	Leon County	N	N
BDO Committee	Broadband Committee	Leon County	N	N
ISP		Tech Bundle	Y	Y
ISP	GM/CEO	Express Wireless	Y	Y
ISP	GM/CEO	Holy Wireless	Y	Y
ISP	Regional Representative	Earthlink	N	N
ISP	VP – State Government Affairs	Kinetic by Windstream	N	Y
ISP	External Affairs	AT&T	Y	Y
ISP	External Affairs	T-Mobile	N	N

\*Attempts were made to contact stakeholders via email and/or phone calls to participate in the questionnaire; some stakeholders or representatives answered/ responded, as indicated in the table above. All others did not respond to repeated contact efforts.

### **Stakeholder Outreach Recommendations**

Despite efforts to contact all stakeholders, constraints related to time and physical outreach limited the scope of our engagement. We recommend that the county extend outreach to a broader range of stakeholders (as seen within Appendix 9.3) to facilitate ongoing dialogue and gather deeper insights.

Given the county's low population density and the significant need for improved broadband access, further outreach is recommended to gain a more comprehensive understanding of connectivity challenges and potential solutions from both stakeholders and potential partners. Expanding engagement to residential areas and small businesses will help assess current service limitations and identify demand for fiber infrastructure. Additionally, addressing affordability concerns by exploring funding or subsidy opportunities can help lower broadband costs for residents.

Coordination with Resound Networks is necessary to gain clarity on the timeline and expected service levels of their RDOF-funded fixed wireless deployment, which is anticipated to be completed by 2029. Engaging county officials and community members in discussions about this deployment will help determine how well it aligns with local connectivity needs and whether further infrastructure investments will be required.

Similarly, collaboration with BVCOGNET should be strengthened to assess how its existing fiber ring, which currently serves rural healthcare facilities, schools, and businesses, can be leveraged to expand connectivity to additional unserved and underserved areas. Aligning these efforts with local and regional broadband planning initiatives will help maximize the impact of existing infrastructure.

By broadening stakeholder engagement, the county can refine its broadband strategies, ensure infrastructure investments align with community needs, and foster collaborative efforts to close the digital divide. Continued dialogue with public and private entities will be essential in securing additional funding, improving affordability, and ensuring broadband access meets both current and future demands



## 4 Gap Analysis and Community Needs Identification

### 4.1 Needs and Gap Analysis

In our increasingly connected world, broadband infrastructure has become a vital component of everyday life, transcending its previous status as a luxury. From educational pursuits and health care access to remote employment and essential communications, having consistent and high-speed internet is indispensable. Nevertheless, numerous communities are still facing significant gaps in broadband availability, affordability and performance, which hinders individuals and businesses from fully engaging in the modern economy. To ensure that broadband services are both accessible and effective in meeting today's needs, it is crucial to construct infrastructure that is both reliable and competitive, offering affordable rates and stable coverage. Without these essentials, the quality of service diminishes, resulting in inadequate connectivity, elevated costs and limited choices, which compromise digital opportunities.

A comprehensive needs and gaps analysis is essential to effectively address these issues. By examining the current state of broadband coverage, capacity, pricing and stakeholder perspectives, neglected regions and barriers to access can be identified. This analysis underscores disparities in service availability and highlights areas where infrastructure investment is most urgently needed to enhance performance and affordability. Additionally, it informs stakeholders about the necessary steps to encourage competition, lower prices and ensure consistent, high-quality broadband access for everyone. Without such an analysis, efforts to promote digital opportunity may fall short, leaving vulnerable populations excluded.

**PLEASE NOTE:** The National Broadband Serviceable Location Fabric is a common data set of all residential and business locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is called a BSL, and the definition of a BSL is determined by the FCC. The Fabric is the foundational location database that is being used across several government programs, including the NTIA's BEAD program, the FCC's Broadband Data Collection, National Broadband Maps and more. CostQuest is the official contractor and provider of the National Serviceable Location Fabric data. Data used within this report was obtained from CostQuest and is Version 4 as of Dec. 31, 2023. Version 4 data was the expected data source for the Texas BDO's BEAD Challenge Process at the time of this writing. Please be aware that ISPs may have continued construction and implementation of new service locations since Version 4, and the data within may be outdated by the time this report finalizes. Please conduct continuing conversations with potential partners to see where changes may have been made.

### 4.2 Needs Discovered from Stakeholder Engagement

- Over a two-week engagement process, we identified key broadband needs through discussions with a broad array of stakeholders, including local government officials, businesses, broadband providers and community members. This inclusive approach brought forward a range of perspectives and challenges related to broadband access. By directly engaging those most affected, we gained a deeper understanding of critical issues like infrastructure gaps, affordability and service quality in various parts of the community. The insights gathered from this collaborative effort will shape targeted strategies to enhance broadband services, ensuring that proposed solutions are inclusive, relevant and customized to meet the community's specific needs. There is increased skepticism and less trust in government within the community.
- Rurality is a significant challenge for the county – much of the community does not even have DSL. Some employees even report going back to the school to do their work.
- Some ISPs provide low-cost options for startup businesses or starting low-cost packages.

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- Funding and budgeting are also a significant challenge.
- Older generations, government and schools may not appreciate or understand the value of improved internet and justification for that expenditure when they are worried about cost.
- Some government agencies simply do not have the means to maintain the budget for internet and fiber.
- Internet is not reliable, especially with copper lines. Current internet needs in the community are not being met.
- Poor weather conditions will typically impact internet service.
- Only certain areas have DSL; most rural communities use satellite.
- There are frequent internet connection drops that can last a few minutes to an hour.
- Some fiber is leased, and fixed wireless is resold, but there is a lack of fiber in the community.
- Brazos Valley Council of Governments provides fiber optic, DSL and satellite options for internet service, but this does not include residential areas.
- The city of Oakwood has limited internet or cellular service.

#### 4.3 *The Determined Needs for Broadband in Leon County, Texas*

##### Access

Broadband access in Leon County, Texas, is influenced by several factors, including the county's rural-urban distribution, the availability of metro and long-haul fiber networks, and the number of broadband providers across the area. Each of these factors plays a critical role in determining the extent of connectivity for residents, businesses and community institutions.

[Exhibit 14] illustrates the average number of broadband providers across Leon County and shows significant variation in access to service providers. While some areas near population centers have access to three or more providers, much of the county has access to only one or two, particularly in rural sections. Areas with limited provider choice often experience higher costs and lower-quality service, as competition is limited. This disparity highlights the need for more provider options to improve service quality and affordability, especially for residents in sparsely populated areas.

According to [Exhibit 15], Leon County is predominantly rural, with only small clusters, such as those around the towns of Centerville, Buffalo, Jewett, Oakwood, Marquez, Normangee and Leona. The dispersed nature of rural areas makes broadband infrastructure development more costly, as providers are less incentivized to build out services in areas with low population density. This distribution highlights the need for targeted infrastructure investments to bridge the gap between rural and urban connectivity.

[Exhibit 20] illustrates the metro fiber network map in Leon County and shows multiple providers, including Brightspeed, Consolidated Communications, Crown Castle, Fiberlight, Windstream and Zito Business, offering metro fiber coverage throughout the county. This fiber infrastructure is essential for supporting high-speed internet services in regions with greater population density, primarily along major routes and near town centers. However, coverage gaps are evident in less populated areas, limiting the reach of high-speed services for rural residents.

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[Exhibit 21] shows the long-haul fiber network in Leon County, which provides critical regional connectivity that supports high-speed internet by connecting Leon County to larger network infrastructures. However, these long-haul networks primarily follow major highways and bypass much of the rural interior, creating limitations for communities located further from these routes. The absence of long-haul fiber in many areas emphasizes the need for additional infrastructure to extend reliable internet access to more remote regions of the county.

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These long-haul networks are essential for connecting Leon County to broader internet backbones, but they primarily serve as transit routes rather than local access points. This is due to long-haul fiber serving as the backbone of internet connectivity, transporting data between major cities, data centers, and network hubs. It's optimized for high-capacity, long-distance transmission rather than last-mile delivery. These networks typically use express routes with minimal breakouts to maintain speed and efficiency.

### **Adoption**

Broadband adoption in Leon County, Texas, is shaped by multiple factors, including internet accessibility, the demographic makeup of the population and the availability of digital devices in households. Each of these aspects contributes to the overall adoption rate and highlights areas where targeted solutions are necessary to improve broadband utilization. Exhibit 13 details the count of Broadband Serviceable Locations (BSLs) without internet access and a breakdown of residential and business locations from that total. The exhibit shows that approximately 2,999 BSLs in Leon County lack internet, representing 30.09 percent of the county's BSLs. Residential locations make up the majority of these unserved BSLs at 73.2 percent, with the remaining 26.8 percent being business locations. Areas with a higher concentration of unserved BSLs experience limited access to broadband infrastructure, which directly impacts adoption rates. Without reliable access, residents and businesses cannot fully benefit from digital services, and adoption remains low in these underserved regions.

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Exhibit 19 reveals that Leon County has significant age disparities, with a high median age (over 50) in eastern regions like Oakwood, Centerville and Leona, while the western areas, such as Marquez, show a lower median age. Older populations often have lower digital literacy levels, which can affect broadband adoption, particularly in regions where residents may not see the immediate value of broadband or face challenges in adapting to digital technology. This suggests that targeted digital literacy programs may be necessary, especially in areas with older demographics, to increase broadband adoption by demonstrating its benefits for health, communication and access to services.

Another important factor influencing broadband adoption is the availability of digital devices within households. [Exhibit 16] illustrates the percentage of households without smart devices, indicating that areas like Oakwood and Buffalo have higher rates of households lacking access to computers, smartphones or tablets, with figures reaching up to 11.4 percent. Without devices to connect to the internet, broadband infrastructure remains underutilized, as residents lack the tools necessary to take advantage of online services. Providing access to affordable or subsidized devices could play a crucial role in increasing broadband adoption in these regions.

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### **Affordability**

The affordability of broadband in Leon County is impacted by a combination of factors, including the number of available providers, median household income and household size. Each of these influences the cost of access to reliable broadband, especially in areas where competition is low and household needs are high.

[Exhibit 14] showing the average number of broadband providers in Leon County reveals that much of the county has access to only two or fewer providers, with limited areas showing access to three to four providers. This scarcity of providers reduces market competition, which can lead to higher prices and limited options for consumers. In regions with only one or two providers, residents and businesses often face higher broadband costs due to the lack of competitive pricing. Larger households, particularly in areas such as Marquez, where the average household size is higher, may require more extensive broadband packages to support multiple users. This need for higher bandwidth can increase the overall cost of internet service, further straining household budgets, especially if incomes are not correspondingly higher. Families may find it challenging to afford the broadband plans that would meet their needs.

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[Exhibit 18] indicates significant income variability across the county. Areas with higher median incomes, such as those around Normangee and certain southern regions, may be better positioned to afford broadband services even in the absence of competitive pricing. In contrast, regions with lower median incomes, such as areas near Oakwood and parts of Jewett, are more likely to experience affordability challenges, especially given the limited provider options and potentially higher service costs in these areas. Lower-income households in these areas may have to prioritize other essential expenses, making broadband access a lower priority.

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These interconnected factors — limited provider options, income variability and household size — contribute to the affordability challenges in Leon County. The limited competition in broadband provision, especially in lower-income areas with larger households, underscores the difficulty many residents face in accessing affordable internet. These factors highlight the need for affordable options to meet the needs of Leon County’s diverse communities.

## Rurality

Leon County is predominantly rural, as depicted in Exhibit 15 highlighting urban and rural areas by census block. This rural composition presents unique challenges in providing broadband service due to the dispersed population and larger distances between households and infrastructure. The vast rural areas make it costly and complex for providers to expand and maintain broadband networks, often resulting in limited access or slower deployment of necessary infrastructure.

Exhibit 13 further illustrates the extent of broadband needs across the county. It indicates that Leon County has a total of 4,881 unserved BSLs, accounting for 85.2 percent of all unserved or underserved locations, and an additional 848 underserved BSLs, representing 14.8 percent. This substantial percentage of unserved locations underscores the broadband accessibility gap in rural Leon County, where the lack of sufficient infrastructure prevents many residents from obtaining reliable high-speed internet.

Most of the unserved and underserved BSLs are dispersed throughout the rural census blocks, with only a small concentration near more populated areas, such as Buffalo and Centerville. The challenge in these rural regions is amplified by the county’s overall lack of dense population centers, which typically attract greater provider interest and investment. Consequently, residents in these rural areas face a persistent digital divide, limiting their access to essential services like remote education, telemedicine and economic opportunities tied to digital connectivity.

### Exhibit 11: Unserved and Underserved Broadband Serviceable Locations\* in Leon County, Texas

Level of Service	Locations
Unserved	4,881
Underserved	848

\*A Broadband Serviceable Location, as defined by the Texas Broadband Development Office, is a specific location — such as a residence, business or institution — that has the potential to receive broadband internet service based on its eligibility for connection to the necessary infrastructure, regardless of whether it currently has active service.

This combination of Leon County's rural nature and the high number of unserved and underserved BSLs highlights the need for targeted broadband solutions. Such solutions would address the specific logistical and financial barriers associated with expanding infrastructure in sparsely populated areas.

### Topography

Leon County's topography, with its gently rolling hills, dense forests and scattered lakes, presents both logistical and financial challenges for broadband deployment. Natural obstacles like thick tree cover and uneven terrain complicate the installation of broadband infrastructure, particularly fiber optic cables, which require clear and direct paths. In heavily wooded areas, additional efforts are needed to clear pathways or install cables underground, adding to both time and cost. However, underground fiber offers a future-proof solution that is resilient to certain weather-related events, such as high winds and storms that can damage aerial cables. Once installed, underground fiber is generally easier and more cost-effective to maintain, providing a stable and long-term broadband infrastructure for the region.

The county's scattered, low-density population, combined with these topographical features, makes broadband expansion a less attractive investment for providers ~~that~~ face higher deployment costs in rural and rugged areas. In such landscapes, signal interference from hills and dense forests reduces the effectiveness of wireless broadband options, necessitating a reliable wired solution like underground fiber. While the initial deployment of underground fiber is more costly due to terrain and the need for specialized installation techniques around lakes and waterways, it ultimately provides a durable infrastructure that can withstand environmental challenges. This long-term reliability not only supports high-speed connectivity but also reduces the need for frequent repairs, making underground fiber a valuable, though initially expensive, option for broadband deployment in Leon County's diverse landscape.

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## Demand Points of Need in Leon County, Texas

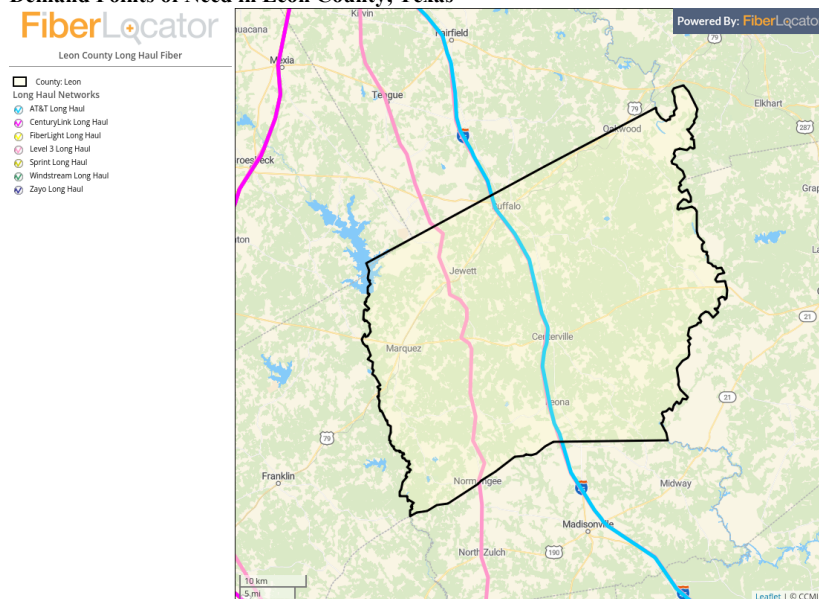


Exhibit 22 for Leon County displays 12 demand points of need for broadband infrastructure: (5) local law enforcement locations (indicated by blue circles) and (7) fire stations/EMS locations (indicated by red circles). These essential facilities are distributed across the county, many of which fall within areas classified as unserved (purple) or underserved (green) for broadband access. The substantial presence of demand points within broadband-deficient areas underscores the critical need for improved connectivity to support these vital services. Enhancing broadband coverage in these areas would significantly bolster the capabilities of emergency response and public safety operations, improving overall community resilience and safety.

### Areas of Need in Leon County, Texas (See Exhibit 23)

- **Unserved Areas (Purple Squares):** Locations lacking broadband service that meets minimum standards. The map indicates 4,881 unserved BSLs, accounting for 85.2 percent of the total unserved/underserved BSLs in Leon County.
- **Underserved Areas (Green Squares):** Regions with broadband access that do not fully meet connectivity needs. The map highlights 848 underserved BSLs, representing 14.8 percent of the total unserved/underserved BSLs in the county.

### Funding Opportunities under Enforceable Commitments

- **RDOF Phase 1 by Spectrum:** The Rural Digital Opportunity Fund (RDOF) Phase 1, under enforceable commitments, funds Spectrum to expand broadband infrastructure in designated areas, targeting unserved locations across Leon County.

- RDOF Phase 1 by Nextlink: Additionally, Nextlink is funded through RDOF Phase 1 to deploy broadband in critical unserved locations, complementing Spectrum’s efforts and bolstering connectivity in other parts of the county.

For further details on these funding opportunities, refer to Section 7: Digital Opportunity and Strategy, which provides a comprehensive breakdown of each funding source and its expected impact on Leon County's broadband infrastructure.

#### 4.4 Evaluating the Potential Broadband Needs

**Exhibit 12: Unserved and Underserved Broadband Serviceable Locations in Leon County, Texas**

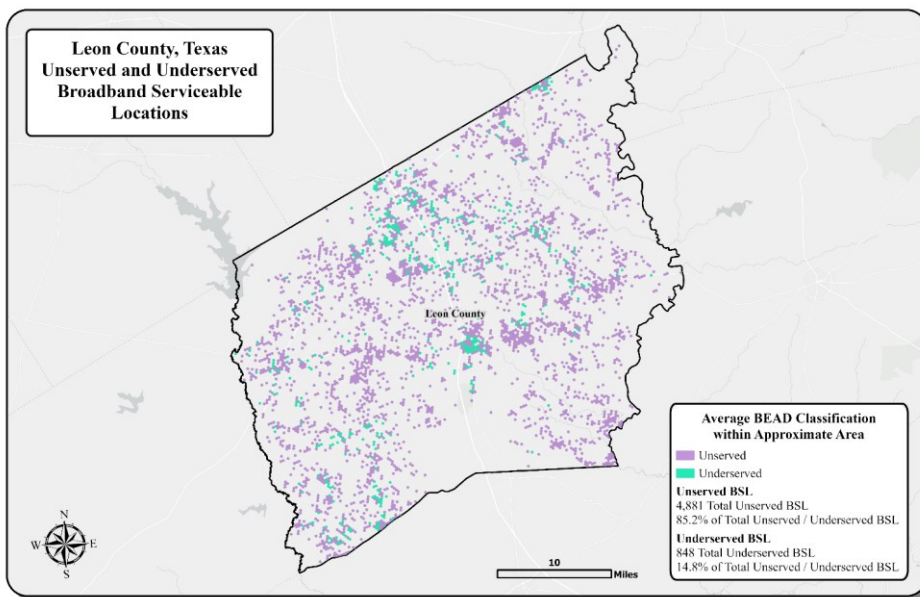




Exhibit 13: Count of BSL without Internet Access in Leon County, Texas

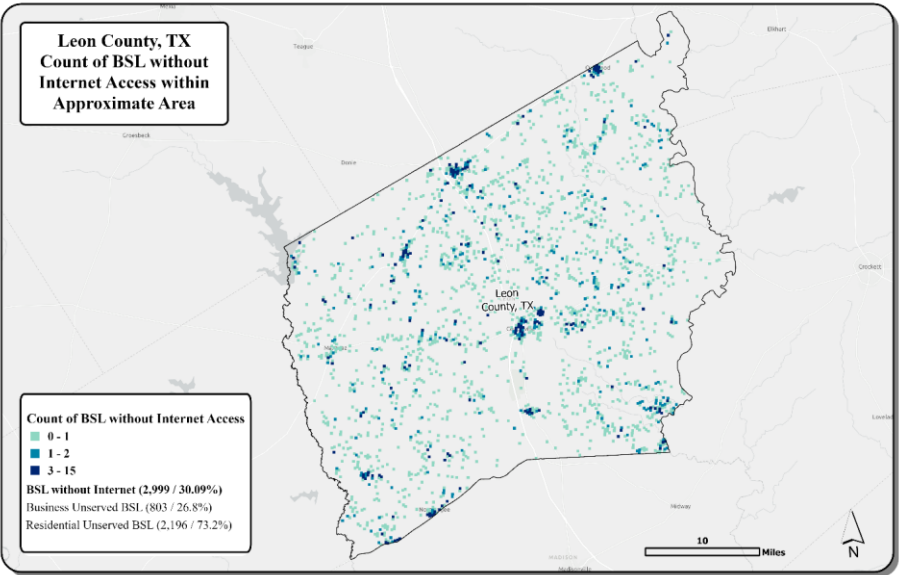


Exhibit 14: Average Number of Broadband Providers within Leon County, Texas

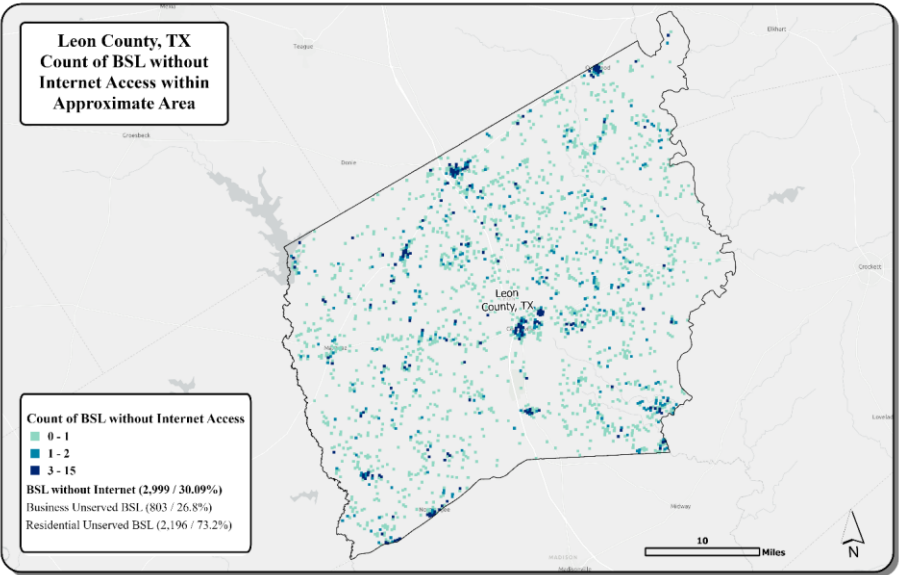




Exhibit 15: Urban and Rural Areas in Leon County, Texas

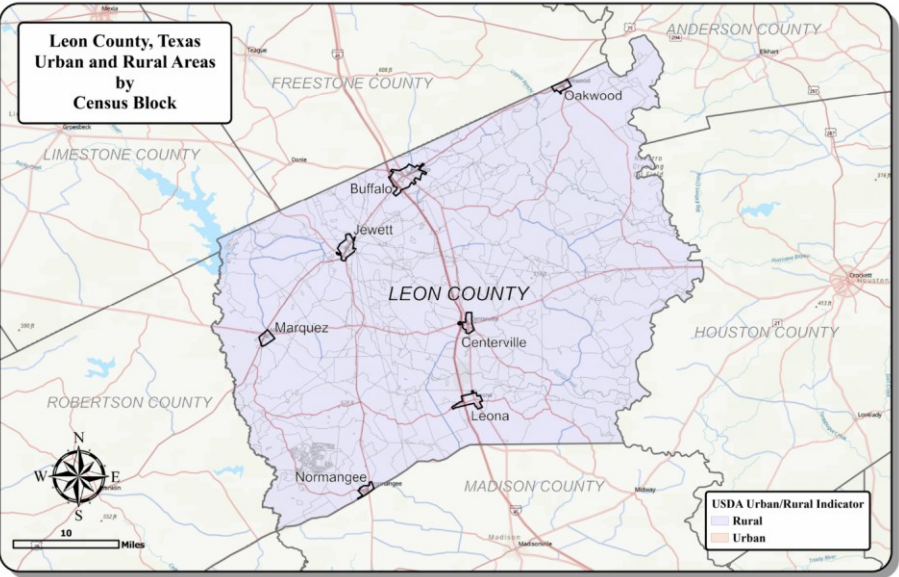


Exhibit 16: Percent of Households without Smart Devices in Leon County, Texas

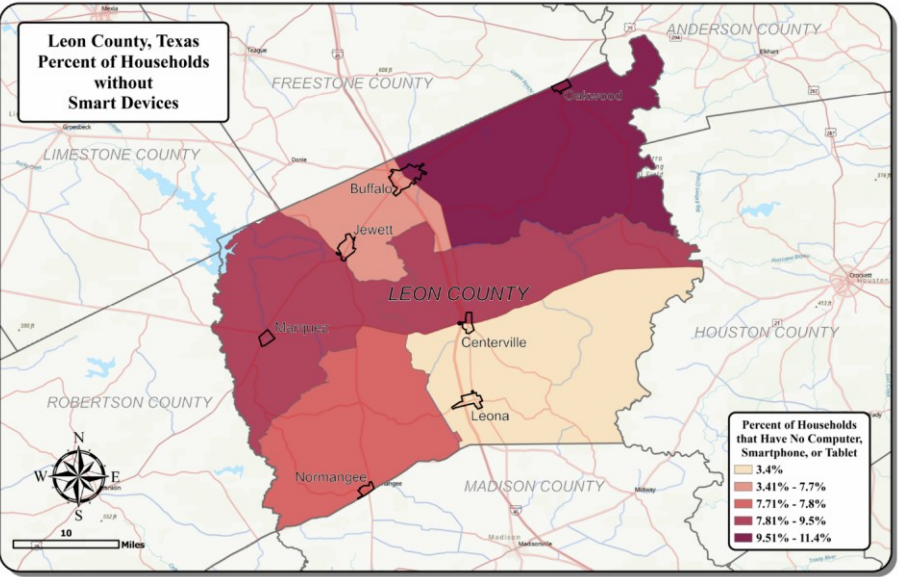


Exhibit 17: Average Household Size in Leon County, Texas

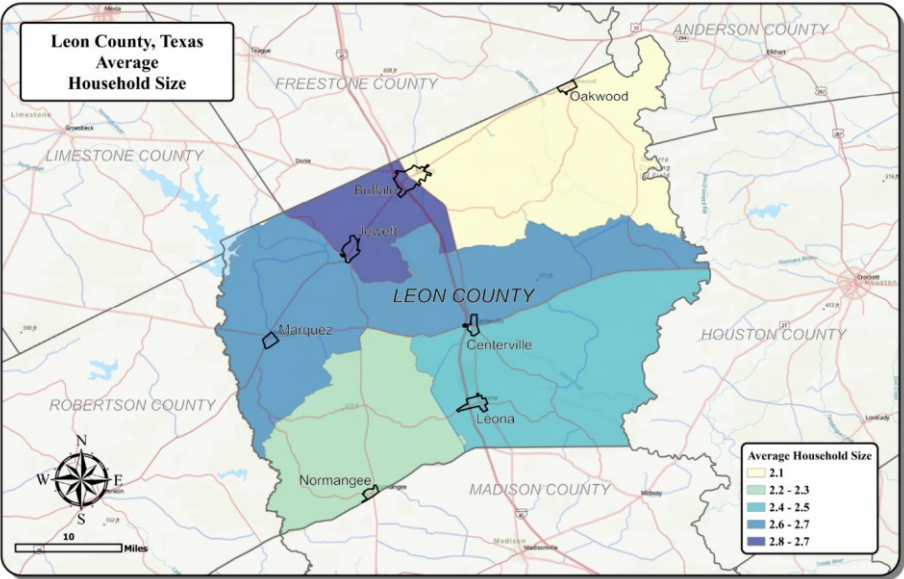


Exhibit 18: Median Household Income in Leon County, Texas

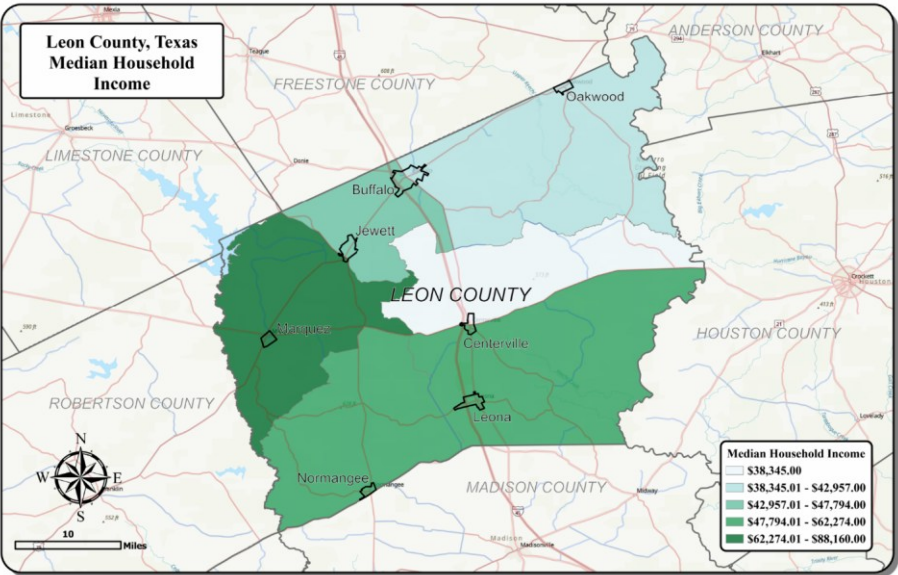
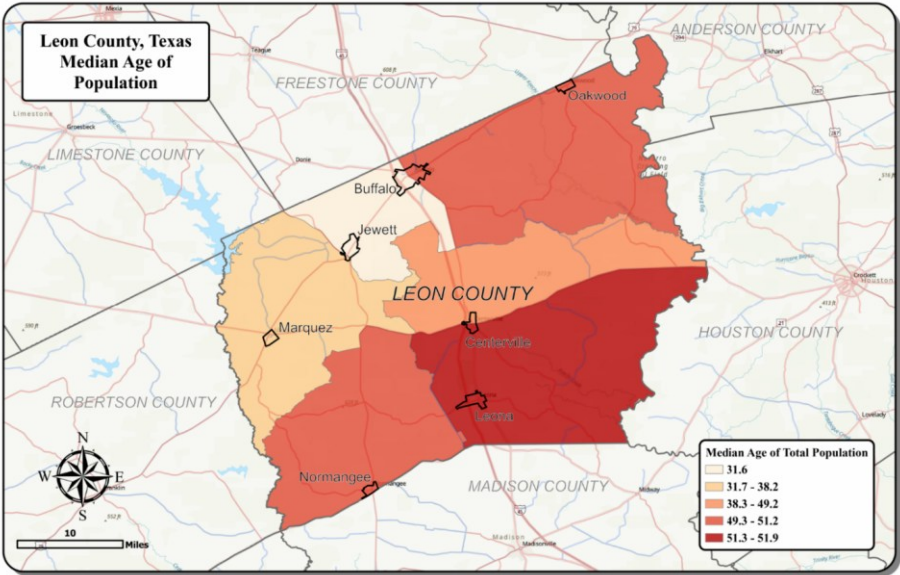


Exhibit 19: Median Age in Leon County, Texas



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Exhibit 20: Metro Network Fiber in Leon County, Texas

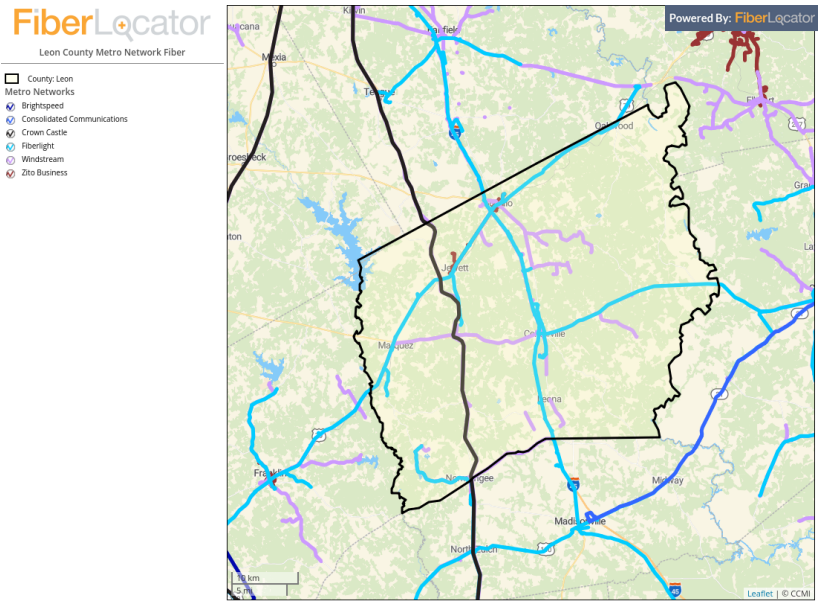


Exhibit 21: Long Haul Fiber Network in Leon County, Texas

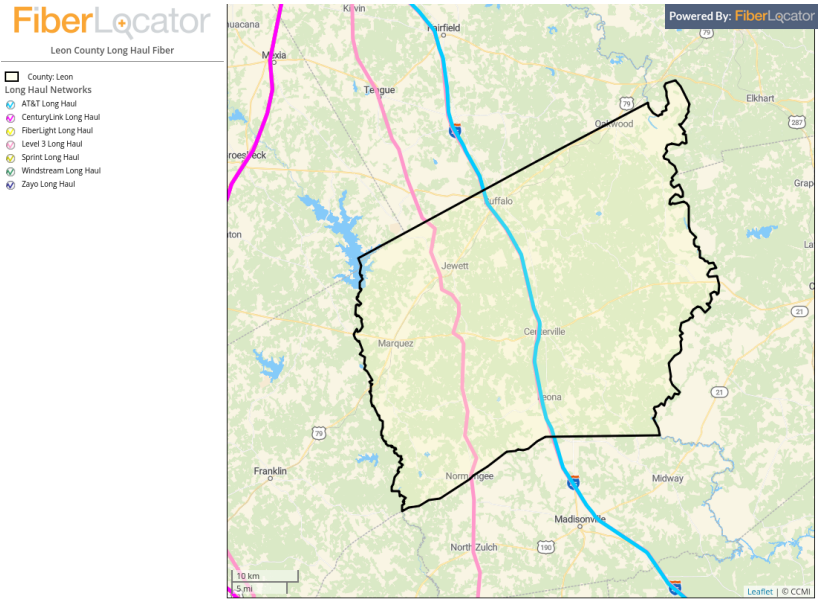


Exhibit 22: Demand Points of Need in Leon County, Texas

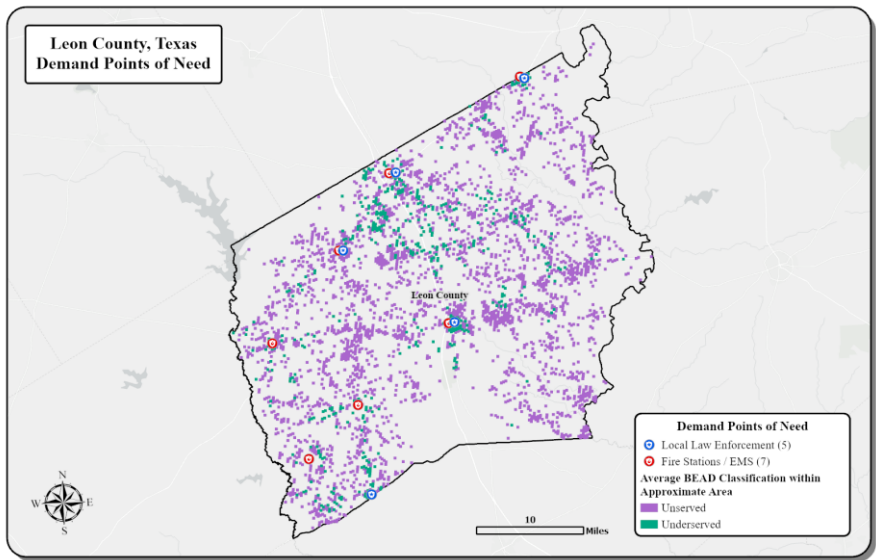
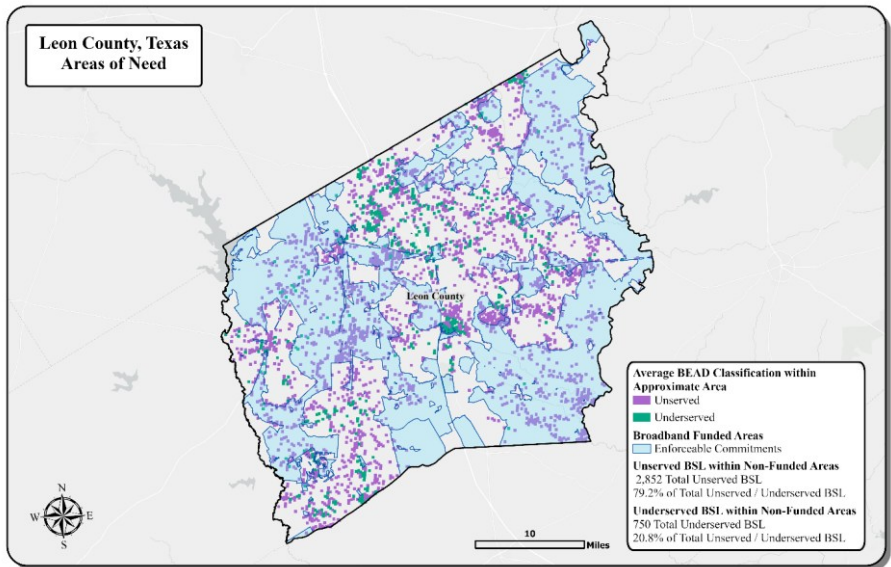


Exhibit 23: Areas of Need in Leon County, Texas



## 5 P3 Identification and Analysis

This service identifies opportunities and options for local public jurisdictions to establish formal partnerships with private providers. The research will outline the process to identify and develop P3 opportunities while detailing the respective comparative advantages from both these public and private arrangements. Possible P3 benefits can include operational capacity, more complete coverage, and lower construction and service costs for the community. Potential risks to the community from the identified P3 opportunities will be outlined alongside advantages resulting from the identified potential P3s. Preparation for the facilitation of Requests for Proposals for partnering opportunities will also be included. An additional result of this process is to help the BDO reach a goal of 99 percent coverage of unserved BSLs through coordinating P3 relationships throughout each county.

[When ISPs are part of the building and/or operating and maintaining broadband infrastructure, the relationship is generally referred to as a Public-Private Partnership (P3). These partnerships between county governments and private entities can take a wide range of forms. It is helpful to think of these variations as a spectrum where one extreme is a fully publicly owned utility model and the other is a hands-off approach that allows the private sector to invest and expand at their own discretion. Even in the latter, the public agency is still involved, such as providing and approving building permits. The sweet spot for most communities falls somewhere in the middle, particularly if grants are needed for the improvements.]

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### 5.1 Business Model Options

#### 5.1.1 Considerations for Business Model Selection and Partnership

Improving broadband often entails building, operating and maintaining new infrastructure to provide a better end-user experience. While private ISPs play a role in the deployment of most broadband infrastructure improvement projects, public agencies are also involved in the process. To better gauge the level of participation in the improvement process of broadband infrastructure, it is important to understand what is available to public agencies.

Models have been developed to help local governments understand the opportunities and risks associated with the different ways in which they can participate. The information in this section will outline the process to identify and determine what role leadership thinks is best for Leon County.

As one moves along the continuum from the fully public side to the fully private end, the share of responsibility in the complexity of the model shifts. When assessing the degree of governmental participation, the municipal broadband utility model ranks highest for complexity and involvement. Texas law includes some barriers and restrictions on the utility model (Texas Utility Code [§ 54.201](#)); however, it is important to note that these restrictions do not prevent local governments from forming a P3 and are a viable option.

Decisions regarding public involvement are often based on costs, financial and/or bond limitations, staff capacity and political will. Understanding these distinctions and how they fit the county can help leadership make a knowledgeable choice on which direction to pursue, should it become advantageous to enter a P3 for broadband improvements.

### 5.1.2 Ownership and Operations Models

To better understand the options Leon County must explore for broadband infrastructure improvement, it is helpful to define the components of a network. A broadband network can be summarized into five basic components, which one party or the other must be responsible for building and/or maintaining:

- (1) **Right of Way (ROW)** — The physical real estate where the network must be built.
- (2) **Middle Mile Network Infrastructure** — The arterial portion of networks that brings internet traffic from last mile networks to connect to the internet via interconnection facilities called Points of Presence or internet exchanges.
- (3) **Last-Mile Network Infrastructure** — The capillary portion of a network that distributes internet connectivity to homes and businesses in the community from the provider(s).
- (4) **Operation of the Infrastructure** — The activities associated with running a commercial network, inclusive of monitoring network traffic, responding to outages, maintaining the equipment, providing services, and the cable plant that enables the network to function and connect to the internet.
- (5) **Customer Service** — The activities associated with connecting customers to the network, troubleshooting and addressing any issues the end-user may experience with the service, billing for the service and collecting/processing payment.

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One entity does not have to own, operate and maintain all five components of a network — that is not usually the case. Typically, there are several participants from both the public and private side involved in the ownership and operations of these components. Moreover, one agency does not have to own and operate the infrastructure — for example, many communities' own infrastructure but contract out the operations.

Once a broadband infrastructure opportunity has been identified, community leaders should begin to define their degree of desire in assuming responsibility for financially and/or operationally within such a venture. If private sector partners could be involved, the public agency's intentions are important to better tailor their outreach to the private sector via a formal channel such as a RFEI.

The matrix within Exhibit 24 outlines how responsibility for these five components can be delineated between a private and public partner. Within the table, the columns represent each component described above, while the rows consist of the following five broad categories of P3 structures commonly implemented. These are:

- (1) **Full Municipal Broadband** — Texas municipalities and counties that consider this model will need to fully understand the state's barriers. As a frame of reference for funding, full municipal models rely on the revenue from the network to cover building and operational costs. These are often through Revenue Bonds, as opposed to General Obligation Bonds where the revenue pays back all the incurred costs and produces additional revenue. However, a full feasibility study is usually required by financing institutions to determine if the network can sustain itself and repay the debt over time.
- (2) **Publicly Owned, Privately Serviced** — This model can be thought of as a workaround for communities with the political will to construct their own infrastructure but do not have the full resources to operate the network. In these networks, the responsibility for funding and building a network is shouldered by the public entity (e.g., via bond issuance). However, a private company is contracted to operate the infrastructure and provide customer service.
- (3) **Hybrid Ownership** — In this model, both the public and private entities contribute capital to build a network, with the public entity building middle mile infrastructure and the private entity



building last mile infrastructure. This model has the benefit of making it easier from a technical standpoint for a community to partner with more than one last mile builder/provider but is also attractive to a private partner for eliminating their cost to build middle mile to reach the neighborhoods in need of service.

- (4) **Private Developer Open Access** — This is an attractive model for communities because it limits the investment they must make into building network infrastructure. It also helps ensure a consumer-friendly environment wherein customers of the network have access to more than one option in service providers. However, for this to be financially feasible for both the private developer who builds the network and enterprises providing services, certain metrics must be met, which vary from company to company. In general, this model tends to require both a higher density of potential customers per road mile, as well as a higher overall number of customers. Remote, sparsely populated communities may not find this model feasible to implement.
- (5) **Full Private Broadband** — This is the most hands-off approach model for a public agency, as the contribution to a partnership by a public entity consists only of ROW policies that are “friendly” to broadband deployments. Examples include expedited permitting processes and Dig Once ordinances requiring the placement of empty conduit usable for future network deployments.

**Exhibit 24: Request for Expressions of Interest Matrix**

	Own ROW/Utility Infrastructure	Own Middle Mile	Own Last Mile	Operate Infrastructure	Service Customer
<b>Full Municipal Broadband</b>	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)
<b>Publicly Owned, Privately Serviced</b>	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Service Provider(s)
				Service Provider(s)	
<b>Hybrid Ownership</b>	Public Entity (City or Utility)	Public Entity (City or Utility)	Service Provider(s)	Service Provider(s)	Service Provider(s)
<b>Private Developer Open Access</b>	Public Entity (City or Utility)	Private Developer	Private Developer	Private Developer	Multiple Service Providers
<b>Full Private Broadband</b>	Public Entity (City or Utility)	Service Provider(s)	Service Provider(s)	Service Provider(s)	Service Provider(s)

### 5.1.3 Accessory Models

In relatively rural and sparsely populated counties, such as Leon County, it is often the case that the publicly owned, privately serviced and the hybrid ownership P3 models are both politically and financially challenging. Even if financial modeling shows a reasonable return on investment through Irrefutable Right of Use agreements with private providers, proposing a bond initiative or using tax dollars might not be the most politically viable option for the community and its leaders. Fortunately,



should this be the case, communities within Leon County are not without recourse should they choose to pursue a full private broadband model. So-called Accessory Models, which leverage the community's inherent control of the ROW and need for internal connectivity, can still make a positive impact via a Dig Once ordinance.

### **Accessory Model Overview**

In addition to the need to facilitate improved broadband deployments, local governments are also recognizing the need to implement public policy initiatives that are designed to improve the quality of street cut repairs as well as encourage joint use of facilities. Strategies used by these agencies generally fall into three categories: incentives, fees and regulations. Examples of incentive-based policies include providing financial incentives for:<sup>5</sup>

- (1) Using trenchless technology where technically suitable and requiring justification for not using trenchless technology should the agency deem it suitable.
- (2) Performing higher quality pavement cut repairs or making smaller and/or less damaging cuts.
- (3) Coordinating with other utility companies to share trenches or underground resources.

Examples of fee-based policies include:

- (1) Assessing appropriate fees for pavement degradation.
- (2) Assessing appropriate permit fees.
- (3) Implementing a lane rental fee to encourage utility companies to restore traffic as quickly as possible.
- (4) Requiring a deposit prior to beginning work to protect against poor quality repairs.
- (5) Assessing penalties within a specified period for non-compliance or for failed repairs.

Examples of regulation-based policies include those that do not require fees nor provide incentives, but place requirements on the contractor regarding quality of work and restrictions on when and where trenching can be done. Examples of this type include:

- (1) Establishing moratorium periods that restrict trenching in new and newly resurfaced pavements for a specified time.
- (2) Requiring the pavement repair to encompass a larger area than simply the area of the trench.
- (3) Enhancing inspections and enforcement of specification requirements.
- (4) Requiring agency-owned utilities to meet repair quality standards and all other policies established for private utility companies.

### **Dig Once Ordinances**

Leon County is within its authority to preserve the physical integrity of its streets and highways, control the orderly flow of vehicles and pedestrians, and manage the gas, electric, water, cable, broadband, telephone and other facilities that crisscross its streets and public ROW. In addition, the county can focus on efficiently using public ROW for a variety of infrastructure and utilities to provide public services; advance their goal of increasing opportunities for access to traffic control, communication and broadband services; limit the frequency of street closures and the cutting of public streets; and reduce road degradation caused by repeated boring and trenching of public ROW.

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<sup>5</sup> "Pavement Utility Cuts." (2018 April 19). Federal Highway Administration (FHWA). Retrieved May 25, 2019, from <https://www.fhwa.dot.gov/utilities/utilitycuts/man01.cfm>

The county can start to require all street construction permit applications involving directional boring or open trenching within a public ROW to include the co-location and installation of conduit owned by the entity<sup>6</sup> simultaneously with the applicant's street construction activity. This is commonly known as a "Dig Once" or a co-location policy. Timely placement of empty broadband conduit, which is conduit for fiber-optic cables that support broadband or, where appropriate, wireless facilities for broadband service, can dramatically reduce costs. The National Broadband Plan noted that "the cost of running a strand of fiber through an existing conduit is three to four times cheaper than constructing a new aerial build."<sup>7</sup> By saving costs, providers may be able to speed up network upgrades, thereby expediting better end-user experience.

The cost of building or upgrading a network in areas where streets need to be dug up is substantially higher than the cost of building or upgrading a network where there is sufficient empty space in the conduit that was placed with foresight years earlier. As such, a co-location/Dig Once policy is important because it gives the jurisdiction the ability to create assets, or "broadband currency," which are a key driver of enhanced broadband and can be a valuable contribution to a P3 agreement with a private service provider. More importantly, it is a very low-cost path to create assets that can drive appealing outcomes. If it is done well, it can allow the county to maintain control of its own broadband landscape.

A co-location or Dig Once policy is "a broadband deployment policy focused on increasing coordination between government agencies and utility companies to decrease the frequency of highway or street excavation." These policies aim to facilitate joint trenching cost savings and ensure that broadband infrastructure improvements are considered alongside other infrastructure and public works projects. To this end, these policies encourage or require that every infrastructure project includes notification and facilitation of opportunities to lower the costs of broadband infrastructure investment. Localities can add connectivity standards to their building codes, ensuring that new constructions are equipped with broadband access.

There are three main benefits to Dig Once policies:

- (1) Lowering costs of infrastructure deployment when completed in conjunction with other infrastructure improvements.
- (2) Promoting and facilitating integration of broadband infrastructure as part of local and regional economic development initiatives.
- (3) Providing a meaningful contribution to future P3 agreements with private providers, potentially lowering their cost to deploy fiber optic network plant by a substantial amount.

The Federal Highway Administration has listed several best practices for Dig Once policies, noting that Dig Once practices have been "recognized by state and local stakeholders as sensible solutions to expedite the deployment of fiber along main routes when implemented as part of a cooperative planning process."<sup>8</sup>

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<sup>6</sup> "These ordinances can also be structured to allow the County to determine during the permitting process whether the placement of empty conduit is to its advantage or not instead of a blanket requirement. They can also be written to require that the entity seeking a permit place the conduit on the County's behalf and at the County's expense, making the conduit into broadband currency the County can then leverage in later P3 negotiations

<sup>7</sup> 3 "Collocation Conduit Installation". (2016 September). Connected Nation. Retrieved October 21, 2021, from <http://www.connectmycommunity.org/wp-content/uploads/2016/09/Local-Policy-Guide.pdf>

<sup>8</sup> <https://www.fhwa.dot.gov/policy/otps/successprac.pdf>

### Middle Mile “Broadband Currency”

If the county has or plans to install any broadband infrastructure, this can be used to attract ISPs to the county. Examples of how this may be beneficial include:

- If the county or member cities decide to build a fiber ring for internal connectivity of their facilities, extra capacity can be built, which could be offered to an ISP (for a lease rate that could reduce their deployment costs).
- Requiring the addition of empty conduit/duct banks to Capital Improvement Projects is a cost-effective way of creating infrastructure that can be used in the future by ISPs to dramatically lower deployment cost per household passed. This can include new developments, roadwork projects, bridge and sidewalk builds.
- Utilizing Dig Once policies can develop an inventory of conduit that can also be offered to ISPs to provide a more affordable way to deploy broadband improvement infrastructure (e.g., via a lease arrangement).

**Exhibit 25: Accessory Model Table**

Accessory Model	Benefits	Drawbacks	Investment
<b>Ordinance and/or Policy (e.g., Dig Once)</b>	Quick and easy to put in place with long term benefits over many years	Can take a very long time to bear fruit	No financial investment, simply one in political capital to implement a new policy/ordinance
<b>Broadband Currency</b>	An effective way to entice private sector investment by reducing deployment costs for ISPs entering the market	Requires the expenditure of funds. While effective, and quicker than a pure policy approach, it is not a quick fix either	Some financial investment is needed to implement this approach as it requires the construction of physical infrastructure
<b>Combined Ordinance and/or Policy with Broadband Currency</b>	This approach has the combined strengths of both above accessory models, with both a long-term outlook and more immediate benefits	Requires the expenditure of funds. While effective, and quicker than a pure policy approach, it is not a quick fix either	Some financial investment is needed to implement this approach as it requires the construction of physical infrastructure

#### 5.1.4 Business Model Funding

There are multiple avenues available to local governments when it comes to funding a network deployment and/or contributing to a P3 for improved broadband. As outlined in the previous section, the simplest and lowest risk option is to purely enact policies and put ordinances in place that reduce the deployment costs for broadband infrastructure while also protecting the integrity of the community’s ROW. While cost-effective, this approach will not provide the county with much control over how long it will take for improved broadband to be realized by the end-user.

Should the political will exist to ensure a greater degree of control by pursuing a publicly owned privately serviced or hybrid ownership model, there are a handful of potential funding avenues to evaluate. Before deciding on this front, however, best practices indicate that robust financial modeling should be performed in conjunction with an engineering analysis to determine accurate project cost both in terms of Capex and Opex. Once financial feasibility and payback periods are confirmed, the following avenues should be explored:

### **Federal and State Grants**

Programs like the Broadband Equity, Access, and Deployment (BEAD) within the Infrastructure Investment and Jobs Act, the American Rescue Plan Act (ARPA), Community Development Block Grant (CDBG) and the USDA's Reconnect Loan and Grant Program provide significant funding for broadband projects. However, time is of the essence with this approach as ARPA funds must be encumbered by Dec. 31, 2024, and spent by Dec. 31, 2026, and a BEAD strategy must be pursued in collaboration with a private partner that would apply for the funds with the county's support. More information on funding opportunities is included in Section 8.

### **Tax Increment Financing**

Tax Increment Financing (TIF) is a funding mechanism that municipalities use to stimulate economic development and infrastructure projects, including those for municipal broadband. TIF works by designating a specific area, known as a Tax Increment District, where the expected increase in property tax revenues from future development is used to finance current improvements. Essentially, the projected growth in tax revenue serves as collateral to fund the upfront costs of the project. This model is particularly useful for projects that might not attract immediate private investment but are expected to generate significant economic benefits over time.

When applied to municipal broadband projects, TIFs can help cover the substantial initial costs of building the necessary infrastructure. By leveraging future tax increments, cities can invest in broadband networks that provide high-speed internet access to underserved areas, while fostering digital inclusion and economic growth. This approach not only enhances connectivity but also attracts businesses and residents, ultimately increasing the tax base and ensuring the long-term sustainability of the investment.

### **General Obligation Bonds and Revenue Bonds**

General obligation bonds (GO bonds) are another common method for municipalities to fund various public projects, including those for municipal broadband. These bonds are backed by the full faith and credit of the issuing municipality, meaning they are secured by the municipality's taxing power. When municipality issues GO bonds, it pledges to repay the bondholders through general taxation, which can include property taxes, sales taxes or other forms of municipal revenue. This makes GO bonds a relatively secure investment, as the repayment is not dependent on the success of the project itself. For municipal broadband, GO bonds can provide the necessary capital to build out the infrastructure, ensuring that the community has access to high-speed internet.

On the other hand, revenue bonds are repaid through the revenues generated by the projects they finance. In the case of municipal broadband, this means that the bonds would be repaid using the income generated from the broadband services provided to residents and businesses. This type of bond is considered riskier than GO bonds because the repayment depends on the project's ability to generate sufficient revenue. However, revenue bonds can be an attractive option for funding municipal broadband as they do not rely on general taxation. They can also be structured to align with the expected cash flows

from the broadband services, or in the case of P3 networks, by the lease fees paid by the private partner to use the infrastructure (see below). By using revenue bonds, municipalities can finance broadband projects without increasing the tax burden on their residents, making it a politically feasible option for expanding digital infrastructure.

### **Leasing Infrastructure**

Leasing agreements can be used to finance the procurement and construction of broadband infrastructure. This approach is not a standalone means of funding a network deployment but rather the revenue backstop used to prove financial viability when pursuing loans and/or revenue bonds. Leasing rates should consider funding necessary to supplement the construction of the network but should not be high enough to deter providers from entering agreements.

#### **5.1.5 Public-Private Partnerships (P3)**

Four of the five partnership models described at a high level are distinct approaches to partnerships, while the fifth is essentially fully passive and leaves broadband improvement completely in the hands of the private sector. This section provides more details on these four partnership models.

### **Open Access**

Traditionally, broadband networks are operated by a single entity, and customers connected to that network are limited to receiving service only from that single entity. In this paradigm, which is by far the most common in the U.S., customers that have access to more than one wireline service provider live in homes that are passed by more than one physical network, each owned and operated by different companies. As broadband network infrastructure is expensive to build, this generally means that once one or two providers are serving a given community, it is difficult for new entrants to justify overbuilding that community, which leads to complacent providers and stagnation of service improvements.

By contrast, in the Open Access model, the wireline network infrastructure is owned and maintained by a neutral, non-ISP, that allows multiple ISPs to utilize the network to deliver service via software defined networking. This paradigm benefits the customers the most but also allows ISPs to expand their service footprints without the risky and expensive investment of capital to build their own networks. Additionally, this model is of particular interest in Texas, where municipalities and counties are prohibited by law from offering broadband service as a utility. The objection to local government beginning to compete with established private sector enterprises by selling broadband service to residents is understandable. But, in building and operating open access infrastructure, the local government is not competing with private enterprise but rather enabling private sector enterprises to compete with one another in such a way as to benefit the community's residents, while also inhibiting de facto monopolies.

Open access networks are typically either built by municipalities or infrastructure companies that solicit ISPs to lease space on their networks. Typically, the goal is to facilitate competition by lowering the costs of deployment, while paying for the infrastructure through leases to the participating providers.

### **Private Ownership with Public Equity**

Costs for deployment can be prohibitive for ISPs. As for-profit entities, it is logical for them to put their limited expansion capital into markets where the ratio of potential customers to dollars spent is more favorable to them. Unfortunately, this tends to mean that less densely populated areas rarely see investment from either incumbent providers or new competitors to the marketplace. To serve these communities, it is therefore common for ISPs to seek subsidies to lower their costs. Sometimes this can

be done through grants, but other times ISPs seek public funding. ISPs often need a faster return on investment (ROI) than communities do.

When considering public investment in networks, it is important to refer to the considerations in the Ownership and Operations model section above. If public money is being used, there should be some form of commensurate ownership and/or return.

This should also be a consideration when public assets are being considered (ROW, land, ring fiber, conduit, etc.). If the public is contributing any asset related to the infrastructure, ownership or ROI should be discussed and incorporated.

#### **Publicly Owned with Private Provider Lease**

A return for any municipal assets being used can be done through leases and, depending on the costs and terms, can be cheaper than the costs ISPs would have to construct their own infrastructure. Public agencies often focus on a longer ROI than private companies, so this model can be successful for the municipality and the ISP.

#### **Revenue Sharing**

It is common in the broadband industry for ISPs to offer revenue sharing. Revenue sharing can be based on ROW use, municipal-owned infrastructure used (if not in a lease agreement), etc. This is most often based on a percentage of their revenue after their initial deployment costs. The values can vary greatly, so it is important to understand the ISP's formula clearly. Depending on the projections, this has sometimes been a good source of ongoing revenue.

#### **5.1.6 Request for Proposal Preparation**

A RFEI is a procurement document used to gather information from potential vendors or partners about their interest and capabilities in a specific project or service. It helps organizations assess market availability and vendor capabilities before proceeding with formal procurement processes.

To review the RFEI template, please refer to the appendices section.

### **5.2 Leon County Prospective Partnership Opportunities**

To assist the county in navigating potential partners and what they could offer, our project team obtained FCC data on the companies already operating in the area and compiled a list of potential entrants to the market that serve similar and proximal communities to those in Leon County. We then made outreach efforts to gauge their interest in entering a P3 with the county. What follows is a summary of those efforts, including contact information for the various entities we spoke with and/or attempted to reach.

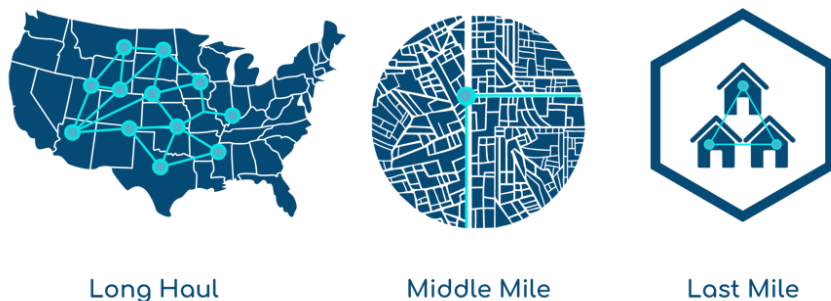
#### **5.2.1 Potential Partners in Leon County**

It is helpful to divide potential P3 partners into two broad categories: last-mile providers and middle-mile/long-haul service providers. In some cases, there is overlap between the two but, generally speaking, this is an effective approach to capture all relevant providers impacting and capable of impacting the project area.

A helpful analogy to understand the difference between these two categories, and to appreciate their interdependence upon one another, is that of the circulatory system in the human body. A long-haul and/or middle-mile network is analogous to the arteries that bring oxygenated blood from the lungs to the arms and legs, while the last-mile network is the capillaries that deliver the oxygen to the individual cells of the body.

In a broadband network, the last-mile portion is necessary to reach the households and businesses that need the service, while the middle- and long-haul portion is necessary to connect the last-mile portion to the rest of the internet. This connection is done via an internet exchange, also known as a point of presence or carrier hotel, which are almost always situated in large cities. The graphic below illustrates these three network layers: long haul to interconnect cities, middle mile to extend that connectivity to communities, and last mile to connect to each home.

**Exhibit 26: Broadband Network Infrastructure Layers**



From a partnership perspective, a community jurisdiction with any sort of long-haul provider agreement can reduce the costs for a last-mile provider to deliver service to that community. In addition, the presence of a last-mile provider can help a middle-mile provider justify their investment to extend their network into underserved areas of these communities.

"Broadband" is available to all BSLs in Leon County. However, only 93.7 percent of households have an internet subscription, indicating the potential of an economic adoption challenge with the present 22.4 percent poverty rate. While the entire county could be considered "served," the majority of this coverage is from copper and fixed wireless. This technology is known to suffer from frequent service outages and fluctuations in available download and upload speeds, making it an unreliable service delivery medium when compared with the gold standard of fiber to the home. Unfortunately, fiber is only available to a fraction of the BSLs in Leon County due to the limited service offered by available providers.

Below are tables with middle-mile/long-haul service providers and last-mile providers with contact information for their representatives. Included is a table that shows which ISPs have a service footprint in Leon County, what technology they use to deliver their service and how many BSLs their networks reach in the county. Note that if a single provider offers service via more than one delivery technology, each of those technologies are given their own row in the table. We have tried to reach out to these service providers, with mixed success, and the county should also reach out to them for future discussions. Notably, we include not only all ISPs that currently operate either wireline or fixed wireless networks in the county, but also others with footprints near Leon County or that are potentially interested in expanding into the county.

**Exhibit 27: Middle-mile Provider with Operations in, or near, Leon County**

Provider	Contact	Email
Consolidated	Sarah Davis	Sarah.Davis@consolidated.com
Consolidated	Brian Lim	Brian.Lim@consolidated.com
FiberLight	Matt Leach	matt.leach@fiberlight.com
Ubiquity	Greg Dial	Greg@UbiquityGP.com
Zayo	ZeeAnn Kane	zeeann.kane@zayo.com
Texas Windstream, Inc.	Mike Hunsucker	michael.hunsucker@windstream.com
LCRA	Gina Dodd	gina.dodd@lcra.org
Lumen	Jeff Mirasola	Jeff.Mirasola@lumen.com
Crown Castle	Mandy Derr	Amandus.Derr@crowncastle.com

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**Exhibit 28: Last-mile Providers with Operations in Leon County**

Providers	Contact	Email or Phone Number
AT&T	Carlos A Martinez	cm3441@att.com
Brazos WiFi	n/a	979-999-7000
Express WISP	n/a	903-626-5343
Nextlink	Claude Aiken	caiken@team.nxlink.com
T-Mobile	Christopher Walker	christopher.walker@t-mobile.com
Texas Windstream, Inc.	Mike Hunsucker	michael.hunsucker@windstream.com
Verizon	n/a	866-928-1939
Zito Media	n/a	888-995-9486
ZochNet	n/a	877-866-7770

**Exhibit 29: Last-mile Offerings Within Leon County**

Provider	Service Delivery Technology	# of BSLs in Footprint
Windstream	Copper	5,862
T Mobile	Licensed Fixed Wireless	4,396
Verizon	Licensed Fixed Wireless	3,889
Nextlink	Unlicensed Fixed Wireless	1,102
Zito Media	Cable	1,017
Nextlink	Licensed Fixed Wireless	1,000
Windstream	Fiber	710
Brazos WiFi	Fiber	514
AT&T	Copper	428
ZochNet	Unlicensed Fixed Wireless	257
AT&T	Licensed Fixed Wireless	240
Express WISP	Unlicensed Fixed Wireless	105

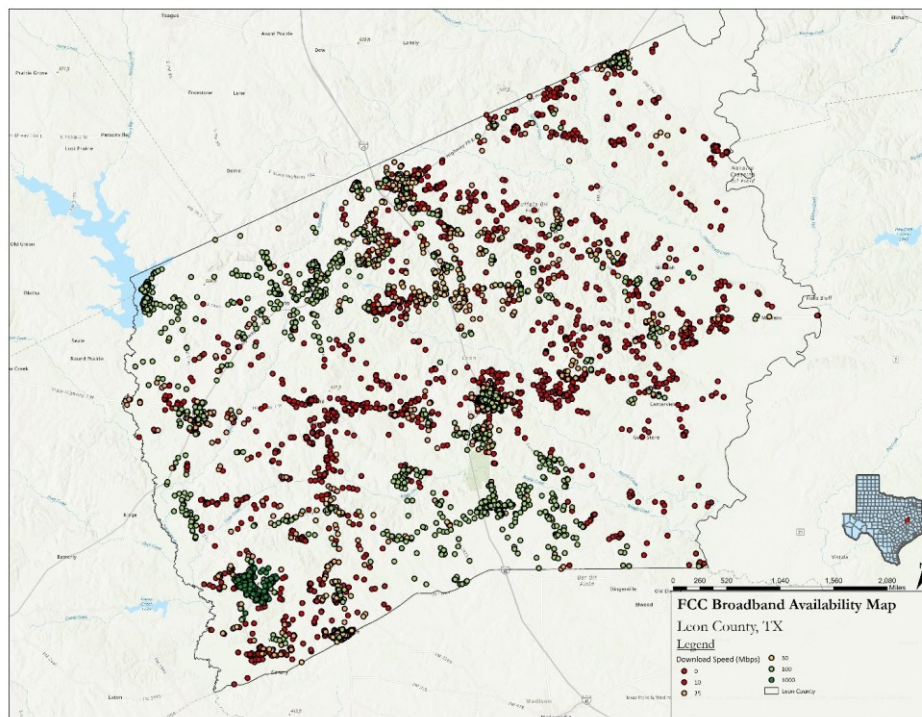


**Exhibit 30: Last-mile Providers without Operations in Leon County**

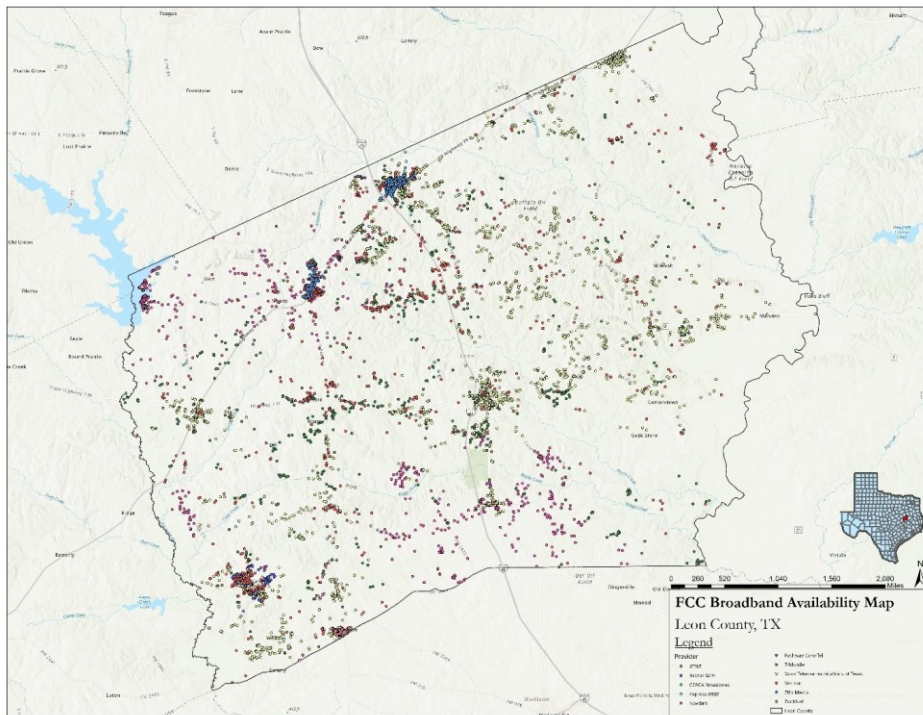
Providers	Contact	Email
Highline	David Shipley	David.shipley@highlinefast.com
BTX Fiber	Rene Gonzalez	Rgonzalez@lit-fiber.com
Underline (open access operator)	Jaime Espinosa	Jespinosa@underline.com
Strata	Jon Bingham	Jbingham@stratanetworks.com
Rise Broadband	Jeff Kohler	Jkohler@risebroadband.com
Ezee Fiber	Matt Marino	Matthew.marino@ezeefiber.com
Consolidated (CCI)	Kevin Kastor	k.kastor@consolidated.com

The maps below indicate the download rate from the FCC within Leon County. The second map highlights which ISP is providing services to each location within the county. Additionally, this information provides valuable insights into the current infrastructure and potential areas for improvement to ensure better connectivity for all county residents. By analyzing these maps, stakeholders can make informed decisions to address current service gaps and promote a more connected community.

**Exhibit 31: FCC Download Rate Within Leon County**



**Exhibit 32: ISPs Providing Services to Each Location within Leon County**



Meetings were held with several middle-mile and last-mile ISPs throughout the course of this project. Willingness to respond to questions varied greatly among each ISP as confidential information could not be shared with the team. For those ISPs that could provide insight to the questions, the team learned valuable information for the county. For instance, FiberLight has not contractually been involved in a P3 agreement, but they have been conducting similar projects with schools in Amarillo, Texas. In addition, they are willing to help foster a partnership with one of their last-mile providers as they are not in the business of doing residential last mile themselves. Similarly, Windstream had been involved in three separate P3 projects for rural regions. While their focus is on staying within their footprint, Windstream would like to be the one to provide last-mile services. In the case of VTX1/TISD, they have a middle-mile partner within the county. They are only able to provide services within their boundaries, but they offer services to 52 counties in Texas.

Zayo provides buried middle-mile fiber about 60 miles away from Leon County. While they are not a last-mile carrier, Zayo is supporting their partners in BEAD applications by being a co-applicant. LCRA does not have infrastructure in Leon County. At this time, they are a wholesale power transmission and generation organization with customers that are utilities and service providers looking to build last-mile networks.

Also of note for Leon County is that there are two additional fiber providers, Pathway Com-Tel and CCECA Broadband, which do not have a service footprint according to Form 477 data but do have plans to build or are active in some capacity in the county, making them potential P3 candidates despite an absence of current footprint. The county should try to keep apprised of Pathway Com-Tel, CCECA Broadband, Zayo and LCRA network development in the area should services expand or upgrade to include Leon County residents. Additional information has been summarized in the table below for ISPs with networks in Leon County (Exhibit 33).

**Exhibit 33: ISP Network Summaries within Leon County**

Questions	FiberLight	Windstream
<b>Do you have middle mile in Leon County?</b>	Yes.	Yes.
<b>Is your middle mile conduit, fiber, both or another technology (fixed wireless, etc.)?</b>	Fiber.	Fiber.
<b>If fiber, is it aerial or buried?</b>	Most likely buried.	Combination of aerial and buried.
<b>Is there any redundancy in the network?</b>	Yes, as they have redundant rings. All their core networks are built redundant.	They believe so, but this needs to be confirmed.
<b>Are you constructing new middle mile in or near Leon County?</b>	A small lateral line is being built out.	No.
<b>Do you provide enterprise, school or government services?</b>	They provide services to all three entities.	They provide services to all three entities.
<b>Are you involved in any public-private partnerships for rural or underserved area expansion?</b>	Not contractually in a P3, but they are involved in a regional ESC in Amarillo, Texas.	Yes – one is underway and two have been completed (Andrews, Texas and Strathmore, Texas).
<b>Are there volume-based discounts for larger or long-term agreements?</b>	Yes, but the financials of the project must be assessed.	They believe so, but this needs to be confirmed.
<b>Are you open to partnership for last mile (if not able to supply last mile yourself)?</b>	Yes, they are always open to it if it makes sense. They only provide last mile to their enterprises and school districts. They do not do residential units and not usually small businesses.	Yes. If somebody wants last mile, they want to be the providers who supply it and not the ones who sell the infrastructure for somebody else to compete with them.

Should the county wish to pursue a P3 agreement with any of the ISPs listed below, the county will need to:

- Utilize the information in this report to have a clear understanding of the unserved and underserved BSLs that are in relatively close proximity to the ISP.
- Talk with the ISP contact listed above.
- Discuss if the ISP is interested in extending their network to serve the BSLs.
- Determine what the ISP needs to extend their network (grant application support letters, assistance in permitting, etc.) to serve the identified BSLs.
- Based on the needs of the ISP, evaluate if the ISP request requires the county to have some level of ownership or control in the network extension. For example, if the ISP requires additional funding (or use of county-owned conduit or use of extra county owned fiber) from the county, and the county is willing to provide that, the county will likely want to have some ownership, control or remuneration in the assets deployed in exchange for its investment.
- If the county does provide any investment in the network extension, the county will want to negotiate and formalize an agreement with the ISP. (Please refer to the business model section of this report.) This could be in the form of a lease agreement (if the ISP is using county-owned conduit or spare fiber) or an ownership and revenue sharing agreement that is reviewed and approved by the county attorney. In these types of arrangements, it is important to also define how operations and maintenance will be accomplished and paid for.

If after completing all the steps above Leon County still has questions on next steps, they should feel free to contact the Texas Broadband Development Office for assistance.

## 6 Workforce Development

This chapter presents both a quantitative and a qualitative analysis of broadband workforce conditions in Leon County and a high-level overview of the framework of recommendations. The analysis and recommendations examine the county's labor force in the context of its regional planning area, identify the workforce development structures needed for broadband improvement and suggest next steps to close any gaps that are found.

### 6.1 Workforce Summary

Leon County has experienced population loss over the last decade, impacting its overall workforce. The county currently has some job offerings in broadband-related occupations, with only 16 of the 43 broadband occupations representing 10 or more jobs in the county. While broadband jobs in the region often require little to no postsecondary education, they do require extensive training and experience. Accessing this necessary training can be challenging for Leon County residents because there are limited training providers within the county.

Despite challenges to residents gaining the certifications, training and experience needed to be qualified for broadband occupations, there are opportunities to leverage existing Leon County and Brazos Valley Council of Government (COG) regional assets. For example, local school districts could develop an electrician career and technical (CTE) program that could serve students and link directly to a broadband career track. Similarly, regional postsecondary education institutions like Blinn College and Texas A&M University-College Station (TAMU) could partner with the county to build and scale up programs related to broadband. Increased retention efforts for students graduating from regional institutions with relevant credentials and skills could also help fill the workforce gap Leon County has experienced with recent population loss. Employers can also broaden and diversify their workforce by building awareness among underserved populations and addressing common barriers to employment.

Building Leon County's broadband workforce means there must be active coordination between regional partners and leaders to understand the landscape and pool resources to meet workforce needs. Broadband service providers must be at the community table sharing their current and future workforce demands. Education partners from K-12, postsecondary and technical training programs must collaborate with employers to establish and scale training programs to provide the supply of workers to meet the future workforce demand. Regional partners and training providers should engage with industry associations to develop the most up-to-date curriculum. Furthermore, accessing the workforce funding needed to bolster these countywide initiatives will require collaboration among workforce, education, regional and employer partners.

### 6.2 Quantitative Analysis and Findings

The following section provides a quantitative analysis of the broadband workforce in Leon County and surrounding region. In addition to definitions, it includes a baseline analysis of the identified broadband occupations (employment trends, earnings and demographics) and a pipeline analysis reflecting the demand for and supply of this workforce in the region.<sup>9</sup>

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<sup>9</sup> All employment, earnings, and demographic data are sourced from the US Bureau of Labor Statistics via Lightcast 2024.3—QCEW Employees, Non-QCEW Employees, and Self-Employed.

## 6.2.1 Definitions

This chapter relies on the following definitions that detail how the broadband workforce is defined, the federal standard used to classify occupations and the geographies used for analysis.

### 6.2.1.1 Broadband Occupation Categories

The broadband workforce referenced throughout this report includes 43 occupations identified by the NTIA, Continuum Capital and the Texas Digital Opportunity Plan.<sup>10</sup> These occupations are grouped into three categories based on required education levels.<sup>11</sup>

Exhibit 34, Exhibit 35, and Exhibit 36 show the national distribution of the workforce in each occupation by broadband occupation category and by educational level.

- **Construction, Installation and Support.** This segment of the broadband workforce is comprised of 18 occupations for which workers tend to need a high school diploma or less.
- **Skilled Technicians.** This category encompasses 10 occupations for which workers tend to need more education than a high school diploma, but less than a bachelor's degree.
- **Project Designers and Specialists.** The 15 occupations grouped under this category tend to require a bachelor's degree or higher.

### 6.2.1.2 Standard Occupational Classification System

The analyzed occupations are classified in accordance with the Standard Occupational Classification (SOC) system that is used by federal agencies to classify workers into occupational categories for statistical purposes.<sup>12</sup>

### 6.2.1.3 Geographies Used

The baseline and pipeline analyses rely on broadband workforce data by county and region. When available, county-level trends are highlighted. In many cases, however, a regional scope is preferable to gain a better understanding of the workforce landscape and its challenges because workers may commute across county lines to job sites and employers. The regions used in this series of reports are Texas COGs (or equivalents),<sup>13</sup> which are collections of neighboring counties that have a shared economic and political interest. Texas COGs served as stakeholders in this project and will continue to be critical to the implementation of any workforce recommendations. Leon County is part of the Brazos Valley COG, which also includes Brazos, Burleson, Grimes, Madison, Robertson and Washington counties.

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<sup>10</sup> *Internet for All: Workforce Planning Guide: Guidance for BEAD Program Eligible Entities*. US Department of Commerce, National Telecommunications and Information Administration (NTIA); *Broadband Market Workforce Needs: Research Summary*. 2024. Continuum Capital on behalf of the Fiber Broadband Association and Power and Communication Contractors Association; *Texas Digital Opportunity Plan, Appendix K: Building the Broadband Industry Workforce and Supporting Digital Skills for Texans*. 2024. Texas Broadband Development Office, Texas Comptroller of Public Accounts.

<sup>11</sup> Typical education required estimated by the US Department of Labor (DOL), Employment and Training Administration (ETA), Occupational Information Network (O\*NET) version 29.

<sup>12</sup> Visit the US Bureau of Labor Statistics [Standard Occupational Classification page](#) to learn more.

<sup>13</sup> For more information on Texas COG regions, visit the [Texas Association of Regional Councils](#).



**Exhibit 34: Distribution of Broadband Occupations by Category and Typical Educational Requirements Nationally, Construction, Installation, & Support Occupations**

SOC Code	Occupation Name/Description (Construction, Installation, & Support Occupations)	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
43-2021	Telephone Operators	97.80%	2.20%	0.00%
47-5022	Excavating, Loading Machine, & Dragline Operators, Surface Mining	94.30%	5.70%	0.00%
47-5023	Earth Drillers, Except Oil & Gas	87.80%	12.20%	0.00%
53-7062	Laborers and Freight, Stock, & Material Movers, Hand	87.70%	8.30%	4.00%
47-2073	Operating Engineers & Other Construction Operators	83.10%	16.90%	0.00%
47-3013	Helpers—Electricians	81.50%	17.20%	1.30%
51-2098	Miscellaneous Assemblers & Fabricators	80.80%	13.90%	5.30%
53-3032	Heavy & Tractor-Trailer Truck Drivers	80.20%	19.80%	0.00%
51-4121	Welders, Cutters, Solderers, & Brazers	74.40%	24.70%	0.90%
49-9052	Telecommunications Line Installers & Repairers	72.70%	27.30%	0.00%
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	69.80%	30.20%	0.00%
49-9051	Electrical Power-Line Installers & Repairers	68.40%	28.80%	2.80%
47-2061	Construction Laborers	67.40%	32.60%	0.00%
51-2028	Electrical, Electronic, & Electrotechnical Assemblers	66.40%	33.30%	0.30%
49-1011	First-Line Supervisors—Mechanics & Installers	57.20%	33.20%	9.60%
47-1011	First-Line Supervisors—Construction Trades	57.20%	34.40%	8.40%
43-4051	Customer Service Representatives	54.80%	31.00%	14.20%
49-2022	Telecommunications Equipment Installers & Repairers	43.10%	39.50%	17.40%

**Exhibit 35: Distribution of Broadband Occupations by Category and Typical Educational Requirements Nationally, Skilled Technicians**

SOC Code	Occupation Name/Description (Skilled Technicians)	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
39-1022	First-Line Supervisors—Personal Service Workers	18.00%	71.70%	10.40%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	32.30%	67.70%	0.00%
47-2111	Electricians	32.90%	65.80%	1.30%



SOC Code	Occupation Name/Description (Skilled Technicians)	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
17-3011	Architectural & Civil Drafters	15.60%	57.10%	27.30%
17-3019	Drafters, All Other	15.60%	57.10%	27.30%
17-3031	Surveying & Mapping Technicians	15.60%	57.10%	27.30%
49-2021	Radio, Cellular, & Tower Equipment Installers & Repairers	34.90%	55.40%	9.80%
17-3012	Electrical & Electronics Drafters	6.10%	51.40%	42.50%
17-3029	Engineering Technologists & Technicians, Except Drafters, All Other	37.00%	44.80%	18.20%
47-4011	Construction & Building Inspectors	38.70%	39.20%	22.10%

**Exhibit 36: Distribution of Broadband Occupations by Category and Typical Educational Requirements Nationally, Project Designers & Specialists**

SOC Code	Occupation Name/Description (Project Designers & Specialists)	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
17-2051	Civil Engineers	0.00%	3.00%	97.00%
19-5011	Occupational Health & Safety Specialists	0.00%	8.70%	91.30%
11-9021	Construction Managers	5.00%	5.00%	90.00%
17-2071	Electrical Engineers	0.00%	11.00%	89.00%
13-1051	Cost Estimators	4.60%	9.10%	86.40%
17-2072	Electronics Engineers, Except Computer	2.80%	12.00%	85.20%
13-1199	Business Operations Specialists, All Other	8.90%	17.60%	73.50%
15-1252	Software Developers	3.50%	29.80%	66.70%
15-1244	Network & Computer Systems Administrators	0.00%	37.50%	62.50%
13-1082	Project Management Specialists	17.50%	21.70%	60.70%
11-9179	Personal Service Managers, All Other	6.70%	33.00%	60.20%
19-5012	Occupational Health & Safety Technicians	9.50%	33.30%	57.10%
15-1241	Computer Network Architects	4.90%	41.20%	53.90%
15-1253	Software Quality Assurance Analysts & Testers	2.90%	44.10%	52.90%
41-3091	Sales Representatives of Services	25.60%	29.90%	44.60%



## 6.2.2 Broadband Baseline Analysis

The baseline analysis examines historical, existing and projected employment by occupation across the broadband workforce categories. This approach establishes a foundational understanding of the labor market for each of the three broadband workforce categories to identify occupations that are well-supplied and growing and those that have few jobs or are declining. Additionally, occupational earning and demographics are reviewed in the context of regional and benchmark trends at the state and national levels.

### 6.2.2.1 Brazos Valley COG Region

This section looks at the baseline analysis for the three broadband workforce categories for the Brazos Valley COG region.

Exhibit 37, Exhibit 38, and Exhibit 39 include the total jobs in 2023, percentage change from 2013 and median earnings for each of the 43 occupations.

#### 6.2.2.1.1 Construction, Installation and Support

The Brazos Valley COG region overall has seen strong employment growth since 2013, on par with the state trend. Most of the occupations in this category follow, and in some cases surpass, the state trend. However, some of the declining or stagnant occupations are key to the broadband workforce, such as electrical power-line installers and repairers, electrician helpers, and telecommunications line installers and repairers. These telecommunication roles and the electrical installer and repairer occupations all tend to earn more than the overall regional earnings levels across the board (i.e., median earning for each of these occupations is higher than the regional median earnings, a finding that holds true for most other percentiles, too). Lower management occupations (supervisors) in this category also have above-average earnings.

#### 6.2.2.1.2 Skilled Technicians

About half of the Skilled Technicians occupations have grown over the last 10 years, while half have stagnated or declined. Those that stagnated or declined tended to be related to drafting or engineering services, except for the catch-all drafter occupation (Drafters, All Other) which saw some growth. Those that grew tended to earn higher wages than the overall regional levels for mid-low earners. The declining occupations (Drafters, All Other) also tend to be held by younger workers, both compared with the region overall and with the same occupation at the state and national levels.

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#### 6.2.2.1.3 Project Designers and Specialists

Several Project Designers and Specialists occupations grew over the last decade in the Brazos Valley COG region, with the number of software developers, business operations specialists, project management specialists and construction managers all increasing substantially. While many of the occupations in this category saw growth in line with the regional trend, those related to engineering fields or computer networks and architecture tended to decline over the period from 2013 to 2023. These are also some of the highest earning occupations in the broadband workforce.

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**Exhibit 37: Baseline Analysis for Broadband Occupations in the Brazos Valley COG Region, Construction, Installation, & Support Occupations**

SOC Code	Occupation Name/Description (Construction, Installation, & Support Occupations)	Total Jobs 2023	Percent change from 2013	Median Earnings
43-4051	Customer Service Representatives	3,715	>100.0%	\$36,009
53-3032	Heavy & Tractor-Trailer Truck Drivers	2,241	43.90%	\$47,547
47-2061	Construction Laborers	1,886	2.20%	\$35,242
53-7062	Laborers & Material Movers, Hand	1,741	41.80%	\$34,623
47-1011	First-Line Supervisors, Construction & Extraction	1,066	25.40%	\$60,690
51-2098	Miscellaneous Assemblers & Fabricators	1,015	88.20%	\$31,473
49-1011	First-Line Supervisors of Mechanics & Repairers	803	47.30%	\$60,757
47-2073	Construction Equipment Operators	795	7.80%	\$46,276
51-4121	Welders, Cutters, Solderers, & Brazers	760	5.50%	\$47,783
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	564	49.80%	\$38,931
49-2022	Telecom Equipment Installers & Repairers	191	55.20%	\$33,900
49-9051	Electrical Power-Line Installers & Repairers	187	0.50%	\$61,417
47-3013	Helpers--Electricians	117	-14.60%	\$44,973
51-2028	Electrical, Electronic, & Electromechanical Assemblers	93	-35.70%	\$36,510
47-5022	Excavating & Loading Machine Operators, Surface	89	-32.90%	\$54,982
49-9052	Telecommunications Line Installers & Repairers	85	-6.50%	\$72,569
47-5023	Earth Drillers, Except Oil & Gas	16	-72.50%	\$49,037
43-2021	Telephone Operators	<10	—	—

**Exhibit 38: Baseline Analysis for Broadband Occupations in the Brazos Valley COG Region, Skilled Technicians**

SOC Code	Occupation Name/Description (Skilled Technicians)	Total Jobs 2023	Percent change from 2013	Median Earnings
47-2111	Electricians	787	37.20%	\$49,299
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	251	19.40%	\$53,635
39-1022	First-Line Supervisors of Personal Service Workers	149	66.10%	\$36,528



SOC Code	Occupation Name/Description (Skilled Technicians)	Total Jobs 2023	Percent change from 2013	Median Earnings
47-4011	Construction & Building Inspectors	141	>100.0%	\$55,515
17-3029	Engineering Technicians, Except Drafters, All Other	114	-67.80%	\$42,680
17-3011	Architectural & Civil Drafters	106	0.90%	\$48,878
17-3031	Surveying & Mapping Technicians	80	-7.70%	\$42,726
17-3019	Drafters, All Other	38	84.40%	\$45,283
17-3012	Electrical & Electronics Drafters	36	-2.10%	\$49,443
49-2021	Radio Tower Equipment Installers & Repairers	<10	—	—

**Exhibit 39: Baseline Analysis for Broadband Occupations in the Brazos Valley COG Region, Project Designers & Specialists**

SOC Code	Occupation Name/Description (Project Designers & Specialists)	Total Jobs 2023	Percent change from 2013	Median Earnings
13-1082	Project Management Specialists	1,362	>100.0%	\$66,416
41-3091	Sales Reps, Miscellaneous Services	948	48.60%	\$49,298
13-1199	Business Operations Specialists, All Other	921	>100.0%	\$69,323
11-9021	Construction Managers	755	>100.0%	\$73,248
15-1252	Software Developers	692	81.60%	\$99,586
15-1244	Network & Computer Systems Administrators	364	-18.00%	\$76,518
17-2051	Civil Engineers	336	-23.50%	\$76,891
13-1051	Cost Estimators	225	25.30%	\$65,062
19-5011	Occupational Health & Safety Specialists	183	87.30%	\$68,957
15-1253	Software Quality Assurance Analysts & Testers	113	>100.0%	\$88,099
11-9179	Personal Service Managers, All Other	108	>100.0%	\$43,174
19-5012	Occupational Health & Safety Technicians	104	86.50%	\$46,785
17-2071	Electrical Engineers	100	-30.90%	\$94,902
15-1241	Computer Network Architects	72	-0.60%	\$112,334
17-2072	Electronics Engineers, Except Computer	41	-36.10%	\$106,473

### 6.2.2.2 Leon County

Of the 43 broadband occupations identified, 16 had at least 10 jobs in Leon County in 2023. Most of the broadband occupations that did have a few jobs or resident workers were in the Construction, Installation and Support category, along with electricians and mobile heavy equipment mechanics in the Skilled Technicians category and construction managers and project management specialists in the Project Designers and Specialists category. Many of these occupations follow a county trend where there was a large spike in employment between 2022 and 2023 of about 900 jobs.

**Exhibit 40: Leon County Broadband Workforce Occupations With At Least 10 Jobs In 2023, Construction, Installation, & Support Occupations**

SOC Code	Occupation Name/Description (Construction, Installation, & Support Occupations)	Total Jobs 2023	Percent change from 2013	Median Earnings
47-2061	Construction Laborers	386	27.50%	\$38,206
47-2073	Construction Equipment Operators	222	14.60%	\$49,204
53-3032	Heavy & Tractor-Trailer Truck Drivers	212	31.00%	\$50,041
47-1011	First-Line Supervisors, Construction & Extraction	126	2.90%	\$64,972
53-7062	Laborers & Material Movers, Hand	74	16.20%	\$33,606
51-4121	Welders, Cutters, Solderers, & Brazers	66	-29.90%	\$45,730
43-4051	Customer Service Representatives	52	30.00%	\$35,471
49-1011	First-Line Supervisors of Mechanics & Repairers	41	14.00%	\$62,734
51-2098	Miscellaneous Assemblers & Fabricators	38	>100.0%	\$34,325
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	25	-9.10%	\$49,069

**Exhibit 41: Leon County Broadband Workforce Occupations With At Least 10 Jobs In 2023, Skilled Technicians**

SOC Code	Occupation Name/Description (Skilled Technicians)	Total Jobs 2023	Percent change from 2013	Median Earnings
47-2111	Electricians	82	20.40%	\$56,189
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	39	-15.70%	\$52,398

**Exhibit 42: Leon County Broadband Workforce Occupations With At Least 10 Jobs In 2023, Project Designers & Specialists**

SOC Code	Occupation Name/Description (Project Designers & Specialists)	Total Jobs 2023	Percent change from 2013	Median Earnings
11-9021	Construction Managers	58	53.00%	\$82,692
13-1082	Project Management Specialists	34	>100.0%	\$79,892

SOC Code	Occupation Name/Description (Project Designers & Specialists)	Total Jobs 2023	Percent change from 2013	Median Earnings
41-3091	Sales Reps, Miscellaneous Services	33	42.80%	\$57,290
13-1051	Cost Estimators	17	-3.80%	\$69,632

### 6.2.3 Broadband Pipeline Analysis

This section analyzes the demand and supply of the broadband pipeline based on the 43 defined broadband occupations.

#### 6.2.3.1 Demand Alignment

Demand for the broadband workforce is estimated by reviewing regional job postings for occupations within each category over a five-year period. To exclude demand from industry sectors not related to broadband deployment and maintenance, these job postings are from employers that fall into the broad construction, utilities and information sectors.<sup>14</sup>

##### 6.2.3.1.1 Construction, Installation and Support

The 10 most in-demand occupations in the Construction, Installation and Support category over the last five years accounted for 93 percent of the 936 job postings in this category in the region (Exhibit 43). Most of these occupations have turnover rates at or below the regional monthly average of 5.8 percent. This means that workers in these jobs tend to stay with their employer more than average. Among the top 10 most in-demand occupations in this category are the three key telecommunication and electrical installer and repairer occupations and the two supervisory occupations, which have the lowest turnover rates.

More than 90 percent of job postings for Construction, Installation and Support that listed education requirements requested only a high school diploma or GED education, which is consistent with the expected required education levels that define this category.

Nearly one-third (30 percent) of these job postings come from seven companies in the region, including infrastructure construction companies, such as Big Creek Construction and MasTec, utility and energy firms, like MDU Resources and Southern Star, and telecommunication providers like Altice USA and Dish.

Construction, power tool operations, heavy equipment and machinery are some of the most-requested specialized skills in this category. Journeyman lineman and OSHA certifications were also frequently requested.

#### Exhibit 43: In-Demand Construction, Installation and Support Occupations in the Brazos Valley COG Region

SOC Code	Occupation Name/Description	Job Postings	Percent of Total	Turnover Rate
49-2022	Telecom Equipment Installers & Repairers	124	13.20%	4.30%
53-3032	Heavy & Tractor-Trailer Truck Drivers	116	12.40%	5.30%
43-4051	Customer Service Representatives	114	12.20%	7.50%

<sup>14</sup> All job postings demand data are sourced from Lightcast 2024.3—QCEW Employees, Non-QCEW Employees, and Self-Employed.

SOC Code	Occupation Name/Description	Job Postings	Percent of Total	Turnover Rate
47-2061	Construction Laborers	110	11.80%	4.50%
47-2073	Construction Equipment Operators	106	11.30%	5.80%
49-1011	First-Line Supervisors of Mechanics & Repairers	78	8.30%	4.30%
49-9052	Telecommunications Line Installers & Repairers	70	7.50%	3.80%
49-9051	Electrical Power-Line Installers & Repairers	57	6.10%	2.50%
53-7062	Laborers & Material Movers, Hand	49	5.20%	8.70%
47-1011	First-Line Supervisors, Construction & Extraction	46	4.90%	4.40%

#### 6.2.3.1.2 Skilled Technicians

Electricians were the most in-demand occupation in this category by far, accounting for more than 38 percent of the Skilled Technicians job postings over the last five years (Exhibit 44). Electricians were followed by construction and building inspectors, mobile heavy equipment mechanics and architectural and civil drafters, which collectively accounted for 85 percent of all job postings in the category. All these occupations have average or below-average turnover rates, indicating that the workers in these jobs tended to stay with their employer for longer than the average job.

About two-thirds of Skilled Technicians job postings listed an education requirement, and those that did tended to only request a high school diploma or GED. However, nearly 82 percent of occupations that listed experience requested between two and six years of relevant work experience. These Skilled Technicians occupations tend to require more training than the **Construction, Installation and Support** category, though that training may not result in traditional education credentials.

Construction, project management, heavy equipment and machinery, and electrical systems and equipment were among the most in-demand specialized skills for Skilled Technicians occupations.

#### Exhibit 44: In-Demand Skilled Technician Occupations in the Brazos Valley COG Region

SOC Code	Occupation Name/Description	Job Postings	Percent of Total	Turnover Rate
47-2111	Electricians	57	38.30%	4.30%
47-4011	Construction & Building Inspectors	37	24.80%	5.20%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	19	12.80%	4.40%
17-3011	Architectural & Civil Drafters	15	10.10%	3.90%
17-3019	Drafters, All Other	9	6.00%	4.20%

#### 6.2.3.1.3 Project Designers and Specialists

The top six most in-demand occupations account for 85 percent of the 595 Project Designers and Specialists job postings (Exhibit 45). Most of these occupations are more aligned with construction management and engineering services (i.e., construction managers, project management specialists, civil engineers and cost estimators). While there was some demand for computer service occupations (i.e., software developers, computer network architects and network and computer systems administrators), these accounted for far less of job posting demand over the five-year period (less than 14 percent). Most occupations in this category have below-average turnover rates, except for occupational health and safety technicians and specialists.

About 60 percent of Project Designers and Specialists job postings that listed education requirements requested a bachelor's degree or higher, and about half asked for four years or more of relevant work experience among those that listed experience requirements. These requests are consistent with the high education credentials that are typically expected of these occupations.

More than 40 percent of Project Designers and Specialists job postings asked for construction or project management skills. Subcontracting, construction management and project scheduling were also in high-demand — all indicative of the concentration in construction and engineering management roles in this category.

**Exhibit 45: In-Demand Project Designers and Specialists Occupations in the Brazos Valley COG Region**

SOC Code	Occupation Name/Description	Job Postings	Percent of Total	Turnover Rate
11-9021	Construction Managers	192	32.30%	2.70%
13-1082	Project Management Specialists	99	16.60%	4.10%
41-3091	Sales Reps, Miscellaneous Services	67	11.30%	5.10%
15-1252	Software Developers	50	8.40%	2.40%
17-2051	Civil Engineers	49	8.20%	2.80%
13-1051	Cost Estimators	49	8.20%	5.30%
15-1241	Computer Network Architects	22	3.70%	2.70%
19-5011	Occupational Health & Safety Specialists	17	2.90%	6.00%
19-5012	Occupational Health & Safety Technicians	17	2.90%	6.50%
15-1244	Network & Computer Systems Administrators	10	1.70%	3.10%

### 6.2.3.2 Supply Alignment

Regional supply of the broadband workforce is measured by a combination of accredited program completions, active apprenticeships, and available high school CTE programs. Though the relationship between educational pathways and occupations is not one-to-one, the reviewed programs give a sense of the supply of workers with credentials and skills relevant to the broadband workforce. Occupations with a limited or declining supply of talent in the region are especially important to consider in preparation for the needs of future broadband development.<sup>15</sup>

#### 6.2.3.2.1 Construction, Installation and Support

System and networking management programs at TAMU conferred more than 900 awards in 2023, consistent with previous years. This type of program contributes to the supply of workers who can fill telecommunications equipment installer and repairer occupations, one of the key telecommunications occupations in the **Construction, Installation and Support** category. There also have been 30 to 40 active telecommunications line installer and repairer apprentices living in the region over the last three years and 30 to 60 active electrical power-line installer and repairer apprentices consistently since 2013. These workforce training programs, apprenticeships and electrical CTE programs at Brenham, Bryan and North Zulch ISDs all contribute to a steady talent supply for the key telecommunications occupations in the region.

<sup>15</sup> Accredited program completion data are sourced from the National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS) via Lightcast 2024.3—QCEW Employees, Non-QCEW Employees, and Self-Employed. Data on apprenticeships are sourced from the US Department of Labor, Registered Apprenticeship Partners Information Database System (RAPIDS). Data on CTE programs are sourced from the Texas Education Agency (TEA).

Since 2013, the region also has had a steady supply of completions in programs related to construction trade supervisors from TAMU and Blinn College, such as construction engineering technician and architectural and building science programs, with more than 5,000 completions in 2023 — mostly from TAMU. Construction management and inspection CTE programs at Brenham and College Station ISDs also contribute to the long-term supply of this kind of occupation.

There is a similar trend for programs related to mechanics and installation supervisors, such as the manufacturing engineering technician and operations management and supervision programs at TAMU, which annually confers more than 1,500 awards on average. While these and similar occupations may be well supplied based on the number of regional completions, it is not certain that TAMU graduates will stay in the region to fill jobs for broadband deployment.

#### **6.2.3.2.2 Skilled Technicians**

There has been an average of 130 active electrician apprentices living in the region each year since 2013. These apprentices combined with the electrical CTE programs at Brenham, Bryan and North Zulch ISDs all contribute to the regional electrician talent supply.

TAMU also regularly confers thousands of degrees in construction engineering technician and architecture programs that may contribute to the supply of architectural and civil drafters, though there is no guarantee these graduates will stay in the region.

#### **6.2.3.2.3 Project Designers and Specialists**

Programs related to construction management, such as construction engineering technician and operations management and supervision programs at TAMU, contribute to the regional supply of construction managers. These programs have consistent, robust annual completions, though graduates may not stay in the region to work.

Similarly, programs related to civil engineering at TAMU and Blinn College contribute to a robust regional supply of talent, but many graduates will leave if there is sufficient demand for their skills.

Further illustrating the risk of talent flight, there are an unusually high number of active software developer apprentices that trained in the region over the last three years — more than 560 were apprenticing in 2023. However, nearly all these apprentices lived outside of the region. Though not the most in-demand occupation in the project design and specialist category, software developers did account for more than 8 percent of regional job posting demand in the utility, construction and information sectors over the last five years.

### **6.3 Qualitative Analysis**

The qualitative analysis includes a collection of community workforce development assets found in the county and across the region. This section also includes findings from stakeholder engagement conducted with regional partners and broadband providers in the county.

#### **6.3.1 Community Assets**

Despite Leon County having limited assets directly available in the county, it is part of the larger Brazos Valley COG region, which has a number of assets that can be leveraged to implement strategies related to building the broadband workforce. Assets are grouped and listed in Exhibit 46. Regional planning groups, including the council of government and workforce development board were identified through online research. Postsecondary institutions and K-12 institutions were identified through online research, the Integrated Postsecondary Education Data System and the Texas Education Agency.



The alignment of training efforts between these institutions and industry employers is critical to building the broadband workforce pipeline in the county.

**Exhibit 46: Regional and County Workforce Development Assets**

Category	Assets
Regional Planning Groups	Brazos Valley Council of Governments, Workforce Solutions Brazos Valley
Postsecondary Institutions	Texas A&M University-College Station, Blinn College, Blinn College District
K-12 Institutions	County school districts: Buffalo ISD, Centerville ISD, Leon ISD, Normangee ISD, and Oakwood ISD
K-12 Institutions	Regional career and technical education (CTE) programs: Brenham ISD, College Station ISD, Bryan ISD, North Zulch ISD, Navasota ISD

**6.3.2 Stakeholder Engagement Findings**

Stakeholder engagement conducted with regional partners and broadband providers in the county led to several takeaways that informed the recommendations in Section 7.4. Interviews were conducted with Workforce Solutions Brazos Valley, Brazos Valley COG, FiberLight and Windstream. Interviews addressed the following areas for the county and greater region: hiring needs, education and training, employment barriers and awareness.

**6.3.2.1 Hiring Needs**

Stakeholders were asked to share their hiring practices and to identify broadband jobs that are hardest to fill regionally.

- Companies mentioned attempting to hire locally where they can and track hires from underserved communities such as veterans, women and minorities.
- Companies mentioned that difficulty filling jobs is often not specific to the role they are filling but rather to the geography for the job, implying that more isolated areas are difficult to hire qualified workforce to serve that area.
- Some of the most challenging positions to hire are installation crews, boring crews, construction crews and network specialists, all of which require special skillsets.

**6.3.2.2 Education and Training**

Stakeholders shared their knowledge about education and training providers offering broadband career training courses or certificates regionally.

- Companies shared that they often train their employees internally, partially due to the dearth of training options and providers found regionally.
- Companies do not currently work with local schools or training providers but are eager to have the conversation about how they can engage more with schools to build their future workforce pipeline.
- Education and training providers do not offer courses related to broadband careers. Specialized programs are more so aimed toward the heavy industry, trucking and nursing sectors.

**6.3.2.3 Employment Barriers**

Stakeholders discussed the most common barriers residents face when seeking employment.

- Housing is an ongoing problem, making it hard for workers to find affordable places to live near job sites.
- Transportation impedes job seekers' ability to access career opportunities.
- Finding quality child care is a challenge for working parents.
- English language skills can be a barrier to employment for non-English speakers in the region.
- One of the biggest hurdles for individuals finding employment is related to educational attainment. There is large population without a GED, which makes most job attainment challenging.

#### 6.3.2.4 Awareness

Stakeholders were asked to share suggestions on how to build awareness around broadband career opportunities across the county.

- Community members simply do not know the broadband sector exists and certainly do not know about the career opportunities within the sector.
- Community outreach is necessary, so people understand there are high-demand, well-paying job opportunities and get excited about these opportunities, especially in installation.
- Partnerships with colleges and training partners, like Blinn College, are needed to build awareness and the workforce pipeline.

### 6.4 Strategic Recommendations

Recommendations for improving the broadband workforce in Leon County center on five areas: collaboration, alignment, awareness, diversification and funding.

#### 6.4.1 Collaboration

Collaborate with ISPs to understand in-demand occupations, skills and training credentials in real time.

- Engage with ISPs regularly through an Employer Advisory Council with shared commitment to building and diversifying the broadband workforce, meeting industry demands and driving learning and training opportunities.
- Identify what employers currently need and what they anticipate needing for workforce demand as well as understand their experience recruiting in the past in other service areas and how they plan to meet their workforce needs locally in the future.
- Validate the data for workforce needs by occupation, skillsets, timing and training requirements.
- Build strong collaborations regionally and locally between area ISPs, such as Windstream and FiberLight, and workforce development partners and training providers. Regional collaboration leads to coordination, rather than competition, with peer communities in the region ensuring all partners are working together to solve workforce challenges and provide training (e.g., working with COGs, workforce development boards, county judges, universities, community colleges and school districts).

#### 6.4.2 Alignment

Align training curriculum between workforce development entities and in-demand skills that lead to industry-recognized credentials by employers.

- Ensure area school districts have access to county-level and regional broadband workforce data to inform the development of CTE programming.
  - Establish broadband-related CTE programs at school districts across the county, starting with electrical CTE programming, then create a specific broadband career track for the most in-demand broadband occupations.
  - Recruit students from related local CTE programs to consider careers in broadband.
  - Launch internship and pre-apprenticeship programs to prepare young individuals to enter and succeed in registered apprenticeship programs in the broadband field.
  - Invite area ISPs to participate in local and regional training program courses to share more about their companies and offer students practical advice.
- Partner with postsecondary education providers to create technical and higher education programs of study that feed into broadband careers.
  - Consider developing a telecommunications component to existing college programming, such as at TAMU or Blinn College, to quickly train broadband professionals.
  - Create bridges between CTE, training providers and higher education institution programs for stackable credentials.
  - Connect students from local and regional training programs with local and regional broadband providers to connect students to job placement opportunities in real time. Give special attention to retaining a portion of the large numbers of relevant program completers at TAMU.
- Understand the local and regional landscape of industry-led certifications and the avenues for pursuing those private educational training program opportunities.
  - Partner with industry associations, like National Telephone Cooperative Association (NTCA), to establish a process to evaluate progress and ensure all local and regional broadband training programs have the flexibility to adapt to meet the current needs of the broadband sector by measuring 1) program completion/graduation, 2) credential attainment, 3) job placement, 4) wage level and 5) job retention.
- Develop programming to target adult workers interested in upskilling, reskilling or advancing in the broadband profession.
  - Identify local, regional and national partners that can help establish training and apprenticeship programs, including ISPs, industry associations, technical and community colleges, and state and local workforce development agencies.
  - Ensure apprenticeship programs are part of a clearly articulated professional pipeline that allows for continued employment and growth.
  - Offer continuing education opportunities like professional development courses, workshops and webinars to meet the future changing skills the workforce will need.
- Incorporate soft skill training into curriculum to ensure job seekers are competitive for employment opportunities and advancement.

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### 6.4.3 Awareness

Raise greater awareness and exposure to the quality career opportunities in the broadband industry.

- Launch public awareness campaigns that inform residents about the local career-oriented job opportunities linked to broadband expansion and the workforce development avenues to access those high-demand jobs.
- Invite parents, families, teachers and school counselors to participate in events that help expose young people to careers in broadband, including externship opportunities with local ISPs for local educators.
- Target adult learners who are looking to upskill or reskill (e.g., integrated education and training models that allow workers to build basic skills like ESL in the context of learning a technical skill).
- Collaborate with trusted community organizations to reach individuals who may face barriers to participation in the broadband workforce, such as rural or isolated residents who have challenges accessing training or underrepresented groups.

### 6.4.4 Diversification

Diversify talent pipelines and ensure broadband career pathways are accessible.

- Actively recruit underrepresented groups such as women and people of color.
- Target veterans whose technical skills can be retrained for broadband and offer transitional programming and training.
- Adopt a detailed prescreening application process for students interested in broadband workforce development training to identify any barriers to training completion (such as child care, transportation or housing) and offer wraparound supports accordingly.
- Partner with broadband providers to offer mobile training opportunities for job seekers with transportation challenges.
- Encourage local child care providers to participate in the Texas Rising Star program and accept child care scholarships for eligible families.

### 6.4.5 Funding

Identify and pursue public regional, state and federal funding resources to scale and sustain broadband workforce development programs.

- Utilize state funding opportunities like the Jobs and Education for Texans Grant Program, which allows CTE programs to utilize up-to-date equipment in the classroom, better preparing students for real work environments.
- Apply for the Skills Development Fund which helps businesses train and retrain workers through partnerships with public community or technical colleges, workforce boards or the Texas A&M Extension Service.
- Foster collaboration between workforce development boards and Type A or Type B economic development corporations for training through the High Demand Job Training Grant Program.
- Seek funding through the Lone Star Workforce of the Future Fund, which provides public community or technical colleges and nonprofit organizations with up to \$250,000 to help train workers in high-demand occupations.
- Ensure area training providers have applied for the eligible training provider list through the Texas Workforce Commission to access Workforce Innovation and Opportunity Act funds for eligible students.

## 7 Digital Opportunities Strategy and Needs Identification

### 7.1 Digital Opportunity Background

Despite significant global progress in digital connectivity, 2.7 billion people remain disconnected from the internet. This digital divide highlights ongoing challenges in achieving universal access, especially in underdeveloped regions where infrastructure and affordability issues persist. Digital opportunity, according to the Texas Digital Opportunity Plan (TDOP), is the full set of conditions required to achieve digital access for all Texans, including widespread affordable and reliable broadband internet, high-quality device access, digital skills training and cybersecurity awareness.<sup>16</sup>

According to current studies, the rate of broadband availability and adoption is lower across the U.S. in locations with higher rates of poverty.<sup>17</sup> In a data study commissioned by the State Education Department, digital access was found to vary greatly across geography as well as socioeconomic groups — these include populations in rural areas, communities with low rates of literacy and digital skills, aging individuals, and disabled communities.<sup>18</sup> Therefore, bridging the digital divide requires localized and individualized assessments and intervention strategies. Digital opportunity acknowledges the differences between individuals and groups of individuals in terms of skills, resources and opportunities to successfully participate in the digital world, and it empowers them to do so.

According to the Texas Broadband Development Office's TDOP, the vision for *digital opportunity*:

“Improve quality of life and promote economic growth by enabling fast, reliable and affordable broadband connectivity for all residents and businesses of Texas, promoting universal broadband adoption and providing access to digital skills development.”<sup>19</sup>

One of the main goals of the TDOP is to ‘Expand adoption of reliable, affordable broadband internet service at home for all Texans, including individuals belonging to covered populations.’ Covered populations, defined by the Digital Equity Act of 2021, includes:

- (1) Individuals who live in Covered Households.
- (2) Aging individuals.
- (3) Incarcerated individuals, other than individuals who are incarcerated in a federal correctional facility.
- (4) Veterans.
- (5) Individuals with disabilities.
- (6) Individuals with a language barrier, including English learners and those with low levels of literacy.
- (7) Individuals who are members of a racial or ethnic minority group.
- (8) Individuals who primarily reside in a rural area.

<sup>16</sup> Collins, R., Delmar, D., & Edson, S. (2024, August 22). Definitions. National Digital Inclusion Alliance.

<https://www.digitalinclusion.org/definitions/>

<sup>17</sup> Garnett, P. (2024, January 20). A handbook for the effective administration of state and Local Digital Equity Programs. Vernonburg Group.

<https://www.vernonburggroup.com/publications/a-handbook-for-the-effective-administration-of-state-and-local-digital-equity-programs>

<sup>18</sup> Moore, L. (2021, June). Achieving Digital Equity in New York. New York State Library. <https://www.nysl.nysed.gov/>

<sup>19</sup> Texas Broadband Development Office. (2024, March). Texas Digital Opportunity Plan. DIGITAL OPPORTUNITY PROGRAM.

<https://comptroller.texas.gov/programs/broadband/funding/digital-opportunity/>

## 7.2 An Ecosystem Approach

The framework for understanding digital opportunity is multifaceted and encompasses the interconnected systems of technology, policies, institutions, resources and communities that create opportunities for every participant to leverage broadband for growth, innovation and inclusion. Ecosystems encourage collaboration and help drive economic development, enhance education and promote inclusion. The term “digital opportunity ecosystems” as defined by the NTIA states:

“A digital opportunity ecosystem is a combination of programs and policies that meets a geographic community’s unique and diverse needs. Coordinating entities work together in an ecosystem to address all aspects of digital divide, including affordable broadband, devices and skill.”<sup>20</sup>

With an ecosystem approach, multiple organizations and/or informal groups are relied on to assimilate new users into digital adoption and share resources, social norms, practices and support related to using these technologies.<sup>21</sup>

According to the FCC<sup>22</sup>, three core pillars must be addressed to bridge the digital divide and achieve digital opportunity — availability, affordability and adoption.<sup>23</sup>

- **Availability:** Is there sufficient infrastructure and coverage to deliver reliable, high-speed wired or wireless broadband service and technology tools for learning?
- **Affordability:** Can learners and caregivers pay for the total cost of maintaining reliable, high-speed broadband service and technology tools for learning?
- **Adoption:** Do learners and caregivers have the information, support and skill to obtain regular, adequate access to reliable, high-speed broadband service and technology tools for learning?

The Office of Minority Broadband Initiative’s fiscal 2023 Annual Report states that a part of expanding access to broadband (as a part of the initiative’s authorizing legislation) means collaborating with anchor institutions and their stakeholders to achieve digital opportunity within the anchor community. “Anchor institutions, specifically institutions of higher education, are force-multipliers for expanding broadband access, building partnerships and leading communities toward economic growth and community vitality (U.S. Department of Housing and Urban Development, 2013).”<sup>24</sup>

Additionally, the TDOP’s primary strategies to address the needs and barriers of unserved and underserved emphasize partnering with and funding statewide organizations and funding local partners. Investment and collaboration with existing community anchor institutions and public-private partnerships is one of the best strategies for bridging the digital divide.

<sup>20</sup> Digital Equity Guide for the states. (2022, November). [https://broadbandusa.ntia.doc.gov/sites/default/files/2022-12/Digital\\_Equity\\_Guide\\_for\\_States\\_11.28.22.pdf](https://broadbandusa.ntia.doc.gov/sites/default/files/2022-12/Digital_Equity_Guide_for_States_11.28.22.pdf)

<sup>21</sup> Cook County. (2023, October). Cook County Digital Equity Plan. Cook County Digital Equity. <https://www.cookcountyil.gov/service/digital-equity>

<sup>22</sup> Federal Communications Commission FCC 22-67 . (2022b, August). <https://docs.fcc.gov/public/attachments/FCC-22-67A1.pdf>

<sup>23</sup> US Department of Education. (2022, September). Advancing Digital Equity for all. Advancing Digital Equity for All. [https://tech.ed.gov/files/2022/09/DEER-Resource-Guide\\_FINAL.pdf](https://tech.ed.gov/files/2022/09/DEER-Resource-Guide_FINAL.pdf)

<sup>24</sup> U.S. Department of Housing and Urban Development. (2013). Building Resiliency: The Role of Anchor Institutions in Sustaining Community Economic Development

It's recommended that counties develop a more robust digital opportunity plan to further identify digital inclusion gaps for addressing needs across availability, affordability and adoption. Much of the available research on digital opportunity and best practices over the past years believe that this comprehensive understanding of the ecosystem is founded on human-centered thinking and empowerment, where solutions are community driven.<sup>25 26</sup>

It is recommended to use the Technical Assistance Program Report as a supplement to develop a more robust digital opportunity plan. The methodology should be customized to align with the specific characteristics of the region and the community's definition of success. While quantitative insights can be derived from data and coverage maps, incorporating multiple qualitative data sources may be necessary to fully understand local needs. Tailored strategies should be applied based on the unique requirements and context of each community. The overarching objective of digital equity is to ensure access to high-speed broadband, technology devices, IT support and digital literacy education, with a focus on inclusivity.

### 7.3 Digital Equity Act Funding

#### 7.3.1 Digital Equity Act Summary

The Digital Equity Act (DEA) requires the NTIA to establish grant programs for promoting digital equity, supporting digital inclusion activities and building capacity for state-led efforts to increase adoption of broadband by their residents.<sup>27</sup> The DEA provides \$2.75 billion to establish three grant programs that promote digital equity and inclusion. The following programs aim to ensure all people and communities have the skills, technology and capacity needed to reap the full benefits of our digital economy.<sup>28</sup>

- **State Digital Equity Capacity Grant Program:** A \$1.44 billion formula grant program to make distributions to states based on their populations, demographics, and availability and adoption of broadband.
- **Digital Equity Competitive Grant Program:** A \$1.25 billion grant program supporting efforts to achieve digital equity, promote digital inclusion and stimulate adoption of broadband.
- **State Digital Equity Planning Grant Program:** A \$60M formula grant program for states, territories and tribal governments to develop digital equity plans.

#### 7.4 Texas Digital Opportunity Plan Summary

In March of 2024, the NTIA accepted the TDOP — the shaping of this report focused strongly on unserved and underserved populations across the state. According to the U.S. Census Bureau, Texas ranks 32 out of 50 for internet adoption.<sup>29</sup> To bridge the digital divide, the TDOP's purpose seeks to navigate non-infrastructure related digital opportunity investments and provide insight and strategies to deploy Capacity Grant funds from the NTIA over the next five years. (See Section 8.1.1 on the Digital Equity Act.) The BDO disseminated surveys, organized a statewide listening tour, and convened working groups and task forces. The insights gained from these engagement efforts significantly influenced the development of the TDOP's goals and strategies.

<sup>25</sup> Bridging the digital divide: Empowering communities through technology. Civica. (n.d.). <https://www.civica.com/en-us/campaigns/insights-from-psn-2023/bridging-the-digital-divide-empowering-communities-through-technology/>

<sup>26</sup> Aryal, A. (2024). Vol. 25 (2024): Digital Empowerment: Transforming Community Growth, Health, Economic Development, and Conservation through Innovative Technologies. View of from digital divide to Digital Empowerment: Transforming Marginalized Communities. <https://socialinnovationsjournal.com/index.php/sij/article/view/8242/6762>

<sup>27</sup> H.R.1841 - 117th Congress (2021-2022): Digital Equity Act of 2021. (2021, March 12). <https://www.congress.gov/bill/117th-congress/house-bill/1841>

<sup>28</sup> Department of Commerce, National Telecommunications and Information Administration. (n.d.). Digital Equity Act Programs. Internet for All. <https://www.internetforall.gov/program/digital-equity-act-programs>

<sup>29</sup> BDO, T. (2024). Texas Digital Opportunity Hub. <https://www.digitalopportunityfortexas.com/>

The TDOP's vision for *digital opportunity* is:

"Improve quality of life and promote economic growth by enabling fast, reliable and affordable broadband connectivity for all residents and businesses of Texas, promoting universal broadband adoption and providing access to digital skills development."<sup>30</sup>

The report encompasses the state policy priorities and efforts in various areas including economic and workforce development, education, health and business. To track these outcomes, they use the NTIA's categories of measurable objectives:

- (1) The availability of, and affordability of access to, fixed and wireless broadband technology.
- (2) The online accessibility and inclusivity of public resources and services.
- (3) Digital literacy.
- (4) Awareness of, and the use of, measures to secure the online privacy of, and cybersecurity with respect to, an individual.
- (5) The availability and affordability of consumer devices and technical support for those devices.

The TDOP is also designed to reach people who have historically faced barriers in digital opportunity. The DEA refers to these groups as Covered Populations and outlines a certain percentage of grant funds to be distributed to these groups in proportion to the total number of individuals. These population groups include veterans, immigrants, low-income households and others — almost 86 percent of Texas falls within one of the Covered Populations, with the largest category being racial and ethnic minorities (58.1 percent).

## 7.5 Broadband Funding

### 7.5.1 Broadband, Equity, Access, and Deployment Program Summary

Funded by the Bipartisan Infrastructure Law, BEAD is a federal grant program that aims to get all Americans online by funding partnerships between states or territories, communities and stakeholders to build infrastructure where we need it and increase adoption of high-speed internet. BEAD prioritizes *unserved* locations that have no internet access or that only have access under 25/3 Mbps and *underserved* locations that only have access under 100/20 Mbps.<sup>31</sup>

Congress split BEAD funding into three formula-based allocations: minimum, high-cost and remaining funds. The minimum allocation to states, Washington, D.C., and Puerto Rico will be \$100 million each; other U.S. territories will receive minimum allocations of \$25 million. On June 26, 2023, the NTIA announced Texas' allocation totaling \$3.3 billion in federal funding for the BEAD Program.<sup>32</sup> This is the largest broadband funding opportunity. Eligible BEAD subgrantees include co-ops, nonprofits, public-private partnerships, private companies, utilities, public utility districts or local government.

The Texas BDO's BEAD Challenge Process began in December 2024, and the application process will open in 2025.

<sup>30</sup> Texas Broadband Development Office. (2024, March). Texas Digital Opportunity Plan. DIGITAL OPPORTUNITY PROGRAM. <https://comptroller.texas.gov/programs/broadband/funding/digital-opportunity/>

<sup>31</sup> National Telecommunications and Information Administration. (n.d.). Broadband Equity Access and Deployment Program. BroadbandUSA. <https://broadbandusa.ntia.doc.gov/funding-programs/broadband-equity-access-and-deployment-bead-program>

<sup>32</sup> <https://comptroller.texas.gov/programs/broadband/funding/bead/>



## 7.6 Funding Opportunities Table

There are several programs for the county to consider applying for or partnering with on an application. These include the following programs administered through the BDO, U.S. Department of Agriculture (USDA) and NTIA. There are a range of factors for consideration, including match requirements, current levels of service, partnership agreements and other key criteria, which would impact which funding source(s) should be applied for and leveraged collectively to bring as much funding to the region as possible.

**Exhibit 47: Funding Opportunities Table**

Grant Program	Funding Agency	Description	Timeline	Total Allocation
<b>State Digital Equity Capacity Grant Program</b>	NTIA	States to implement plans and promote digital inclusion; additionally, the program funds an annual grant program for five years.	Winter 2024 – April 2025	Texas' tentative award allocation is \$55.6 million.
<b>Digital Equity Competitive Grant Program</b>	NTIA	Awards will focus on addressing the needs of the Covered Populations not met by the Capacity Grant Program and will strive for a diverse pool of recipients.	Fall 2024	\$1.25 billion.
<b>BEAD Program</b>	NTIA	Through state allocation and planning, this program intends to expand high-speed internet access by funding planning, infrastructure deployment and adoption programs.	2025 Challenge Process: Dec. 3-17, 2024	\$42.5 billion under IIJA. Texas was allocated \$3.3 billion. BDO call for projects in summer 2024. NTIA approval of state plan anticipated spring 2025.
<b>Texas Proposition 8: Broadband Infrastructure Fund Amendment</b>	State of Texas, administered by the Texas Comptroller	HB 9 created the Texas Broadband Infrastructure Fund (BIF) administered by the comptroller. Funds in the BIF only used for expanding broadband and telecommunications across the state.	November 2023 (Approved by Texas Voters)	\$1.5 billion funding multiple BDO programs.
<b>Just Transition Fund (JTF) Federal Access Center</b>	JTF	Funding to support match and application development costs like grant writing and engineering.	Rolling	Grants up to \$100,000.
<b>Community Development Block Grant (CDBG)</b>	Texas Department of Agriculture	Funds prioritized regional activities in non-entitlement areas of Texas. Open to units of local government.	Dec. 9, 2024	\$750,000 maximum award per application.
<b>USDA ReConnect (Future Rounds)</b>	USDA	Offers loans, grants and loan-grant combinations to facilitate broadband deployment in areas of rural America that currently do not have sufficient access to broadband.	ReConnect Round 6 TBA	Available funding varies based on loans and grants.

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## 7.7 County-specific Digital Opportunities Planning

### 7.7.1 Digital Opportunity Needs Assessment

Leon County has several community anchor institutions that may serve as critical broadband related resources to its residents. As broadband remains a critical utility for modern day living, the county should keep apprised of these institutions and their programs as future broadband opportunities may be beneficial to the community.

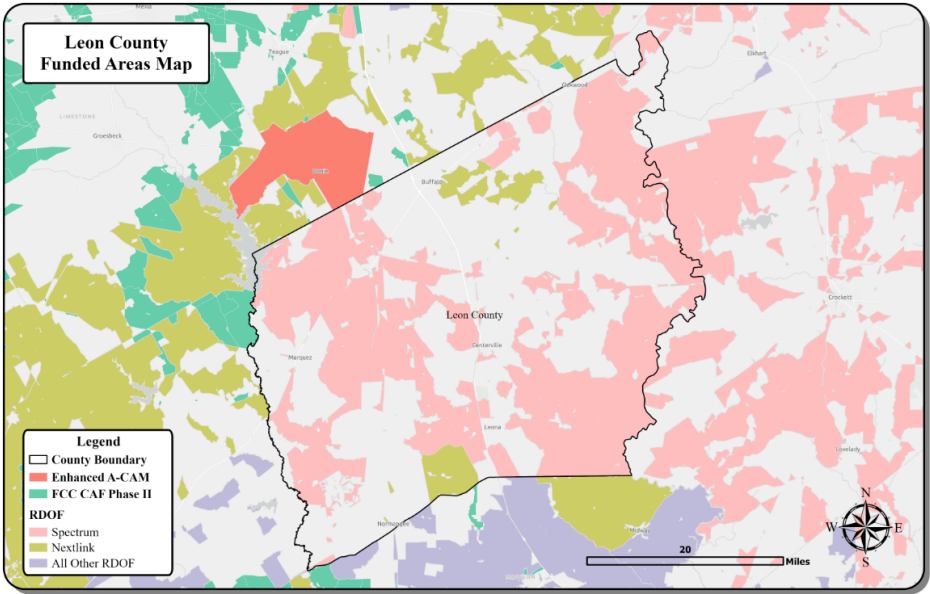
- **Brazos Valley Council of Governments (COG)**
  - The Brazos Valley COG serves as the vehicle for local governments to identify the needs, develop the responses and implement solutions to improve the quality of life for its residents. One of their programs involves providing fiber optic broadband to rural Brazos Valley health care providers.
- **Jewett Area Chamber of Commerce**
  - The Chamber focuses on the economic well-being and future growth within the Jewett area while also improving the quality of life for residents.
- **Buffalo City Housing Authority**
  - Public Housing Authorities provides housing for individuals in need of both a safe and respectable standard of living. Qualifications are based on income, the number of dependents and whether an individual is elderly and/or disabled.
- **Charles and Marie Geelan Community House**
  - The Community House is a 501(c)(3) nonprofit organization that supports senior citizens in the area by providing a safe environment for learning and socializing.
- **Workforce Solutions Brazos Valley**
  - Workforce Solutions is a partner of the American Job Center network that serves individuals seeking employment and employers seeking employees.
- **Buffalo Public Library**
  - The Buffalo Public Library offers public access to computers and free Wi-Fi.
- **Elmer P. & Jewel Ward Memorial Library**
  - Libraries are known to offer public access to computers, free Wi-Fi use for visitors and rent mobile Wi-Fi hotspots. Although this library just opened up in mid-2024, the library has potential to become a hub for residents, if it hasn't already.
- **Jewett Public Library**
  - The library offers public use of computers with internet access.
- **Buffalo Independent School District**
  - Buffalo ISD submitted a Request for Proposal in early 2024 for the implementation of Wi-Fi within school buses.
- **Leon, Centerville, Normangee and Oakwood ISDs**
  - While no known broadband-related program is in effect at Leon, Centerville, Normangee or Oakwood ISDs, every school district still serves as a great **[CAI]** due to the nature of education and should be included in future discussions.
- **Freestone Medical Center**
  - Works with Beam Healthcare to provide telehealth services.
- **St. Joseph Regional Health Center**
  - Offers telehealth services through the St. Joseph Medical Health Group throughout the Brazos Valley.

Commented [SG34]: Define this acronym earlier

**Exhibit 48: Leon County, Covered Populations**

Covered Populations	Texas	Leon County
Veterans	4.94%	7.4%
Low-Income Households	18.3%	24.1%
Individuals Living With Disabilities	11.3%	18.5%
Individuals With English Proficiency	12.2%	4.3%
Racial Or Ethnic Minorities	59.3%	24.6%
Age 60+	17.9%	32.5%

**Exhibit 49: Leon County Funded Areas Map**



**FCC Rural Digital Opportunity Fund (RDOF):** The primary federal funding program for last-mile broadband in Leon County is the RDOF. The FCC ran a competitive reverse auction ending in 2020 that awarded \$9.2 billion to 180 winning bidders. These winning bidders include Spectrum and Nextlink in Leon County. Spectrum has been awarded multiple RDOF areas on the eastern and western sides of the county to provide FTTP technology. This award covers much of the county including the communities of Concord, Pleasant Ridge, Middleton, Spillers Store, Guys Store and oilfields in the eastern section. Nextlink was also awarded 38 RDOF areas in the north, just to the east of Buffalo and in the southern section of Leon County southwest of Leona. The Nextlink RDOF awards are for projects incorporating both FTTP and fixed wireless technologies.

**FCC Healthcare Connect Fund:** \$22 million BVCOG middle mile network “BVCOGNET” was funded with support from the FCC’s Healthcare Connect Fund.

**NTIA BEAD:** In terms of broadband funding eligibility, there are 5,729 BEAD eligible locations in Leon County — 4,881 are unserved and 848 are underserved. The RDOF areas will be ineligible for BEAD funding.

## 7.8 Stakeholder Outreach

The stakeholder and outreach strategy portions of this report (Task 1 and Task 2) gathered insight into the county’s existing broadband and social infrastructure. During the outreach process, stakeholders were consulted regarding existing digital opportunity programs and resources available to the residents of the county.

### Key Takeaways

- Leon County faces significant digital opportunity challenges, with a range of efforts aimed at addressing these gaps, particularly for the elderly and economically disadvantaged populations.
- Schools and libraries in Leon County have good internet access and programs for distribution of devices, ensuring some degree of digital inclusion. For students, the county follows a 1:1 device program for grades 6-12, where students are given Chromebooks to take home. Lower grades (Pre-K through 5) have full classroom sets of devices for use during school hours.
- Outside of schools, the Texas Workforce Commission also offers devices to assist people with job applications and workforce development, playing a crucial role in bridging the digital divide for those seeking employment. In addition, the Brazos Valley Council of Governments offers digital literacy programs like resume-building workshops and basic IT training. However, the county still faces difficulties in adopting more advanced digital solutions, including cloud-based services, due to the limitations in internet connectivity and digital infrastructure. One of the local businesses provides informal tech support, primarily assisting the elderly population. This service is largely provided free of charge, demonstrating a community-centered approach to help seniors, many of whom lack basic digital skills and struggle with issues related to their devices. Given that around 70 percent of customers needing this support are over 70 years old, this kind of local assistance plays a key role in addressing digital literacy.
- Leon County struggles with poor internet speeds and a lack of broadband infrastructure, a common issue across rural Texas. Affordability can be a big issue not only for residents but also for creating business models for investment of resources to develop internet infrastructure. One provider, Holy Wireless, offers low-cost internet packages aimed at helping startups and small businesses get online. However, overall internet quality still needs significant improvement.

- Leon County’s journey toward closing the digital divide is a work in progress, with a combination of community efforts, school-based programs and external support from statewide initiatives aimed at improving internet access and digital literacy. Expanding access to reliable and faster internet remains a major goal for the county, as the current speeds are insufficient for many residents and businesses.

### **7.9 Digital Opportunity Strategy Planning**

The Digital Opportunity Roadmap is divided into three phases that progressively build on each other to create the required momentum for change. The three imperatives for the roadmap are availability, affordability and adoption.

- Phase 1: Laying the groundwork.
  - Developing the structures, processes and influence necessary to set the foundation for change.
- Phase 2: Preparing a strategy.
  - Operationalizing goals, actively communicating and supporting changes while addressing challenges.
- Phase 3: Monitor and update strategy.
  - Iterating, refining and solidifying changes in the county’s network, while expanding new programs or parts.

Each action area has pivotal implementation steps to take in each phase that help deliver on the goals for change. Mapping dependencies across areas also highlights the interconnectedness of the roadmap.

#### **Recommendations**

##### **BEAD Grant Recommendations**

- (1) The county should consider applying for the JTF funding to support a BEAD application.
- (2) Leon County should participate in the BEAD challenge process in December 2024 to review the accuracy of locations and CAIs.
- (3) For the broader BEAD application, the county should partner with a provider that can serve the eligible BEAD locations in the county.

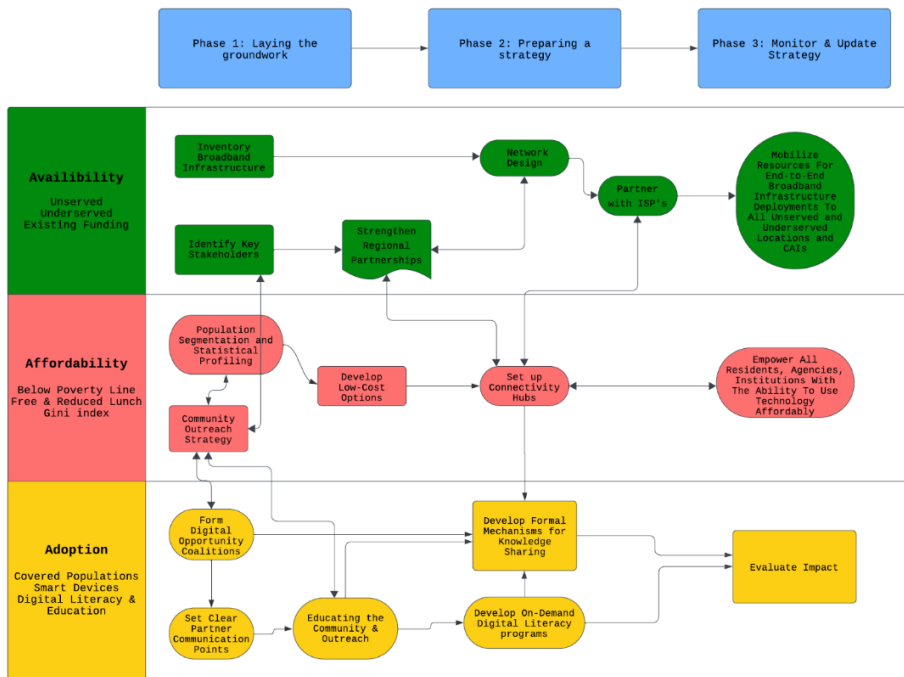
##### **Digital Opportunity Recommendations**

- (1) The county should adopt a Digital Opportunity Strategy to address adoption and affordability challenges specific to Covered Populations in the county.
- (2) The county or an eligible entity should apply for the Digital Equity Capacity Grant to fund digital adoption programs in the community. Some of the relevant eligible entity types in this county under this grant include the county (political subdivision of state) nonprofit entity, CAI or a partnership.
  - a. The county should consider working with the libraries across the county to prepare an application for this funding program, as these entities are local to the county and can be key connectivity hubs for programs such as device access and digital literacy.

## RDOF Coordination Recommendation

- (1) Engage with the providers building out RDOF areas in the county regarding the timeline for the buildout to better understand the deployment technology and buildout timeline.

## Exhibit 50: Digital Opportunities Roadmap



## 8 Network Design Assessments

Network Design Assessments introduce the purpose and intent of the High-Level Design (HLD). The information provides proposed broadband solutions that serve commercial, residential and public facilities where they are most needed — where gaps are identifiable and align with local broadband goals. This includes different idealized county solutions. Guidance throughout the network development process may continue to update this process as more information is gathered until deployment occurs.

**PLEASE NOTE:** The National Broadband Serviceable Location Fabric is a common data set of all residential and business locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is called a BSL, and the definition of a BSL is determined by the FCC. The Fabric is the foundational location database that is being used across several government programs, including the NTIA's BEAD program, the FCC's Broadband Data Collection, National Broadband Maps and more. CostQuest is the official contractor and provider of the National Serviceable Location Fabric data. Data used within this report was obtained from CostQuest and is Version 4 as of Dec. 31, 2023. Version 4 data was the expected data source for the Texas BDO's BEAD Challenge Process at the time of this writing. Please be aware that ISPs may have continued construction and implementation of new service locations since Version 4, and the data within may be outdated by the time this report finalizes. Please conduct continuing conversations with potential partners to see where changes may have been made.

### 8.1 Preliminary Network Design Assessments

#### 8.1.1 Primary Network Design Assessments

Middle- and last-mile HLDs can play an important role in helping communities and ISPs understand options to reach unserved and underserved BSLs. Determining potential routes and generating a cost per passing for each BSL for the construction of network infrastructure sheds light on the feasibility of options and provides data for discussions of those options.

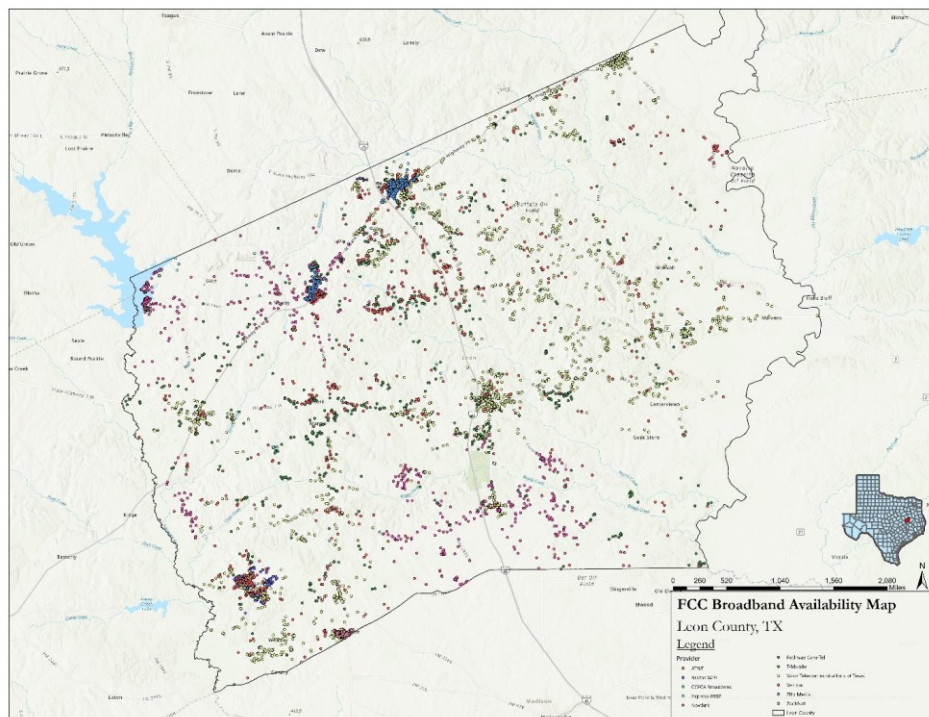
Being able to see existing middle mile and options to build last mile helps communities and ISPs to evaluate options to extend their services to the home. HLDs with high-level costs can point out the financial needs and limitations that have traditionally deterred private ISPs from investing in Leon County's unserved and underserved regions. This knowledge presented from the HLD could potentially facilitate public and private sector endeavors by lowering backhaul expenses and establishing connections to county and municipality facilities in areas where such assistance would yield the greatest benefits.

These high-level costs may also possibly be used for certain parts of grant applications.

For discussions with potential ISP partners, in addition to HLDs, it is helpful to know where current ISPs have service. In considering what ISPs to talk with to possibly take next steps toward building out the HLD areas, it is helpful to know which ISPs have infrastructure in relative proximity. Other ISPs might consider building the HLD areas, but it often makes the most financial sense for the closest ISP to extend their existing network.

To fully grasp the impact of the HLD developed for Leon County, it is essential to understand the current landscape of last-mile providers offering broadband services to served addresses, as well as the geographic distribution of these ISPs within the county. The accompanying map offers a visual representation of existing service coverage.

**Exhibit 51: Self-reported ISPs in Leon County**

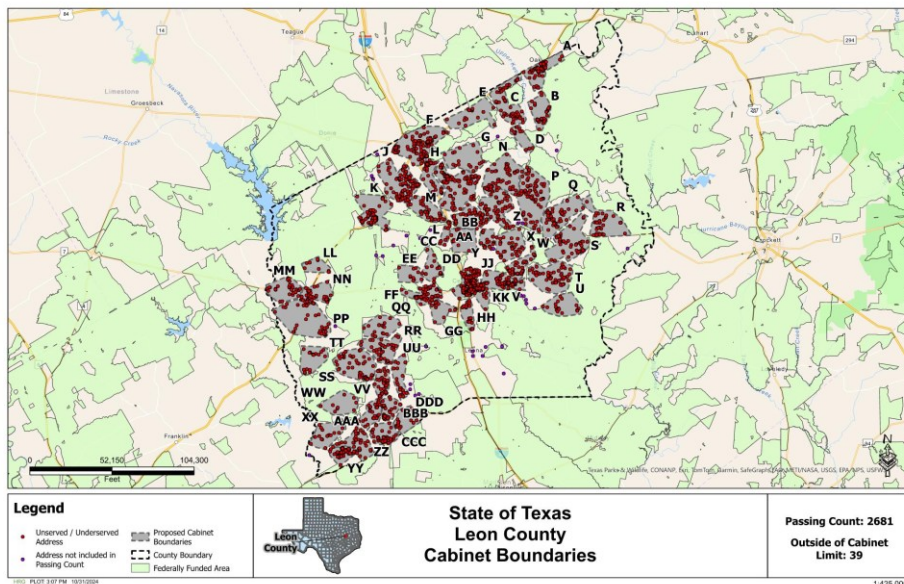


This map shows the self-reported ISPs in Leon County. Throughout the county, there is a wide variety of ISP coverage that makes it hard to select prominent ISPs throughout the entire region. However, there is a visible cluster of Valor Telecommunications of Texas in the central region of the county. There are also visible clusters of Brazos Wi-Fi in the northern section of the county, while Verizon has a presence in the western half of the county. It would make sense to discuss any HLDs for unserved and underserved addresses in proximity to these ISPs with the closest ISP(s).

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**Exhibit 52: HLD Areas for Leon County**



The above map shows the HLD areas for Leon County. Each letter labels a "cabinet" area. A cabinet area can be defined as an individual network within which all the extensions to the BSLs tie back to one cabinet. Each cabinet must be tied to a middle-mile source. The unserved and underserved BSLs are divided into cabinets to provide the most efficient and cost-effective last-mile options. Each cabinet area can be discussed with an ISP, or cabinets can be clustered together if an ISP wants to extend their network to multiple HLD areas. Cabinet areas were determined by the locations and numbers of unserved and underserved BSLs.

Please see the appendices for the network design, unserved and underserved BSL counts and high-level cost per passing.

The HLDs for the middle- and last-mile routes have been marked to leverage county right-of-way (ROW). Although the availability of ROW was not explicitly verified, given the rural nature of the HLD areas, ROW availability should not present significant issues. Additionally, the ownership of ROW along these routes was not thoroughly investigated.

When designing the middle- and last-mile infrastructure, it was crucial to incorporate measures to mitigate outages caused by natural disasters, weather events and other catastrophes. Consequently, the team developed an HLD with an entirely underground configuration, except for the most isolated addresses. For these outlying addresses, even with grant funding, building fiber was deemed infeasible. These specific locations are marked on the maps, and alternative solutions, such as point-to-point connections, are recommended to provide service to residents. While this approach may not offer the same level of protection from natural disasters as underground fiber, it represents a more cost-effective solution.

It is also helpful to assess the redundancy strategies of the surrounding middle-mile network from ISPs. As of now, there are three middle-mile providers whose middle mile covers a combination of the following roads: Interstate 45 (I-45), Route 79, TX-7, TX-75 and Co Rd 39 through Leon County. There are also smaller segments found along portions of S Farm to Market, Co Rd 811, Co Rd 831, Co Rd 1618, Robinson Ave and TX-75. In discussions with one of the middle-mile providers, they indicated their network includes redundancy. However, prior to any next steps that the county takes regarding partnership or implementation, the county should verify this information from the other two providers.

Achieving redundancy poses challenges. Efforts were made to design redundancy where feasible, but it was not possible in many areas. As highlighted in the middle-mile section, redundancy at the middle-mile level may exist, but it is often cost-prohibitive for the last mile.

While the primary focus of HLDs is to address current broadband deficiencies, they must also be designed to accommodate future growth while maintaining stable and reliable performance. Accordingly, the HLDs for the county to include provisions for excess capacity, allowing for potential network expansion as needed. Designers aimed to include sufficient excess capacity without significantly increasing costs. It is crucial to discuss this capacity with any public-private partner (P3) to ensure it aligns with their network plans.

Additionally, the design incorporates a GPON architecture with a cabinet in each design area. This architecture facilitates scalability and adaptability. The layout and capacity of the network should also be discussed with any P3 partner to ensure it integrates seamlessly with their existing network and future plans.

## **8.2 Primary Preliminary Network Design Assessments**

The current HLD is focused on extending fiber connections to the unserved and underserved regions of Leon County. Our primary objective is to ensure all BSLs within these categories are connected.

Any additional connections, including those for municipal facilities or community public access points (CPAs), can be addressed in a secondary network design if necessary. Considering the middle-mile infrastructure, the HLD network designs, the geographic locations of the BSLs and the available excess capacity, it is feasible to design segments to reach other addresses.

This HLD paves the way for comprehensive connectivity, laying a robust foundation for further expansions and enhancements. By prioritizing these unserved and underserved areas, we aim to bridge the digital divide and bring high-speed internet access to communities that need it most.

Given the substantial grant funding allocated for broadband networks, concerns have arisen regarding the availability of construction labor and materials. Therefore, it is essential to thoroughly evaluate timelines in discussions with ISPs and construction companies.

Several factors will influence the timeline, including the formation of partnerships, the definition of network designs, the bidding processes for contractors and materials, potential shortages, and the terms of agreements. These elements collectively create a complex landscape where accurately defining the construction start date and duration becomes challenging.

Due to the uncertainty associated with these factors, it is not feasible to establish a precise timeline until the terms of agreements have been finalized. This understanding underscores the importance of proactive planning and communication with all stakeholders involved in the project to ensure realistic expectations and effective project management.

By acknowledging these challenges and addressing them collaboratively, we can better navigate the uncertainties and work toward the successful implementation of the broadband network.

### **8.3 Cost Analysis of Assessments**

The HLDs utilize buried fiber to extend connectivity to underserved addresses as efficiently and cost-effectively as possible. The designs employ a GPON architecture, incorporating a cabinet in each highlighted area. While individual ISPs may not require a cabinet at every designated location, we have included them to accommodate potential costs if needed.

For very remote addresses, an alternative solution, such as point-to-point connections, may be necessary. The costs for these solutions have not been included in the current design due to the need for a detailed assessment of distance and topography.

Each HLD includes additional capacity, aiming to provide some room for growth without unnecessarily inflating costs. The goal is to ensure there is enough excess capacity to allow for network expansion while maintaining economic feasibility.

By focusing on the deployment of buried fiber and incorporating flexible design elements, these HLDs aim to deliver robust and scalable broadband solutions to the most underserved areas, fostering greater connectivity and digital inclusion.

The HLDs in this section of the report are intended to serve as a valuable tool for discussions with potential P3 providers. It is recommended that the county utilize these HLDs to explore options with providers regarding both network designs and BSLs, as well as other critical connection points.

Given that ISPs will likely require grant funding to make the business case for reaching these addresses, discussing design and BSLs is crucial to verify cost estimates for grant applications. ISPs may have existing network extension plans that these HLDs could complement. Therefore, engaging in discussions with ISPs about their needs and options, alongside municipal opportunities, will be vital in finalizing the network designs.

Further discussions with ISPs are essential to ensure policies and permit procedures help the community manage their ROWs and assist providers in extending their networks in an organized manner. Specific discussions on policies and procedures with providers can foster a true partnership within a P3 arrangement. While communities should maintain control over their ROWs, working collaboratively with ISPs can create a positive and efficient process.

If a community provides financial resources or assets in P3 negotiations, it is crucial to ensure the use of public funds and infrastructure complies with local, state and federal regulations. From meetings with middle- and last-mile providers that the consulting team successfully conducted, most ISPs expressed a keen interest and willingness to collaborate with the county and communities to enhance broadband services.

There are multiple goals that can be pursued within P3 discussions, as outlined in this report. These include stakeholder engagement, ISP collaboration, digital equity and workforce development analyses. These elements serve as foundational building blocks to address underserved and unserved BSLs and to align broadband connectivity with broader community objectives. In discussions and negotiations with ISPs, incorporating these diverse data sources will maximize the overall benefits achieved.

#### 8.4 Legal / Risk Analysis of Assessments

The broadband industry is experiencing a monumental transformation, driven by an influx of grant dollars that are reshaping networks, ISPs, construction practices, policies and procedures. While this presents significant opportunities, it also introduces potential risks.

In a P3 arrangement, if the community does not contribute municipal funds, the financial risk largely falls on the providers. However, if ISPs overextend or make imprudent decisions, the county or municipality might be left with unfinished projects. Therefore, it is essential to assess the business strength of ISPs when deciding which ones to negotiate with.

In many rural areas, there may be only one ISP providing last-mile services. During P3 negotiations, it is crucial to understand their pricing structures and how these might change if the ISP is acquired by another entity.

Communities might be asked to support grant applications with letters of support. Deciding which ISP to support, especially if there are multiple contenders, can be challenging. A framework for selecting ISPs or providing support to all applicants might be necessary. Key criteria for selection could include the ISP's business stability, willingness to connect municipal facilities and CPAs, guarantees on pricing structures, and their growth and long-term goals.

If the community invests public funds, it is imperative to clearly understand what they will receive in return and how they can control the use of that investment. In such P3 negotiations, the role of the municipal attorney is crucial. If the municipality has any ownership stake, clear definitions of responsibilities for construction, operations and maintenance must be established.

Through discussions and careful consideration of these factors, communities can ensure P3 arrangements are both beneficial and sustainable, effectively balancing the risks and rewards of broadband expansion.

#### 8.5 Research and Analysis on Comparable Networks

When evaluating the HLD and planning future steps, Leon County should examine case studies from the City of Mont Belvieu, TX, and the City of McKinney, TX, to understand their broadband network designs. This analysis will equip Leon County with valuable insights into various design routes, thereby laying a solid foundation for future design discussions.

##### City of Mont Belvieu, TX:

Some communities may elect to build, own, and operate their own network. However, in Texas, there are specific restrictions on how this can be accomplished. Mont Belvieu is one community that has successfully taken this approach.

The challenges of this path include managing all aspects of construction, material procurement, operations and maintenance. While many communities are accustomed to overseeing construction projects, owning and operating a broadband utility presents unique challenges. Unlike most municipal utilities, the broadband industry is competitive. This means municipal leadership must navigate the complexities of hiring skilled talent and managing customer choices.

Additionally, while these projects are typically financed through revenue bonds, the municipality must possess the bonding capacity to support such a large-scale initiative.

**Commented [JT36]:** Additional clarification needed over why this text is repeating. Is this supposed to say something else or be deleted entirely?

**Commented [JT37R36]:** Wrong section was copied over from previous document. Updated.

### **City of McKinney, TX:**

McKinney serves as an example of a municipality that has successfully implemented its own connectivity infrastructure while seeking P3 relationships. The City determined the need to own and operate the connectivity infrastructure for their facilities. Without eligibility for grants, they financed the infrastructure through Capital Improvement Plans (CIP) and other budgeted projects.

The City chose not to provide retail broadband services to residents and businesses. Instead, they issued a Request For Proposals (RFP) for an ISP to build fiber throughout the City, connecting all residents and businesses. The RFP included specific requirements for construction and services, attracting multiple respondents.

McKinney did not have a significant number of unserved or underserved addresses, making them ineligible for need-based grants. The responses to their RFP did not require grants or any investment from the City. As a result, McKinney has progressed significantly with their municipal ring and has already built out fiber for the majority of the City.

## 9 Appendices

### 9.1 *Data Sources For Demographic and Census Related Information*

- The American Community Survey (ACS) is an ongoing survey that provides vital information on a yearly basis about our nation and its people. Information from the survey generates data that helps inform how trillions of dollars in federal funds are distributed each year.
- The BDO published and promoted a public draft of the TDOP. We encouraged all Texans to provide feedback on the plan and received more than 300 comments on the TDOP draft. Following public comments and related revisions, the BDO submitted the draft to the NTIA on Feb. 28, 2024. The NTIA accepted the TDOP on March 28, 2024.

**Commented [JT38]:** I'm confused about this statement of source - is this pertaining to the tables above? It's not clear to me, as I assume that none of the information provided in the tables above needed to come from the ACS or TDOP.

**Commented [JT39R38]:** Corrected. Put sourcing together. Moved Task 01/02 recommendation to 9.3.

### 9.2 *Asset Mapping Sourcing*

FCC Fabric Maps	Data created with FCC Fabric latest version and exports of ISP Fixed Broadband Availability Data	<a href="https://broadbandmap.fcc.gov/data-download">https://broadbandmap.fcc.gov/data-download</a>
Locations service by Broadband Types	ULFW, FTTH, LFW, Copper, Cable	created by joining FCC fabric and ISP downloads
Unserved Locations		created by joining FCC fabric and ISP downloads
Underserved Locations		created by joining FCC fabric and ISP downloads
Served Locations		created by joining FCC fabric and ISP downloads
Number of Broadband Providers by Locations		created by joining FCC fabric and ISP downloads
Population	U.S. Census Blocks	<a href="#">US_Census_Blocks_v1 (FeatureServer) (arcgis.com)</a>
Household Median Size	ACS Median Income & Household size	<a href="#">ACS_Household_Size_Centroids (FeatureServer) (arcgis.com)</a>

Household Median Income	ACS Median Income & Household size	<a href="#">ACS Median Income by Race and Age Selp Emp Centroids (FeatureServer) (arcgis.com)</a>
Households without Smart Device	ACS Internet Connectivity	<a href="#">ACS Internet Connectivity Boundaries (FeatureServer) (arcgis.com)</a>
Median Age	ACS Median Age	<a href="#">ACS Median Age Boundaries (FeatureServer) (arcgis.com)</a>
Urban and Rural		<a href="#">NBAM Omnibus v4b Living Atlas gdb View (FeatureServer) (arcgis.com)</a>
Households without Internet	Addresses with zero providers from the FCC data	created by joining FCC fabric and ISP downloads
Right of Ways/Jurisdictions	TxDot, RR, Pipelines, City/County Limits, Waterways, etc.	Various
Fiber Locator — Metro Networks		Fiberlocator.com
Fiber Locator — Long Haul Networks		Fiberlocator.com
Fiber Locator— Connected Buildings		Fiberlocator.com

### 9.3 Recommended Organizations for Extended Stakeholder Outreach

Non-profits, Community-based, and other organizations
Local Volunteer Fire Departments
Local Electric Cooperatives
Local Telephone Cooperatives
Local Community Centers
Local Libraries

Governmental Entities
City of Centerville
Centerville ISD
City of Leona
Oakwood ISD
City of Buffalo
Buffalo ISD
Anderson, Cherokee & Leon Counties
Leon County Extension Office

Leon County Broadband Committee Members*	Entity
David Grimes	
Mike Anderson	Buffalo Economic Development and Tourism Corporation

\*Includes only committee members that did not participate in the questionnaire

### 9.4 P3 - Request for Expression of Interest (RFEI)

The purpose of this RFEI is to gauge the interest and capabilities of potential suppliers or vendors before initiating a formal procurement process. The information gathered will be used to inform Leon County's decision-making process for the development and implementation of broadband infrastructure within the county.

Leon County is situated east of Waco along Interstate 45 in eastern Central Texas. It is bordered by Limestone and Freestone counties to the north, Anderson and Houston counties to the east, Madison County to the south and Robertson County to the west. The largest community in the county is Buffalo, located near the Freestone County line, while Centerville serves as the county seat. The Burlington Northern Railroad traverses the county from Normangee to Jewett, intersecting two rail lines. Leon County encompasses 1,078 square miles of rolling plains.

Broadband, once considered a luxury, has now evolved into a critical driver for economic growth and overall quality of life. It plays a pivotal role in education, business attraction, telemedicine, tourism, remote work and supporting our senior citizens. Beyond mere convenience, broadband is now an essential tool for residents' work, medical care access and children's education. Businesses also recognize it as a key factor when contemplating relocation. Given its significance, Leon County is enthusiastically strengthening broadband services to benefit the entire community.



## Project Overview

A project overview is a high-level summary of a project that outlines its key aspects. It serves as a roadmap for stakeholders and provides a clear understanding of the project's purpose, scope and objectives {Insert Project Overview}:

The main components typically include:

- Project Title.
- Overview.
- Project Justification.
- Objectives.
- Phases of Work.
- Metrics for Evaluating and Monitoring.
- Timeline.
- Estimated Budget.

## Objective:

A project objective is a specific, measurable and time-bound goal that a project aims to achieve. It provides a clear direction for the project team and stakeholders, ensuring everyone is aligned with the project's purpose {Insert Project Objective}:

The main key characteristics typically include:

- Specific.
- Measurable.
- Achievable.
- Relevant.
- Time-bound.

## Scope of Work (SOW):

A project Scope of Work (SOW) is a detailed document that outlines the work to be performed for a project. It serves as a formal agreement between the project team and stakeholders, ensuring everyone has a clear understanding of what is expected {Insert Scope of Work}:

- Infrastructure Development: The service provider will be responsible for the design, planning and installation of broadband infrastructure in the specified territory. This includes all necessary surveys, permits and construction work.
- Partnership with ISPs: The installed infrastructure will be made available to ISPs for their use as a backhaul for their last-mile service. The service provider will coordinate with ISPs to ensure seamless integration and operation.
- Maintenance and Support: Post-installation, the service provider will provide ongoing maintenance and support to ensure the infrastructure's optimal performance and reliability.
- Grant Assistance: The service provider will collaborate with the County to identify and apply for grants that can offset the project's costs. This includes preparing necessary documentation and providing expertise on grant applications.
- Benefits to the Service Provider:

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- Public-Private Partnership: This project offers the opportunity to enter into a public-private partnership with the County, opening avenues for future collaborations and projects. Leon County does not intend to own or operate the proposed broadband infrastructure.
- Visibility and Reputation: Being part of this initiative will enhance the service provider's visibility and reputation in the broadband market.
- Financial Support: Potential access to grant funding can significantly reduce the financial burden of the project.

Leon County is looking forward to potential ISP's interest and is open to discussions to explore this mutually beneficial opportunity further. Please feel free to contact us for any clarifications or additional information.

Illustration Map (Appendix A)

High-level Design (HLD) Options (Appendix B)

### Questions and Response Guidelines

Respondents may submit questions by email to Leon County no later than {Insert Time} by the deadline set forth in the Schedule of Events. Questions concerning this RFEI must be in writing and addressed to Leon County at the email address below. Leon County expects to electronically respond with answers to the written questions on or about the date set forth in the Schedule of Events.

### Questions Contact

{Insert Contact Name and Email Address}

### Response Guidelines

Submit one (1) electronic copy titled "{Insert File Name} Leon County Broadband Network Deployment Submittal" to {insert contact email address}. Include {Insert File Name} Leon County Broadband Network Deployment Submittal as the email subject title.

### Schedule Of Events

- Issuance of RFEI: {Insert Date}
- Deadline for Submission of Questions: {Insert Date}
- Deadline for Submission of Response: {Insert Date}
- Interviews (if required): {Insert Date}

### Proposal Format

#### Introduction

Each original Proposal and copy shall contain a cover sheet with the following: "{Insert File Name} Leon County Broadband Network Deployment" and the name and address of Respondent. Proposal pages must be numbered consecutively.

Proposals must be organized as described in the section titled "General Organization of Response Content" below. Proposals not organized in this manner may be subject to disqualification. Conciseness and clarity of content are required; vague and general Proposals may be considered non-responsive,

which may result in the disqualification of said Proposals. Proposals must be complete; failure to provide all required information may result in the disqualification of the Proposal.

ALL EXHIBITS TO THIS RFEI ARE PREPARED EXCLUSIVELY FOR THIS RFEI. RESPONDENT'S SUBMISSION OF OTHER EXHIBITS OR DOCUMENTS, INCLUDING PRIOR RFEI EXHIBITS, MAY RESULT IN DISQUALIFICATION OF THE PROPOSAL.

#### General Organization of Response Content

The respondents must provide the following identifying information:

- (1) Cover Letter which includes the name and address of the business entity submitting the response.
- (2) Response to the following four categories of information:
  - a. Existing service in the vicinity of Leon County.
  - b. Details of the infrastructure (technology) you are proposing.
  - c. The service options that would be offered as the result of the project.
  - d. Operational details such as who will operate and maintain the network.
- (3) Detailed overview of Respondent's experience providing the requisite Services listed in the RFEI. Respondent must demonstrate its knowledge of and experience with activities relevant to the Services. Respondents must provide a detailed profile that describes the following:
  - a. The size and scope of all operations, including number of Respondent's employees and years in business.
  - b. References from similar fiber broadband projects.
  - c. Case studies of previous similar work performed, particularly work in the last three (3) years.
  - d. Depth and length of experience with state agencies.
  - e. Depth and length of experience with local governments.
  - f. Any other information Respondent believes is pertinent to this RFEI.
- (4) Estimated project timelines for the following:
  - a. Planning and design.
  - b. Permitting and approvals.
  - c. Construction and installation.
  - d. Testing and activation
- (5) Anticipated and unforeseen hurdles:
  - a. Provide detailed insights into the anticipated difficulties related to the scope of work.
  - b. Lay out strategies for handling unforeseen issues that may arise.
- (6) Cost and budget:
  - a. Supply estimated costs for materials (fiber, structure).
  - b. Labor (installation, maintenance).
  - c. Any recurring costs (maintenance, upgrades).
- (7) The County desires to pursue grant funding from the Broadband Equity, Access, and Deployment (BEAD) program and any subsequent funding opportunities that may become available. Discuss your intent to pursue grant funding in coordination with the County:
  - a. Describe previous successes in securing grant funding.
  - b. Explain strategies for pursuing grant funding in relation to this scope of work.

In addition, please provide any and all important information and data your firm feels are important to the project. This could include insights, recommendations, potential challenges and opportunities.

#### Response Evaluation

The response will be evaluated on completeness and compliance with the requirements. Leon County may eliminate any responses that (a) are non-conforming, (b) do not meet the minimum requirements, (c) are not economically competitive with other responses or (d) are submitted by respondents who lack appropriate qualifications.

Leon County will evaluate responses based on merit and the following criteria:

- (1) Completeness of response.
- (2) Willingness to provide last-mile service in identified regions and unserved areas of the County.
- (3) Approach and philosophy concerning broadband deployment.
- (4) Qualifications, experience and references.
- (5) Comparative financial and partnership arrangements requested.
- (6) Overall professional organization and quality of the RFEI.

### **Responder Selection**

Leon County reserves the right to reject any or all responses or portions thereof, to issue RFEI updates at any time, and to make any (or no) partnership arrangements based on county policies and needs. Leon County reserves the right to make an award without further discussion of the responses submitted; there may be no best and final offer procedure. Interviews and negotiations may be conducted with one or more of the respondents. Each initial offer should contain the respondent's best terms from a cost or price, service, timing and technical standpoint.

Leon County may consult references familiar with the respondent regarding its prior operations and projects, financial resources, reputation, performance or other matters. Submission of a response shall constitute permission for the County to make inquiries and authorization to third parties to respond to them.

Leon County may elect to initiate contract negotiations with one or more respondents including negotiation of costs/price(s) and any other issues, terms and conditions, and modifying any requirement in the RFEI. The option of whether to initiate contract negotiations rests solely with the County. No respondent shall have any rights against Leon County arising from such negotiations.

As a result of the selection of a respondent to supply products and/or services to Leon County, the County is neither endorsing nor suggesting that the respondent's product or service is the best or only solution. The respondent agrees to make no reference to Leon County in any literature, promotional material, brochures, sales presentation or the like without the express written consent of Leon County.

This RFEI does not create any obligation on Leon County to make any contract award.

### **Compliance with Federal, State and Local Laws**

Respondent warrants in submitting a response and in the performance of an award as a result of the response, that respondent has complied with, or will comply with, all applicable federal, state and local laws, ordinances and all lawful orders, rules and regulations hereunder.

### **Additional Information**

If not explicitly asked in this request, respondents are encouraged to provide additional information that may be helpful to the County.

### **Limitation of Liability**

Leon County makes no representations, warranties or guarantees that the information contained herein is accurate, complete, timely or that such information accurately represents the conditions that would be encountered in pursuing the work now or in the future. The furnishing of such information by Leon County shall not create or be deemed to create any obligation or liability upon it for any reason whatsoever and each respondent, by submitting its response, expressly agrees that it has not relied upon the foregoing information and that it shall not hold Leon County liable or responsible therefore in any manner whatsoever. Accordingly, nothing contained herein and no representation, statement or promise of Leon County, its directors, officers, agents, representatives or employees, oral or in writing, shall impair or limit the effect of the warranties of the respondent required by this RFEI and that it shall not hold Leon County liable or responsible therefore in any manner whatsoever.

### **Confidentiality**

Any portions of the response containing confidential or proprietary information should be clearly marked "Proprietary and Confidential." Leon County reserves the right to release any such information to its agents or contractors for the purpose of evaluating the respondent's response. Under no circumstances will Leon County be held liable for any damages resulting from any disclosure of respondents claimed confidential information during or after the RFEI process.

### **Leon County Confidential Information**

Specifications, drawings, sketches, models, samples, tools, computers or other apparatus programs, trade secrets, confidential research, development or commercial information, intellectual property, patents, and /or other technical or business data are hereinafter designated as "Confidential Information." Confidential Information shall not include information that (a) is generally available to the public prior to the date of this Agreement; (b) enters the public domain during the term of this Agreement through no fault of the respondent; (c) the respondent can establish, through its own contemporaneous records, was in its possession prior to disclosure of the Confidential Information to the respondent; or (d) is independently developed by the respondent without reference to or use of the Confidential Information.

The respondent shall: (a) hold and maintain all Confidential Information received in strict confidence; (b) restrict disclosure of Confidential Information only to those employees of the respondent or its wholly owned subsidiaries that have been informed of the confidential nature of the information and have agreed to be bound by the restrictions of this Agreement governing disclosure of Confidential Information, and who need to know the Confidential Information for responses to Leon County for furnishing material, software, documentation or services hereunder; and (c) not duplicate, reproduce, distribute, store in any electronic information retrieval system or disseminate Confidential Information in any other manner. All Confidential Information, whether written, oral or other furnished to the respondent hereunder, or in contemplation hereof, shall remain the property of Leon County. All copies of such Information in written, graphic or other tangible form shall be returned to Leon County or permanently destroyed at Leon County's request.

Respondent obligations with respect to the Confidential Information shall survive termination of this Agreement and remain in full force and effect for a period of five years from the date of receiving of this Agreement.

## Due Diligence

Prior to submitting a response, respondents should carefully examine all the supplied materials, including plans, specifications and designs related to this project.

### 9.5 Digital Opportunity Definitions

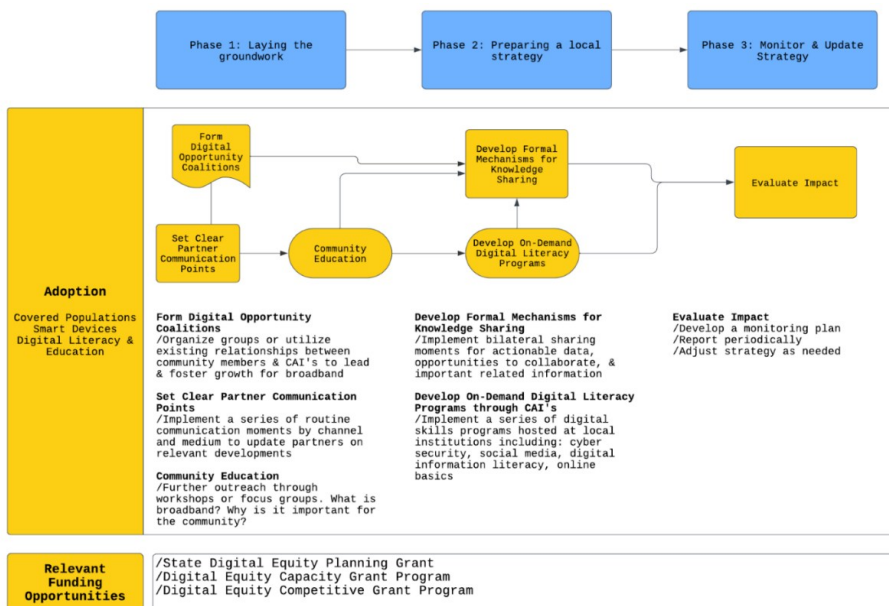
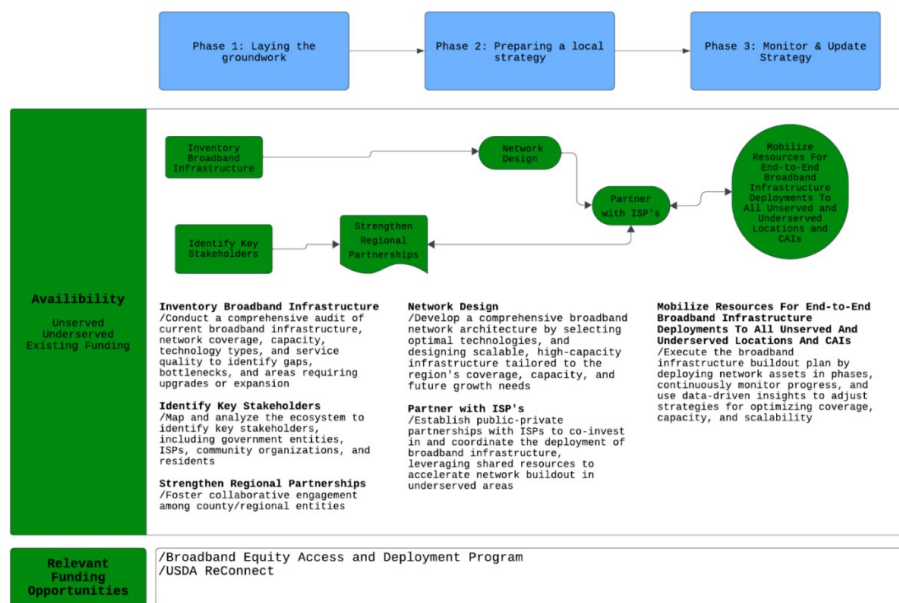
Digital Opportunity	Digital opportunity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital opportunity is necessary for civic and cultural participation, employment, lifelong learning and access to essential services.
Digital Inclusion	Digital inclusion refers to the activities necessary to ensure all individuals and communities, including the most disadvantaged, access and use Information and Communication Technologies. This includes five elements: 1) affordable, robust broadband internet service; 2) internet-enabled devices that meet the needs of the user; 3) access to digital literacy training; 4) quality technical support; and 5) applications and online content designed to enable and encourage self-sufficiency, participation and collaboration. Digital inclusion must evolve as technology advances. Digital inclusion requires intentional strategies and investments to reduce and eliminate historical, institutional and structural barriers to access and use technology.
Digital Divide	The digital divide is the disparity in access to, knowledge of, and ability to use digital tools and technology.
Digital Literacy	The American Library Associations has defined digital literacy as “the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.”
Covered Populations	<ul style="list-style-type: none"><li>(1) Individuals who live in households with income less than or equal to 150 percent of the federal poverty level.</li><li>(2) Aging individuals.</li><li>(3) Incarcerated individuals, other than individuals who are incarcerated in a federal correctional facility.</li><li>(4) Veterans.</li><li>(5) Individuals with disabilities.</li><li>(6) Individuals with a language barrier, including individuals who are English learners and have low levels of literacy.</li><li>(7) Individuals who are members of a racial or ethnic minority group.</li><li>(8) Individuals who primarily reside in a rural area.</li></ul>

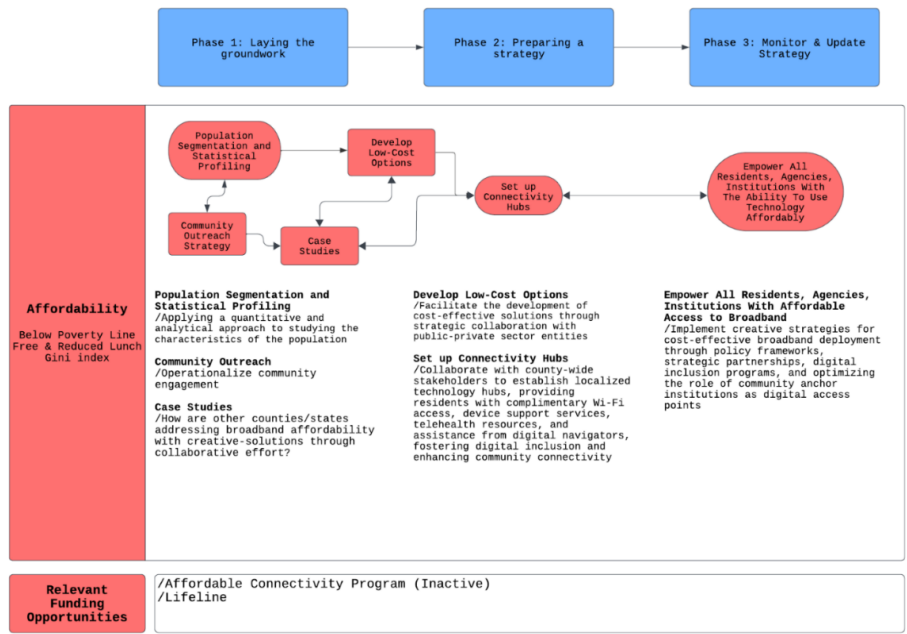
**Commented [JT41]:** Is there a reason this definition was not included in the table above with others? I'd prefer this definition be included in the table.

**Commented [JT42R41]:** Moved to table.

## 9.6 Digital Opportunity Roadmaps

Commented [JT43]: I would like these diagrams to be given their own section/title like the other - i.e. 9.6







## 9.7 Network Design Assessments

Please see each of the appendices below for the network design, unserved and underserved BSL counts and high-level cost per passing within Leon County. Please note how different the cost per passing is per cabinet area. This points out the dramatic impact the number of BSLs and the distance to BSLs have on cost per passing.

There are some steps that can be taken to lower the cost per passing. Examples include grant funding, changing the boundaries of a cabinet area (which can raise or lower the cost per passing), extending an existing network that is near unserved or underserved BSLs and utilizing a different infrastructure (aerial fiber or point to point technology, etc.).

