



PFLUGERVILLE

BROADBAND MASTER PLAN

2025

City of Pflugerville

ACKNOWLEDGEMENTS

The City of Pflugerville's staff members and citizens provided knowledge, assistance, and insight throughout the process of developing this Plan. The contributions and efforts of the following are appreciated and helped to make the Broadband Master Plan possible:

Pflugerville City Manager's Office

Pflugerville Public Works Department

Utilities

Emergency Services

Development Engineering

Transportation & Operations

Public Works Services

Pflugerville Information Technology Department

Pflugerville Independent School District

Pflugerville Police Department

Pflugerville Parks and Recreation

Pflugerville Library

Pflugerville Communications Department





Table of Contents

1

INTRODUCTION

1.0 Executive Summary	11
1.1 Objectives & Goals	12
1.2 Related Plans	14
1.3 Mapping Background	15
1.3.1 Introduction to the Data Source	
1.3.2 V6-V7 Merged Location Dataset	
1.3.3 Hierarchical Land Use Classification	
1.4 Technical Background	16
1.4.1 Locations Identified by Internet Speed Offered	
1.4.2 Technology Types	18
1.4.3 Differences in Infrastructure	19

2

DEMOGRAPHIC OVERVIEW

2.0 Demographic Overview	22
2.1 Community Snapshot	23
2.1.1 Race + Ethnicity	
2.1.2 Age Distribution	24
2.1.3 Educational Attainment	
2.1.4 Economic Characteristics	25
2.1.5 Housing	
2.1.6 Covered Populations	26

3

STAKEHOLDER ENGAGEMENT

3.0 Stakeholder Engagement	28
3.1 Community Snapshot	29
3.2 Public Input	
3.2.1 Key Takeaways	31

4

GAP ANALYSIS + COMMUNITY NEEDS

4.0 Needs + Gap Analysis	33
4.1 Determined Needs	34
4.1.1 Importance of Fiber	
4.1.1.1 Futureproofing Connectivity	
4.1.1.2 Reliability	
4.1.1.3 Speed + Performance	
4.1.2 Residential	35
4.1.2.1 Fiber Coverage	
4.1.2.2 Coaxial Coverage	
4.1.2.3 Number of Providers	
4.1.2.4 Rurality/Development	
4.1.2.5 Topography	
4.1.2.6 Residential Affordability	
4.1.2.7 Unserved + Underserved	
4.2.2 City Facilities	46
4.2.2.1 Areas of Need for FTTP	
4.2.2.2 Public Wi-Fi	
4.2.3 Economic Development	48
4.2.3.1 Current Broadband Coverage	
4.2.3.2 Unserved + Underserved	
4.2.3.3 Existing Middle Mile	

5

FUTURE PLANNING

5.0 Future Planning	56
5.1 Planning Scenario Frameworks	57
5.2 A Citizen-Centric Broadband Approach for Pflugerville	60
5.3 The Internet of Things (IoT) + The Future	61
5.3.1 IoT Applications in a Community Context	
5.3.2 The Broadband-IoT Link	

6

CONNECTIVITY IMPROVEMENT

6.0 Connectivity Improvement	65
6.1 High-Level Designs	67
6.1.1 Residential HLD	67
6.1.2 City-Facilities HLD	73
6.1.3 Economic Development HLD	76
6.1.4 Pflugerville Pfiber Plan	82
6.1.5 Network Topologies + Methodologies	85
6.1.6 Material + Capacity Considerations	85
6.1.7 Implementation Strategy	85

7

PUBLIC-PRIVATE PARTNERSHIPS

7.0 Public-Private Partnerships	86
7.1 Available Business Model Options	88
7.1.1 Ownership + Operations Models	
7.1.2 Accessory Models	89
7.1.3 Dig Once Ordinances	90
7.1.4 Middle-Mile "Broadband Currency"	91
7.1.5 Business Model Funding	92
7.1.6 Various Partnership Models	93
7.2 Provider Outreach + Engagement	95
7.2.1 Potential Partners in City of Pflugerville	96

8

DIGITAL OPPORTUNITY

8.0 Digital Opportunity	105
8.1 Resident Provider Options	106
8.1.1 Data Accuracy + Methodology	
8.2 Transition from Digital Equity Act Funding to Cross-Sector Collaboration	108
8.3 Broadband Funding	108
8.4 Digital Opportunities Planning + Strategy	111
8.4.1 Needs Assessment	
8.4.2 Digital Opportunity Strategy	
8.5 BEAD Funding	114

9

PUBLIC POLICY TOOLS

9.0 Public Policy Tools	122
9.1 Assessment of Existing + Available Public Policy Tools	123
9.2 Ordinance Recommendations	123
9.3 Procedure Recommendations	124
9.4 Engineering Design Manual Recommendations	125

10

RESILIENCY + CYBERSECURITY

10.1 Resilience	127
10.2 Cybersecurity	128
10.3 Physical Security	128
10.4 Climate Resilience + Disaster Preparedness	129

11

OVERALL RECOMMENDATIONS

11.0 Overall Recommendations	131
Future Planning	
Broadband Connectivity Improvement Options	
Public-Private Partnerships	
Digital Opportunity	
Public Policy Tools	

12

APPENDIX

12.0 Appendix	136
---------------	-----

LIST OF FIGURES

Figure 1: Race + Hispanic Origin	24	Figure 35: Count of BEAD Applicants by PAU	121
Figure 2: Number of FTTP Serviceable BSLs Within Each Area	36	Figure 36: Count of BEAD Applicants	122
Figure 3: Percent of BSLs with Fiber per Subdivision	37	Figure 37: BEAD Location Awards in Pflugerville	123
Figure 4: BSLs Served by Coaxial Cable	39	Figure 38: BEAD ISP Awardees	124
Figure 5: Average Number of Providers Within Area	40	Figure 39: BEAD Awards by Technology Type	125
Figure 6: Urban/Rural Indicator	42		
Figure 7: Residential Unserved & Underserved BSL's	45		
Figure 8: Areas of Need for FTTP Based on Stakeholder Engagement	46		
Figure 9: Areas of Need for Public Wi-Fi	47		
Figure 10: Long Haul Networks	49		
Figure 11: Metro Networks	50		
Figure 12: Distribution of Unserved + Underserved BSLs by Economic Development	51		
Figure 13: Unserved + Underserved by Economic Development BSLs	52		
Figure 14: Existing Middle Mile + Middle Mile Needs	54		
Figure 15: Citizen-centric Broadband Approach	60		
Figure 16: Residential HLD - Continued Development & Stability	72		
Figure 17: Residential HLD - Accelerated Growth	74		
Figure 18: Residential Scenario A + B, Overlaid With Fiber Subdivision	76		
Figure 19: City Facilities HLD	79		
Figure 20: Economic Development HLD - Full Digital Expansion	80		
Figure 21: Economic HLD, Scenario B - Full Digital Expansion Overlaid With Master Mobility Plan + CIP Lines	82		
Figure 22: Economic HLD, Scenario B - Full Digital Expansion Overlaid With Future Land Use	85		
Figure 23: Pflugerville Pfiber Plan (Greenfield) CIP + TxDOT Opportunities	86		
Figure 24: Pflugerville Pfiber Plan	87		
Figure 25: Pflugerville Pfiber Plan (Greenfield)	88		
Figure 26: FiberLight RFI Response	102		
Figure 27: Economic Development HLD - Full	103		
Figure 28: LCRA RFI Response	104		
Figure 29: LCRA RFI Response Existing + Planned Network	105		
Figure 30: Zayo RFI Response	106		
Figure 31: Zayo RFI Response Existing + Proposed Network	107		
Figure 32: Broadband Provider Search	111		
Figure 33: Internet Service Providers Available in Pflugerville	111		
Figure 34: City of Pflugerville BEAD Application BSLs + CAls	120		

LIST OF TABLES

Table 1: City of Pflugerville Fiber + Broadband Master Plan Goals	13
Table 2: Building Type Mapping + Land Use Mapping	16
Table 3: A Guide to Understanding Internet Speeds	17
Table 4: Pflugerville Population Projects	23
Table 5: Language Other than English Spoken at Home	24
Table 6: Educational Attainment	24
Table 7: Median Income by Type of Families	25
Table 8: Covered Populations	26
Table 9: Percent of BSLs with Fiber per Subdivision	38
Table 10: Residential Advertised Cost for Internet Plans	43
Table 11: Broadband Planning Scenario Frameworks	58
Table 12: Various Forms of Broadband Public-Private Partnerships	91
Table 13: Accessory Model Table	95
Table 14: Funding Opportunities Table	113
Table 15: Private/Philanthropic Funding Table	114
Table 16: Covered Populations	116

01

INTRODUCTION

1.0 INTRODUCTION

Executive Summary

Access to reliable, high-speed broadband is a critical infrastructure component necessary for economic growth, educational opportunity, healthcare access, and overall quality of life. In today's digital economy, broadband connectivity plays a vital role in ensuring that communities remain competitive, resilient, and inclusive. Ubiquitous broadband access across the City of Pflugerville, Texas will help this community's residents and economy thrive.

The Pflugerville Fiber & Broadband Master Plan outlines a strategic vision and roadmap for improving broadband infrastructure access, internet service affordability, and adoption of connected technology across Pflugerville. The plan was developed through a comprehensive planning process in two phases:

- The **Visioning Phase** included a demographic data review; stakeholder and public engagement; intensive research on the City of Pflugerville; infrastructure mapping and data analysis; and development of a broadband needs and gaps evaluation.
- The **Planning Phase** included analysis of future scenarios and trends; design of broadband connectivity options; a look at potential public-private partnership (P3) possibilities; evaluation of funding opportunities and digital opportunities; a review of existing city ordinance and public policy related to broadband; and finally a roadmap and set of overall recommendations.

The objective of this plan is to identify gaps and recommend actionable strategies to achieve ubiquitous, affordable, and high-quality broadband access for all residents, city facilities, and businesses in Pflugerville.



1.1 Objectives + Goals

Goal Development has been a key component of achieving this objective. The Visioning Phase was critical to establishing goals. The Planning Phase aims to develop recommendations and strategies that can achieve these goals. Inputs to the goal development work during the Visioning Phase include:

- Scope of Work
- Pflugerville Strategic Action Plan 2026-2030
 - “Connected Smart City” vision
- Stakeholder Engagement
 - City - Interviews with City Staff and Visioning Workshop
 - Residential - Public Input Meeting
- Data Analysis
 - Demographic Data
 - FCC Data Mapping
 - Infrastructure Data
- Asset Mapping
- Needs and Gaps Analysis

The organizing structure for the entire Pflugerville Fiber & Broadband Master Plan divides out key categories of broadband need. The primary categories of need are defined as residential, city facilities, and economic development.

- Residential – pertains to broadband coverage for Pflugerville residents.

- City Facilities – addresses broadband needs for facilities owned and managed by the City of Pflugerville.
- Economic Development – looks at broadband for local businesses and commercial entities.

Goals were then organized under the key pillars of broadband planning: access, adoption, and affordability. These pillars are critical categories any city needs to address in order to reduce the digital divide and build a more connected community.

- Access - focuses on expanding broadband infrastructure, particularly fiber.
- Adoption – emphasizes increased internet usage and/or subscription in underserved areas and supporting covered populations.
- Affordability - addresses competition, cost-effectiveness of fiber deployment, and evaluating current offerings for residents and city facilities.

Goal Structure Overview: The project goals are structured as a matrix covering residential, city facility, and economic development aspects, each evaluated across access, adoption, and affordability.

Table 1: City of Pflugerville Fiber + Broadband Master Plan Goals

	Residential	City Facilities	Economic Development
Access	<ul style="list-style-type: none"> Evaluate Residential Fiber Access Increase Residential Fiber Access Increase High Speed Wireless/Mobile Access 	<ul style="list-style-type: none"> Ensure High-Capacity Fiber Access to Facilities in Need Ensure High-Speed Wireless Access to Facilities/Departments in Need Protect City Right-of-Way and Assets 	<ul style="list-style-type: none"> Enable Fiber Availability to all Local Businesses/Commercial Properties Enable High-Capacity Fiber Access for Commercial and Industrial Facilities
Adoption	<ul style="list-style-type: none"> Enable Fiber Availability to all Local Businesses/Commercial Properties Enable High-Capacity Fiber Access for Commercial and Industrial Facilities 	<ul style="list-style-type: none"> Enable Any Eastward Exapansion of City Facilities Expand Public Wi-Fi Access at City Facilities Provide Resourcing, Library Programming, and Public Computing 	<ul style="list-style-type: none"> Support Small Business Digital Adoption Support Digital Skills Training for Small Businesses Enable AI, Cybersecurity, Scam Protection Training Programs
Affordability	<ul style="list-style-type: none"> Enable Increased Residential Provider Competition Evaluate Internet Affordability in the City 	<ul style="list-style-type: none"> Assess Cost Effective Fiber and Connectivity Options for Facilities 	<ul style="list-style-type: none"> Enable Affordable Fiber for All Local Businesses Assess Cost Effective and Scalable Fiber Options

1.2 Related Plans

Several recent plans commissioned by the City of Pflugerville or entities in the region were reviewed and incorporated into this plan as a measure to ensure coordination between goals and planning documents.

Pflugerville Strategic Action Plan 2026-2030

The Pflugerville Strategic Action Plan 2026–2030 lays a strong foundation for aligning with the future of broadband, particularly through its emphasis on connectivity, smart infrastructure, and inclusive development. As the city envisions becoming a “Connected Smart City,” broadband becomes a critical enabler of that vision. High-speed internet can support everything from smart mobility systems to digital access in parks and public spaces, helping residents move, gather, and engage more seamlessly.

Travis County and City of Austin Broadband and Digital Equity (2023)

The Travis County and City of Austin Broadband and Digital Equity Needs Assessment (2023) provides a comprehensive look at the digital divide in one of Texas’s most economically vibrant regions. Despite Austin’s reputation as a tech-forward city, the report finds that many residents—especially those who are low-income, people of color, older adults, rural residents, immigrants, and

others—face significant barriers to internet access, device ownership, and digital skills.

The Aspire Pflugerville 2040 Comprehensive Plan

The Aspire Pflugerville 2040 Comprehensive Plan identifies Pflugerville as a rapidly growing, diverse suburb within the Austin metropolitan area with a strong economy, high educational attainment, increasing racial and ethnic diversity, and a youthful, engaged labor force. The plan outlines historic growth, current demographic trends, economic assets, housing affordability challenges, and key planning initiatives. It highlights mobility concerns, growing housing needs, infrastructure demands, and the importance of inclusive community development.

Pflugerville Pforward Mobility Master Plan (2025)

The Pflugerville Pforward Mobility Master Plan (MMP) is a comprehensive, long-range strategy that guides the future of Pflugerville’s transportation network. Developed through extensive community engagement, the plan integrates and updates previous transportation, trails, and development plans into a unified, multimodal approach. It prioritizes safe,

connected, and accessible infrastructure for all travel modes—walking, biking, driving, and public transit—emphasizing the development of “10-Minute Neighborhoods” where residents can easily reach amenities by foot or bike.



1.3 Mapping Background

1.3.1 Introduction to the Data Source

The National Broadband Serviceable Location Fabric is a standardized dataset of all locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is referred to as a Broadband Serviceable Location (BSL). The definition of a BSL was determined by the Federal Communications Commission (FCC) and refers to a specific location 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. CostQuest is the official contractor and provider of the National Broadband Serviceable Location Fabric data. The Fabric serves as the foundational location database used across several government programs, including The National Telecommunications and Information Administration's (NTIA) Broadband Equity Access and Deployment Program (BEAD) Program, the FCC's Broadband Data Collection (BDC), the National Broadband Map, and others. The BDC data indicates what broadband services, if any, are available at locations included in the Fabric, as reported by internet service providers every six

months. This report uses Version 7 Fabric data as of June 30, 2025, and Version 6 BDC data as of December 16, 2024. This location data is summarized using a hexagon. Each hexagon typically covers 0.046 square miles and summarizes the number of BSLs at the hexagon level rather than as individual points. The symbology for each hexagon varies based on the map, please refer to the legend tied to each individual map to interpret each specific dataset correctly.

1.3.2 V6-V7 Merged Location Dataset

The V6–V7 Merged Location Dataset is an analytical product developed for broadband feasibility assessment and planning. It integrates Version 6 (V6) Broadband Data Collection service availability data with Version 7 (V7) Federal Communications Commission Broadband Serviceable Location Fabric data.

Please note that the V6–V7 Merged Location Dataset is not an official FCC product and should not be interpreted as a definitive record of broadband service availability or serviceable locations. The dataset excludes 61 locations present in the V6 Fabric that are not retained in V7, likely due to duplication, error correction,

or reclassification within the FCC Fabric. As a result, the final dataset reflects only locations contained in the V7 Fabric and may not fully represent historical V6 coverage.

Additionally, the 416 new locations introduced in V7 are not associated with V6 BDC service data and have been provisionally classified as unserved until further validation is available. Users should refer to official FCC Broadband Serviceable Location Fabric and BDC filings for authoritative records. Please continue engaging with potential partners to identify any changes that may have occurred.

1.3.3 Hierarchical Land Use Classification

The Hierarchical Land Use Classification for BSLs within the City of Pflugerville and its Extraterritorial Jurisdiction (ETJ) was developed using a stepwise method that prioritizes the best available data. Classifications were determined through (1) direct assignment of Residential BSLs using FCC Building Type Codes, (2) spatial joins with City of Pflugerville Land Use data, and (3) FCC Land Use Codes for ETJ locations without city zoning definitions. This process provides a current,

standardized view of land use across all BSLs within the city and ETJ, including ETJ areas that previously had no zoning classification. While this method ensures comprehensive coverage, the following limitations should be noted:

- **Data Dependence:** Results are reliant on the accuracy and completeness of FCC and City zoning datasets.
- **Generalization:** FCC Land Use Codes may not align perfectly with local zoning definitions.
- **ETJ Inference:** ETJ classifications are inferred from FCC codes where no City zoning exists, which may introduce inconsistencies.
- **Planned Unit Development (PUD):** PUD zoning cannot be inferred from FCC codes and is only available in City-defined zoning.

Table 2: Building Type Mapping + Land Use Mapping

Pflugerville Zoning Category	FCC Land Use Code(s)	Included
Residential	Recreation	✓
Park Facilities/Open Space	Recreation	✓
Commercial/Retail	Recreation	✓
Industrial	Recreation	✓
Agriculture/Development Reserve	Recreation	✓
Mixed Use/Corridor	Recreation	✓
Planned Unit Development	Recreation	✗

1.4 Technical Background

1.4.1 Locations Identified by Internet Speed Offered

When discussing internet speeds, the written form may occasionally be seen in the format of “Y/Z” or “YxZ” where Y is the download speed (typically with units of Mbps), and where Z is the upload speed (also typically with units of ‘megabits per second’).

As officially defined from the BEAD Notice of Funding Opportunity (NOFO)¹, the terms ‘unserved’ and ‘underserved’ (see Table 1) are the broadband standards set by the FCC and were based on perceived sufficient internet usage in 2015 which focused on internet browsing, email, and limited streaming media. Videoconferencing and other common applications in recent years demand high bandwidth in the upload direction as well.

A broadband-serviceable location that the Broadband DATA Maps show as:

- **Unserved** – a) having no access to broadband service; b) lacking access to Reliable Broadband Service offered with—(i) a speed of not less than 25 Mbps for downloads; and (ii) a speed of not less than 3 Mbps for uploads; and (iii) latency less than or equal to 100 milliseconds.

- **Underserved** – (a) not an unserved location, and b) that the Broadband DATA Maps show as lacking access to Reliable Broadband Service offered with—(i) a speed of not less than 100 Mbps for downloads; and (ii) a speed of not less than 20 Mbps for uploads; and (iii) latency less than or equal to 100 milliseconds.
- **Served** – (i) fiber-optic technology; (ii) Cable Modem/ Hybrid fiber-coaxial technology; (iii) digital subscriber line (DSL) technology; or (iv) terrestrial fixed wireless technology utilizing entirely licensed spectrum or using a hybrid of licensed and unlicensed spectrum.

In March of 2024, the FCC annual high-speed internet assessment updated the broadband standard for internet speeds to at least 100 Mbps download speed and 20 Mbps upload speed. This is the first update to the 25/3 Mbps benchmark for high-speed fixed broadband established by the FCC in 2015.

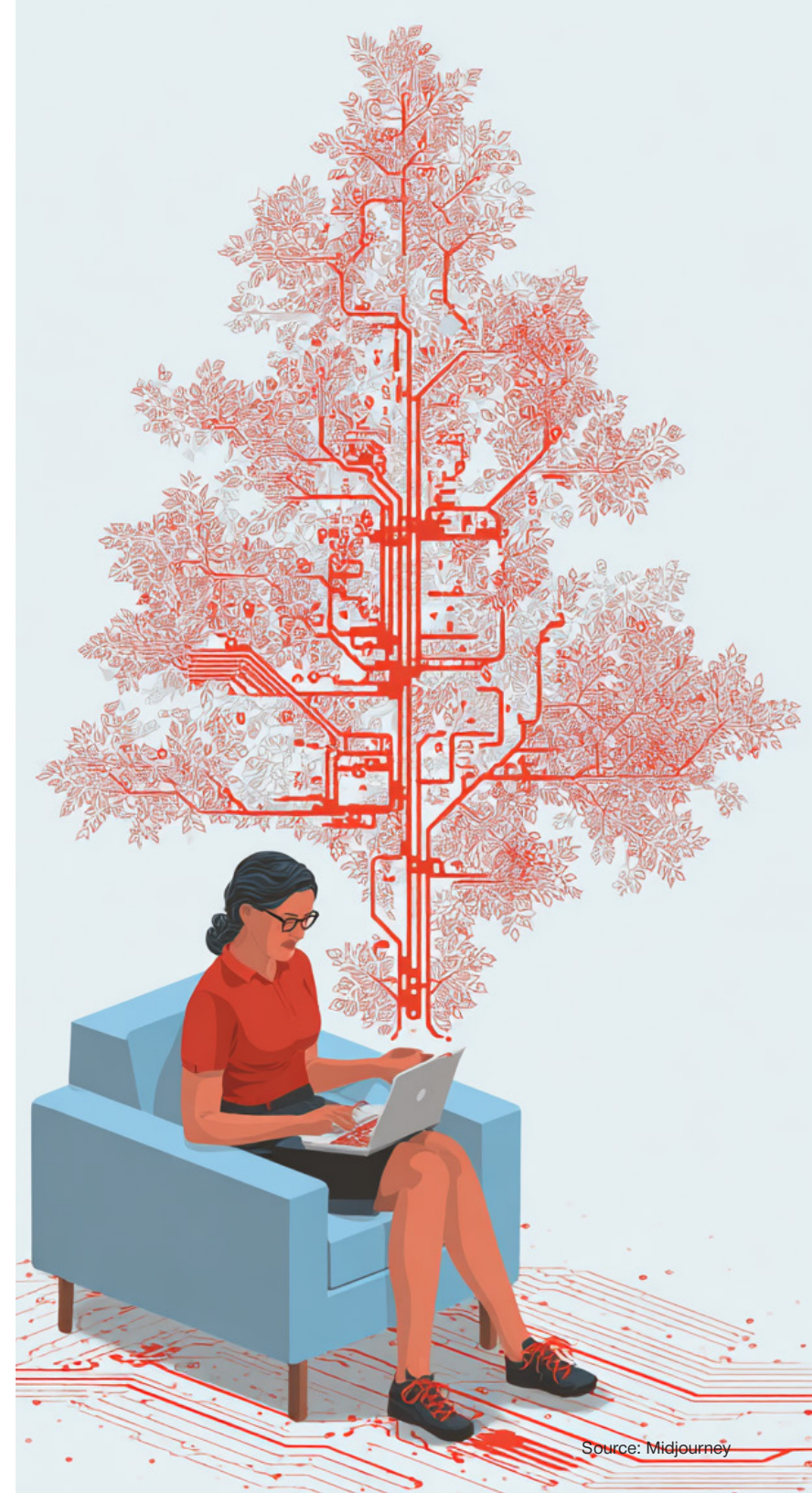
Their evaluative report found that ‘advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion.’ They estimate that 100/20 Mbps terrestrial fixed broadband service has not been physically deployed to approximately 7% of Americans. Fixed terrestrial broadband service (excluding satellite) (cont. p.18)

Table 3: A Guide to Understanding Internet Speeds

Internet connection speed matters because it determines how quickly users can access, download, and share online content, directly affecting productivity, communication, and access to essential services such as education, healthcare, and employment. Faster speeds support multiple users and devices, enable high-quality video streaming and conferencing, and reduce delays that hinder participation in today’s digital economy.

The FCC defines minimum broadband standards to ensure that all Americans have access to reliable, high-speed internet. As of 2024, the FCC’s benchmark for fixed broadband is 100 megabits per second (Mbps) download and 20 Mbps upload, an update from the previous 25/3 Mbps standard. These thresholds set the baseline for what constitutes adequate broadband service and guide federal and state efforts to close the digital divide.

Internet Download Speed	Type of Activity	Number of Wi-Fi Users
0-5 Mbps	<ul style="list-style-type: none"> • Checking Email • Streaming Music on one device • Searching Google 	1-2 people
5-40 Mbps	<ul style="list-style-type: none"> • Streaming video on one device • Video call with Skype • Online gaming for one player 	3-4 people
40-100 Mbps	<ul style="list-style-type: none"> • Streaming HD video on a few devices • Multiplayer online gaming • Downloading large files 	5-7 people
100-500 Mbps	<ul style="list-style-type: none"> • Streaming video in UHD on multiple screens • Downloading files quickly • Multi-player online gaming 	8-10 people
500-1,000+ Mbps	<ul style="list-style-type: none"> • Doing most anything on numerous devices simultaneously 	More than 10 people



has not been physically deployed to approximately 24 million Americans, including almost 28 percent of Americans in rural areas, and more than 23 percent of people living on Tribal lands.²

Where possible, the recommendation for a minimum standard for broadband is 100 Mbps symmetrical (100 Mbps download/100 Mbps upload).

1.4.2 Technology Types

Residential and business internet services use either wired or wireless connections. Wired connection types mean the wiring is connected directly to the address—these include fiber-optic, coaxial cable, and copper internet (also referred to as Digital Subscriber Line or “DSL”). Wireless connection types could include satellite, fixed wireless, as well as 5G home internet. Please note that multiple technology types or providers can serve one address—therefore, one address is not representative of one provider or technology type.

The pricing and download speeds presented below were collected by HighSpeedInternet.com⁴ which reviewed and compiled data directly from the FCC.

The following is a brief breakdown of each technology type.⁵

Copper/ DSL. Fixed wireline service using copper wire (e.g., Asymmetric or Symmetric DSL, ethernet over copper, T-1, etc.). Highly malleable and durable metal used to manufacture cables that provide internet connectivity.

- FCC Data Technology Code: 10
- Typical Maximum Download Speed: 100 Mbps
- Expected Residential Subscriber Price: \$39.99-\$55.00/ month.
- Incompatible with fiber cables, difficult to upgrade.
- Transmits data in the form of electrical signals.

Cable (Co-axial). Fixed wireline service using co-axial cable or hybrid fiber co-axial (e.g., DOCSIS 4.0). Cable uses the same infrastructure as cable television to provide homes or buildings with internet access—it runs through co-axial cables, which are the same cables used for cable TV.

- FCC Data Technology Code: 40
- Typical Maximum Download Speed: 1,000 Mbps
- Expected Residential Subscriber Price: \$19.99-\$109.99/ month.
- Operates on a shared network.
- Susceptible to network congestion and slowed speeds.
- Able to reach gigabit speeds for downloads, but only a few providers offer upload speeds above 50Mbps.

- Widely accessible, often offered as a bundled TV package deal.
 - Hybrid Cable/Fiber. A hybrid cable incorporates optical fibers and co-axial cable wires within the same jacket and is a medium for both power supply and data transmission.

Fixed Wireless. Connects a specific location—such as a farm or a house—to the internet using radio waves. Relies on an antenna to transmit and receive signals.

- Typical Maximum Download Speed: 50 Mbps.
- Expected Residential Subscriber Price: \$25.00-\$144.99/ month.
- Offers speeds ranging between 3 and 1,000 Mbps, dependent on spectrum of waves, antenna technology at the tower, and distance/ line of sight (LoS) to said tower.
- Three different technology codes that filers can use when submitting data on the availability of, and subscriptions to, terrestrial fixed wireless services in the BDC system. The codes are intended to characterize the last-mile fixed wireless technology used to deliver internet access services to end users at fixed locations. Each code is described below.⁶
 - Unlicensed Terrestrial Fixed

Wireless: Fixed terrestrial wireless service using entirely unlicensed spectrum, including service provided over Wi-Fi as a fixed solution, to make last-mile connections to fixed locations.

- FCC Data Technology Code: 70

- Licensed Terrestrial Fixed Wireless: Fixed terrestrial wireless service using entirely licensed spectrum (including priority access licenses in the 3.5 GHz band) or a hybrid of licensed, unlicensed, and licensed-by-rule spectrum to make last-mile connections to fixed locations. This includes service provided over a 4G LTE or 5G-NR mobile network but sold as a fixed solution. Providers that use licensed microwave spectrum for backhaul but otherwise use unlicensed or licensed-by-rule spectrum for last-mile connections to end users may not use this technology code.

- FCC Data Technology Code: 71

- Licensed-by-Rule Terrestrial Fixed Wireless: Fixed terrestrial wireless services using entirely licensed-by-rule spectrum or a hybrid of licensed-by-rule and unlicensed

spectrum to make last-mile connections to fixed locations. Licensed-by-rule spectrum users include operators providing last-mile connections through general authorized access (GAA) in the 3.5 GHz Citizens Broadband Radio Service (CBRS) band.

- FCC Data Technology Code: 72

Fiber-optic. Works by transmitting information using light signals through thin strands of glass or plastic. Installing fiber optic infrastructure is challenging especially in areas with rough terrain.

- FCC Data Technology Code: 50
- Typical Maximum Download Speed: 6,000 Mbps
- Expected Residential Subscriber Price: \$29.99-\$299.95/ month.
- Higher data speeds.
- Capable of transmitting data at speeds of up to 100Gbps.
- Offers symmetrical speeds for both uploads and downloads.

Satellite.⁷ Satellite broadband, another form of wireless broadband, is useful for serving remote or sparsely populated areas. Downstream and upstream speeds for satellite broadband depend on several factors, including the provider and service package purchased, the consumer's line of sight to the orbiting satellite, and the

weather. Satellite service can be disrupted in extreme weather conditions. Speeds may be slower than DSL and cable modem, but the download speed is still much faster than the download speed with dial-up internet access. For satellite broadband service, a user must have a dish or base station – the costliest item, a satellite internet modem, and a clear line of sight to the provider's satellite.

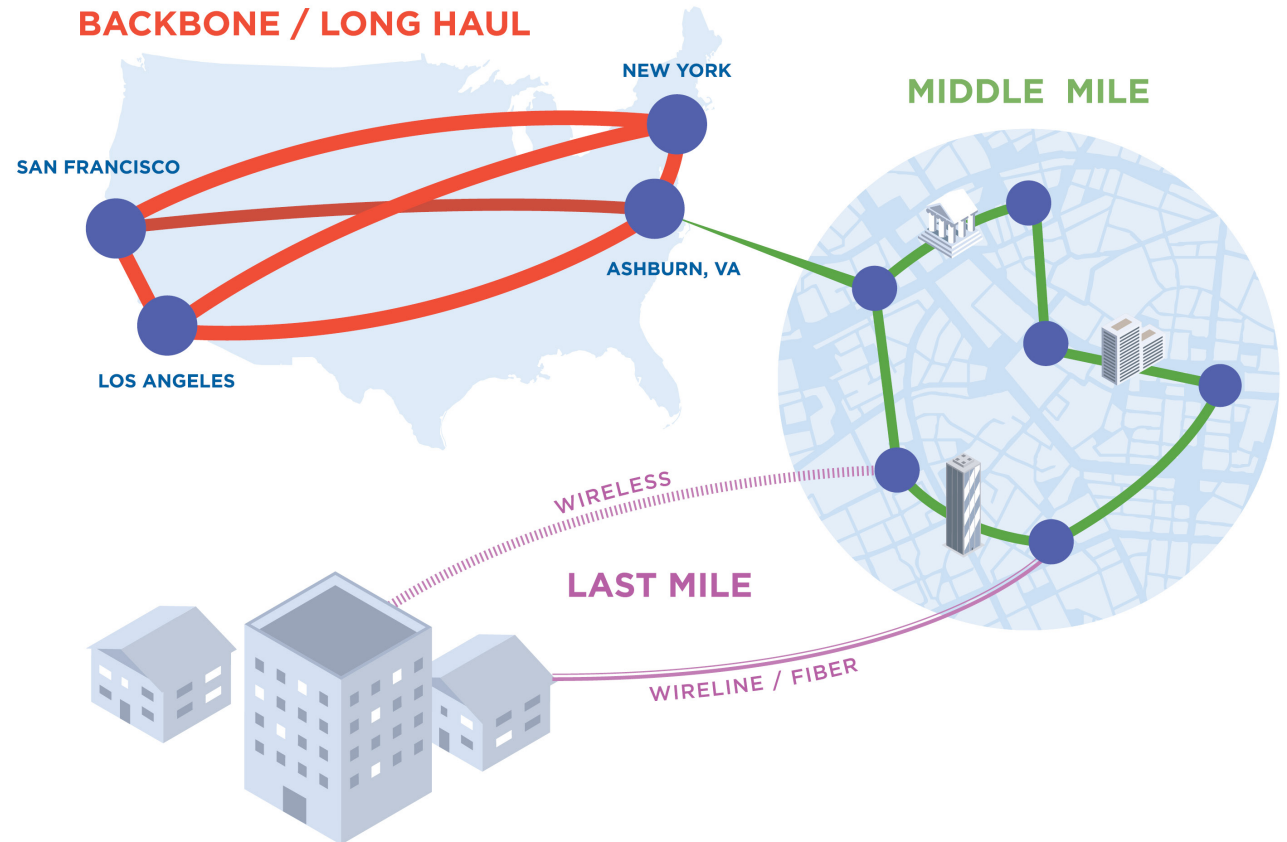
- Typical Maximum Download Speed: 100 Mbps
- Expected Residential Subscriber Price: \$30.00-\$500.00/ month.
- Offers symmetrical speeds for both uploads and downloads.
 - Geostationary Satellite: Fixed non-terrestrial wireless service using satellites in geostationary orbit (i.e., Geostationary Earth Orbit)
 - FCC Data Technology Code: 60
 - Non-Geostationary Satellite: Fixed non-terrestrial wireless service using satellites in non-geostationary orbit (i.e., Low Earth Orbit or Medium Earth Orbit)
 - FCC Data Technology Code: 60

1.4.3 Differences in Infrastructure

Middle Mile⁸ — The term “middle mile infrastructure” — (A) means any broadband

infrastructure that does not connect directly to an end-user location, including an anchor institution; and (B) includes— (i) leased dark fiber, interoffice transport, backhaul, carrier-neutral internet exchange facilities, carrier-neutral submarine cable landing stations, undersea cables, transport connectivity to data centers, special access transport, and other similar services; and (ii) wired or private wireless broadband infrastructure, including microwave capacity, radio tower access, and other services or infrastructure for a private wireless broadband network, such as towers, fiber, and microwave links.

Last Mile⁹ — The last mile is the final leg of the network that connects the local points of presence to individual homes, businesses, or end-user devices. This is often considered the most critical and challenging part of the network due to the varying distances, diverse user needs, and potential obstacles that can affect data delivery quality. The goal of the last mile is to provide reliable, high-speed connectivity directly to the end-users. Last mile networks can take various forms, such as DSL, cable, fiber-optic, wireless (like Wi-Fi or cellular networks), and even satellite connections. The technology used depends on factors like location, available infrastructure, and the desired level of service quality.



Source: California Public Utilities Commission (2022); Benton Institute Open-Access, Middle-Mile Networks (2022).

Section Footnotes

1. Notice of Funding Opportunity -1 NOTICE OF FUNDING OPPORTUNITY BROADBAND EQUITY, ACCESS, AND DEPLOYMENT PROGRAM EXECUTIVE SUMMARY A. Federal Agency Name. (n.d.). Retrieved January 30, 2023, from <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>
2. Federal Communications Commission. (2024, March 14). 2024 SECTION 706 REPORT. Federal Communications Commission. <https://www.fcc.gov/documents>
3. How much speed do you need?. HighSpeedInternet.com. (2024, August 28). <https://www.highspeedinternet.com>
4. The Consumers Guide to Internet Speed. (2020, March 25). HighSpeedInternet.com. <https://www.highspeedinternet.com/resources/the-consumers-guide-to-internet-speed>
5. bdc-availability-data-specifications.pdf | Powered by Box. (n.d.). Us-Fcc.app.box.com. <https://us-fcc.app.box.com/v/bdc-availability-spec>
6. Federal Communications Commission. (2024, January 1). Technology codes for terrestrial fixed wireless. BROADBAND DATA COLLECTION HELP CENTER. <https://help.bdc.fcc.gov/hc/en-us/articles/12271133620763-Technology-Codes-for-Terrestrial-Fixed-Wireless>
7. Getting Broadband Q&A. (2011, May 10). Federal Communications Commission. <https://www.fcc.gov/consumers/guides/getting-broadband-qa>
8. Notice of Funding Opportunity -1 NOTICE OF FUNDING OPPORTUNITY MIDDLE MILE GRANT PROGRAM EXECUTIVE SUMMARY A. Federal Agency Name. (n.d.). Retrieved May 6, 2024, from <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/MIDDLE%20MILE%20NOFO.pdf>
9. last mile | Broadband Grant Term Definition. (n.d.). Broadband.money. Retrieved May 6, 2024, from <https://broadband.money/broadband-grant-terms/last-mile>



02

DEMOGRAPHIC OVERVIEW

2.0 DEMOGRAPHIC OVERVIEW

Incorporated in 1965, the City of Pflugerville is a suburban community in central Texas, situated within the Greater Austin metropolitan area. The city has experienced rapid growth in recent years, attracting families and businesses due to its proximity to Austin and its affordable living options. Pflugerville offers a mix of suburban living with easy access to the cultural and economic opportunities of Austin.

Understanding the demographic composition of a community is essential for developing an effective broadband master plan. Population size, density, age distribution, income levels, and other socioeconomic factors influence broadband demand, digital equity, and infrastructure needs. The demographic overview provides an outlook of the community's characteristics, helping to identify underserved populations, forecast future connectivity requirements, and guide strategic broadband deployment. By aligning broadband expansion efforts with demographic trends, this plan ensures that all residents have access to reliable, high-speed internet, fostering economic growth, education, and overall quality of life.

2.1 Community Snapshot

According to the Community Snapshot from the Aspire Pflugerville 2040 plan, the City of Pflugerville and the surrounding region has seen significant population expansion, drawing newcomers from across Texas, the broader region, and the nation. Many are attracted by a robust and diverse economy paired with a high quality of life. This rapid growth has brought with it increasing demands on transportation systems, land use, and infrastructure. Projections for Travis County indicate that

Table 4: Travis County Population Projections

Travis County	
Population 2020	1,290,188
Projected Population 2030	1,572,639
Projected Population 2040	1,820,417
Projected Population 2050	2,035,923
Projected Population 2060	2,252,137
Numeric Change 2020-2040	530,229
Numeric Change 2020-2060	961,949
% Pop Change 2020-2040	41.1
% Pop Change 2020-2060	74.6

Source: Texas population projections program. Texas Demographic Center. (n.d.). <https://www.demographics.texas.gov/Projections/2024/>

this upward trend will persist over the next 20 to 40 years (See **Table 4**).

2.1.1 Race + Ethnicity

Demographic shifts include slow growth in the non-Hispanic White population, significant declines in many rural counties, and rapid growth among other groups. The Hispanic population is projected to more than double from 2010 to 2050, becoming the largest racial/ethnic group by the early 2040s. The Asian population is expected to grow fastest, especially in a few major counties including Travis. The non-Hispanic Black population will grow steadily statewide, with suburban areas—such as Pflugerville—seeing notable increases; nearly 20% of Pflugerville's residents identify as Black, the highest proportion in the Austin metro.

Pflugerville, Texas, has a diverse population with no single racial or ethnic majority (**Figure 1**). Approximately 38% of residents are non-Hispanic White, while about 32% identify as Hispanic or Latino of any race. Black or African American residents make up roughly 18%, and Asian residents account for around 8%. Additionally, about 16% of the population identify as multiracial, with smaller

percentages identifying as American Indian, Alaska Native, Native Hawaiian, or Pacific Islander. This mix reflects the city’s growing diversity and multicultural character.

This table shows that about one-third of residents in Pflugerville (30.7%) and Travis County (30.4%) speak a language other than English at home, slightly lower than the statewide rate in

Table 5: Language Other than English Spoken at Home

Language Other Than English Spoken at Home		
Texas	Travis County	Pflugerville
35.4%	30.4%	30.7%

Source: U.S. Census Bureau, 2023 ACS 1-Year Estimates

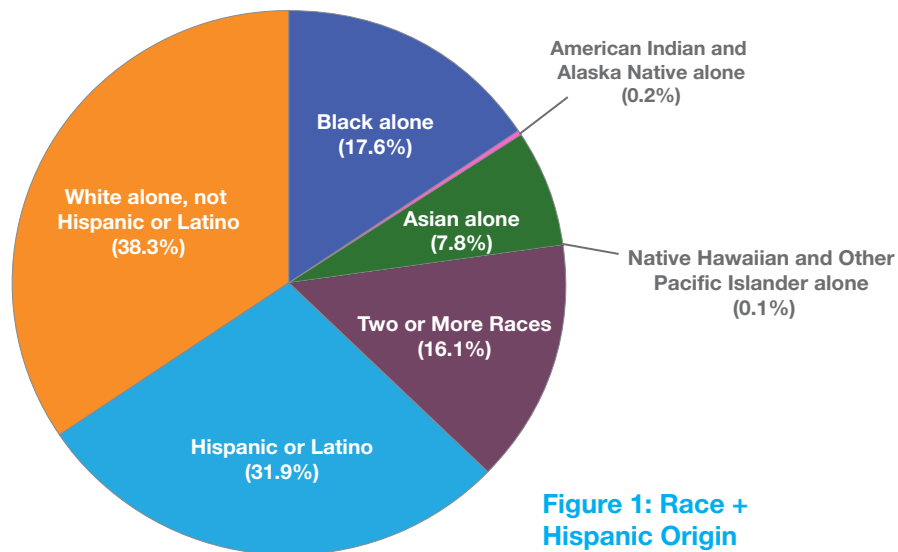


Figure 1: Race + Hispanic Origin

Source: U.S. Census Bureau, 2023 ACS 5-Year Estimates

Texas (35.4%). The numbers suggest that Pflugerville and Travis County are somewhat less linguistically diverse than the state overall, though they still have a significant multilingual population. This reflects the influence of immigrant and bilingual communities in the area, which likely contributes to cultural diversity, educational needs (e.g., bilingual programs), and demand for multilingual services.

2.1.2 Age Distribution

Pflugerville’s 2023 population pyramid shows a strong concentration of working-

age adults, particularly between ages 30 and 54, with the largest cohort in the 45–49 range. Youth under 20 make up a significant but smaller share, while seniors 65 and older represent a relatively small portion of the population. The gender balance is fairly even, though women slightly outnumber men in older age groups. Overall, the city’s age structure suggests a community anchored by middle-aged residents, with steady family presence and limited senior population, but a likely increase in older adults in the coming decades.

Table 6: Educational Attainment

Educational Attainment	
Age Group	Percent Estimate
Population 18 to 24 years	
	(X)
Less than high school graduate	8.50%
High school graduate	42.60%
Some college or associate’s degree	38.60%
Bachelor’s degree or higher	10.30%
Population 25 years and over	
	(X)
Less than 9th grade	3.00%
9th to 12th grade, no diploma	2.50%
High school graduate	21.30%
Some college, no degree	23.50%
Associate’s degree	8.50%
Bachelor’s degree	28.60%
Graduate or professional degree	12.70%
High school graduate or higher	94.50%
Bachelor’s degree or higher	41.20%

Source: U.S. Census Bureau, U.S. Department of Commerce. (n.d.). Educational Attainment. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1501.

2.1.3 Educational Attainment

Pflugerville’s educational attainment data shows a relatively well-educated population, particularly among adults 25 and older, where 94.5% have at least a high school diploma and 41.2% hold a bachelor’s degree or higher. Among younger adults aged 18 to 24, most have completed high school (42.6%) or have some college or an associate’s degree (38.6 percent), while only 8.5% lack a high school diploma. For the 25+ group, a significant share has completed some college without earning a degree (23.5%), and about one in five hold advanced degrees (associate’s, bachelor’s, or graduate). These figures suggest Pflugerville has a strong base of residents with postsecondary education, supporting a skilled workforce and potential for knowledge-based economic growth.

2.1.4 Economic Characteristics

2.1.4.1 Employment

Pflugerville has a labor force participation rate of 76% among its population aged 16 and over, with 71.7% employed and 3.9% unemployed. Women have a slightly lower labor force participation rate (70.8%) but still make up a significant share of the workforce. Most employed residents work in management, business, science, and arts occupations (52.6%), followed by

sales and office roles (20.7%). Other key industries include educational services and health care (21.2%), professional and scientific services (15.5%), and retail trade (10.4%). The majority of workers (74.3%) are in private wage and salary positions, while 20.2% work in government roles and 5.3% are self-employed.

2.1.4.2 Mobility

The majority of workers in Pflugerville commute by car alone (67.8%), with a smaller portion carpooling (7.7%) or using public transportation (0.4%). Walking (0.5%) and other means (1.5%) are minimal, but a notable 22.2% of the workforce works from home—reflecting shifts toward remote employment. The mean travel time to work is 27.3 minutes, indicating that many residents commute to job centers outside the city such as Austin

or Round Rock.

2.1.4.3 Income

In 2023, Pflugerville households earned well above state and national averages. Families in Pflugerville reported a median income of \$120,736—about 25% higher than the U.S. and 32% higher than Texas, though slightly below nearby Travis County. Married-couple households earned \$135,808, surpassing both the state and national figures, while nonfamily households earned \$71,939, more than 50% above the U.S. and Texas averages. These trends show that Pflugerville offers strong earning potential across household types, especially compared to broader state and national patterns.

2.1.5 Housing

Pflugerville’s housing market is predominantly composed of single-family

Table 7: Median Income by Type of Families

Median Income by Types of Families (2023)				
	United States	Texas	Travis County	Pflugerville
Families	\$96,922	\$91,752	\$126,667	\$120,736
Married-couple	\$115,507	\$111,784	\$150,868	\$135,808
Nonfamily	\$47,232	\$47,584	\$68,639	\$71,939

Source: U.S. Census Bureau, U.S. Department of Commerce. (n.d.). Income in the Past 12 Months (in 2023 Inflation-Adjusted Dollars). American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1901.

detached homes (74.3%) with a high occupancy rate of 96.2%, of which 71.2% are owner-occupied. Most housing was built after 1990, with significant growth between 2000–2019. The median home value is \$354,900, and most owner-occupied units have mortgages, with a median monthly cost of \$2,177; about one-fifth of these owners spend 35% or more of their income on housing. Rental housing accounts for 28.8% of occupied units, with a median rent of \$1,856, and over 40% of renters face high-cost burdens (paying 35% or more of income on rent).

2.1.6 Covered Populations

The Digital Equity Act of 2021 defined "Covered Populations" as specific groups that are more likely to experience barriers to broadband access and digital inclusion. These populations are prioritized for funding and support under digital equity initiatives. The covered populations include:

1. Individuals who live in Covered Households (individuals or families with income levels at or below 150% of the federal poverty line)
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

The following data highlights how Pflugerville compares to Texas and Travis County across key demographic and digital access indicators. Pflugerville has a higher share of veterans (8.0%) and individuals with disabilities (13.2%) than both the state and county, but it shows significantly lower poverty levels (4.9% compared to 13.7% statewide and 10.2%

countywide). Its older population (65+) is slightly below the state average but similar to the county. Notably, Pflugerville stands out in digital access, with nearly universal computer ownership (99.3%) and broadband subscriptions (96.7%), well above state averages. Among seniors, digital access is particularly strong, as only 1.4% of residents aged 65+ live in households without a computer, compared to 9.3% statewide. This suggests Pflugerville benefits from strong socioeconomic conditions and high levels of digital connectivity, despite having above-average shares of veterans and people with disabilities.

Table 8: Covered Populations (Texas, Travis County, Pflugerville)

Covered Populations			
Covered Populations	Texas	Travis County	Pflugerville
Veterans	6.1%	4%	8.0%
Poverty	13.7%	10.2%	4.9%
Individuals Living with Disabilities	12.7%	9.8%	13.2%
Age 65+	13.8%	11.4%	11.8%
Households with a Computer	95.6%	97.6%	99.3%
Households with a Broadband Internet Subscription	90.0%	93.3%	96.7%
Population 65+ with no Computer in Household	9.3%	5.0%	1.4%

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

Section Footnotes

1. Notice of Funding Opportunity -1 NOTICE OF FUNDING OPPORTUNITY BROADBAND EQUITY, ACCESS, AND DEPLOYMENT PROGRAM EXECUTIVE SUMMARY A. Federal Agency Name. (n.d.). Retrieved January 30, 2023, from <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>
2. Federal Communications Commission. (2024, March 14). 2024 SECTION 706 REPORT. Federal Communications Commission. <https://www.fcc.gov/documents>

FLUGER
PARK

03

STAKEHOLDER ENGAGEMENT

3.0 STAKEHOLDER ENGAGEMENT

3.1 Community Snapshot

To assess broadband in Pflugerville, this initiative combined quantitative data with community engagement, ensuring local needs were accurately reflected. This outreach heightened awareness and provided the study with valuable perspectives, contextualizing the preliminary Needs and Gaps Analysis. Stakeholder input helped evaluate existing conditions, potential partnerships, and the feasibility of broadband expansion. A summary of findings from outreach includes:

- **Current Infrastructure & Services:** The city utilizes fiber connections for all departments, with a 1 Gig connection at two core locations. Some facilities lease dark fiber from Optimum, while the city also owns a few lines. There is redundancy with multiple providers (Cogent & Optimum).
- **Challenges & Future Plans:** The city is addressing VPN-related connectivity issues, upgrading firewalls, and working on a new wireless controller for public Wi-Fi. As of December 2025, key projects include ensuring seamless connectivity for the new City Hall and a Public Works facility expected

in July 2026 while planning for long-term eastern expansion and fiber alternatives.

- **Expansion Considerations & Priorities:** The city is frequently evaluating the cost-effectiveness of owned fiber vs. alternatives like cellular or SD-WAN, expanding public Wi-Fi, and improving security infrastructure.
- **Digital Opportunity:** Pflugerville Library is an important community anchor institution (CAI) and offers many resources, classes, connectivity and digital devices to the public.
 - There is interest in expanding Wi-Fi coverage outside the building.
 - The library has 50 mobile hotspots available for checkout, but demand is high.
 - Digital skills training is offered but faces challenges due to limited classroom space and a need for one-on-one instruction.
- **Parks & Recreation:** Fiber to popular parks and community parks is desired.
 - Public Wi-Fi in community parks would be valuable to both residents and city staff.
- **Pflugerville ISD** recently completed a 2-year private fiber network upgrade.

- Rural areas remain underserved, and student access via mobile devices/hotspots was strong during COVID.
- There is an interest in expanding Wi-Fi density at current school locations and across additional campus areas.

- **Pflugerville Police Department**
 - Interest in having fiber running to all three cores, as well as two fiber connections running to every location in the city.
- **Public Works - Transportation & Operations** complete a Mobility Master Plan in Summer 2025 that focuses on transportation grid network expansion.
- **Public Works - Utilities:** Connectivity at remote sites is needed.
 - A cost study and evaluation of network architecture for fiber vs. wireless might prove valuable.
 - There are also water towers that could be leased to providers.

3.2 Public Input - Residential Broadband Needs

On March 26th, 2025, a public meeting was held at the Pflugerville Public Library to discuss the advancement of

broadband services in the area. The meeting was attended by city employees (3), representatives from CobbFendley (3), and members of the public (5). The session aimed to address concerns, gather feedback, and explore solutions for improving internet connectivity in Pflugerville.

3.2.1 Key Takeaways:

Major findings and key takeaways from the public meeting across the various modes of engagement (written questionnaire, public comments, Q&A) are outlined below.

- **In-Person Questionnaire Findings:**
 - Average Daily Internet Usage: 3-8 hours per day.
 - Common Uses for the Internet at Home: Work, content creation, and entertainment.
 - Issues Due to Poor Connectivity: Difficulties with video calls and online/virtual meetings.
 - Monthly Internet Costs: \$75-\$125, with some users paying as high as \$147.
 - Public Wi-Fi Needs: Limited use of public Wi-Fi, but some residents expressed interest in seeing more Wi-Fi in public spaces.
 - **Q&A Discussion:**
 - City's Role in Broadband Improvement: The city aims to form public-private partnerships to incentivize providers to extend service to unserved/underserved areas.
 - City's Efforts to Encourage Service Providers: Use of grant funding, coordination with providers, and streamlined permitting for expanding service.
 - City's Approach to ROW (Right of Way) Issues: The city seeks to avoid a free-for-all in the ROW while ensuring efficient investment in infrastructure.
 - Suggestions for Change: Public can attend workshops and public
- Many felt current public Wi-Fi met their needs despite minimal usage.
 - Frequent issues with connectivity, such as daily outages and poor upload/download speeds.
 - Complaints about the lack of competition for better pricing and speeds.
 - Experiences with poor service and price hikes, such as doubling of monthly bills after a year contract.
 - Frustration with unreliable Wi-Fi and lack of compensation for outages.
 - Some residents had to switch back and forth between multiple poor service providers due to noncompetitive pricing.

meetings as well as engage with city representatives.

Pflugerville Broadband Needs

Parks



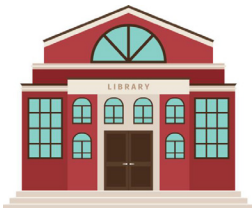
- Public Wi-Fi, Security
- Fiber to the top 3 parks (1849, Wells Point, Lake Pflugerville) Also for consideration: Pfluger Park and Downtown East
- Community parks & fiber connectivity planning for expansion/growth
- Computers/E-Sports at Rec Center

Transportation



- No fiber assets, traffic signals on cellular network
- Joint County projects could offer opportunity to include conduit
- Mobility Master Plan
- Current connectivity needs being met

Library



- Public Wi-Fi outside the building
- Programming and/or facility growth
- Increased automation for library checkout
- Uses Tech Logic product suite

PfISD



- Utilizes private fiber network (288 fiber count)
- Network ISP is Grande
- Possibility of leasing in the future
- Remaining connection issues in rural eastern parts and west of I-35

Information Technology



- Typically evaluating fiber vs. alternatives
- IT planning for new city facilities: potentially moving network core east
- City providers: Optimum (fiber), Verizon (cellular)

Utilities



- Cost concerns (fiber vs. alternatives)
- Currently leasing fiber
- Open to leasing to telcos on existing water towers
- Fiber to AMI collector locations would be ideal



04

**COMMUNITY NEEDS
+ GAP ANALYSIS**

4.0 COMMUNITY NEEDS + GAP ANALYSIS

In today's digital age, broadband is no longer a luxury but a fundamental necessity, driving education, healthcare, remote work, and essential communication. Reliable, high-speed internet is a crucial component of modern life, yet many communities continue to face challenges such as limited access, high costs, and underperforming networks. The ongoing digital divide can hinder economic participation and personal development, making it imperative to establish a resilient broadband infrastructure that is both affordable and capable of delivering stable connectivity to all.

For the City of Pflugerville, emphasizing the need for broadband expansion and modernization is especially critical. As the city continues to grow, evaluating broadband feasibility alongside future construction projects—including those in the Capital Improvement Plan—presents an opportunity to integrate connectivity solutions efficiently. By developing partnerships, implementing prescribed public policy approaches, and by incorporating broadband expansion into planned infrastructure projects, Pflugerville can optimize resources, minimize costs, and future-proof its digital landscape.

A comprehensive needs and gaps analysis is essential to overcoming connectivity challenges. Assessing existing network coverage, capacity, pricing models, and stakeholder insights can help identify underserved areas and the specific barriers to full connectivity. This detailed evaluation highlights service disparities and helps direct targeted investments, fostering competition and reducing costs. Without this strategic approach, digital inclusion efforts risk falling short, leaving vulnerable populations without the reliable internet access they need to thrive.

4.1 Determined Needs

Pflugerville, Texas, is a growing city located just north of Austin. As the city expands, its broadband infrastructure has become a key area of focus to meet the increasing demands for reliable internet service, driven by residents, businesses, and educational institutions. The city is working to ensure that broadband access is equitable and sufficient for all its residents.

4.1.1 Importance of Fiber for Broadband

From a technological standpoint, coaxial broadband is fading out as a long-term solution. While coaxial can deliver relatively fast download speeds through hybrid fiber-coaxial (HFC) networks, its limitations are becoming more apparent in today's data-driven environment. Upload speeds are significantly slower compared to fiber, creating bottlenecks for remote work, video conferencing, telehealth, and cloud-based applications. Additionally, coaxial performance can degrade under heavy neighborhood usage, leading to congestion and reduced reliability.

In contrast to fiber's capacity for futureproofing, coaxial infrastructure is reaching its practical limits. Although incremental upgrades such as DOCSIS 3.1 and the forthcoming DOCSIS 4.0 standard can extend coaxial's product life span, these technologies still cannot match fiber's symmetrical gigabit speeds, low latency, and long-term scalability. As Pflugerville continues to grow, the shift toward fiber will be critical to ensure that residents and businesses are not constrained by the limitations of coaxial networks.

4.1.1.1 Futureproofing Connectivity

Fiber is considered the gold standard for broadband infrastructure because it is highly scalable. Unlike copper or coaxial cable networks, fiber has virtually unlimited bandwidth potential. As internet demand continues to grow—driven by smart homes, cloud computing, remote work, telehealth, and emerging applications like virtual reality and artificial intelligence—fiber can support these needs without requiring frequent infrastructure overhauls. Deploying fiber in Pflugerville today ensures that the network can meet the community’s needs not just now, but decades into the future.

4.1.1.2 Reliability

Fiber networks are significantly more reliable than legacy technologies. Fiber is less susceptible to signal degradation over distance, weather-related interference, or electromagnetic disruptions. This means fewer outages and more consistent performance, which is critical for businesses, schools, healthcare providers, and residents who rely on stable connections for daily operations.

4.1.1.3 Speed + Performance

Fiber delivers symmetrical speeds—meaning upload and download speeds are equally fast. This is increasingly important as activities like video conferencing, online

education, remote medical consultations, and cloud-based work require strong upload performance. While other technologies may provide fast downloads, they often lag in upload capacity, creating bottlenecks for modern digital use. Fiber’s gigabit-level speeds enable seamless participation in today’s digital economy and position Pflugerville to remain competitive with other rapidly growing Texas communities.

4.1.2 Residential

4.1.2.1 Fiber Coverage

Figure 2 highlights areas using a hexagonal grid to represent coverage density. Each hexagon indicates the number of broadband serviceable locations (BSLs) with access to fiber internet. The shading provides a clear picture of where fiber infrastructure is present versus where it is lacking:

- **Light green (1–25 BSLs with fiber):** These areas have some fiber connections but limited coverage, likely serving only a small number of homes or businesses.
- **Medium green (26–75 BSLs with fiber):** These represent stronger concentrations of fiber service, showing more widespread adoption within those neighborhoods.
- **Dark green (76–160 BSLs with fiber):**

These are the most fiber-rich zones, with a high density of homes and businesses connected.

- **Gray (No fiber within area):** These areas currently lack fiber service, leaving households reliant on other technologies such as DSL, cable, fixed wireless, or satellite.

From the map, it is clear that fiber deployment in Pflugerville is uneven. The western and central portions of the city show heavier concentrations of fiber coverage, while much of the eastern and southern areas remain unserved by fiber, highlighted in gray. This uneven distribution underscores a digital divide: some neighborhoods have access to the most advanced broadband technology available, while others do not.

Figure 2: Number of FTTP Serviceable BSLs within each Area

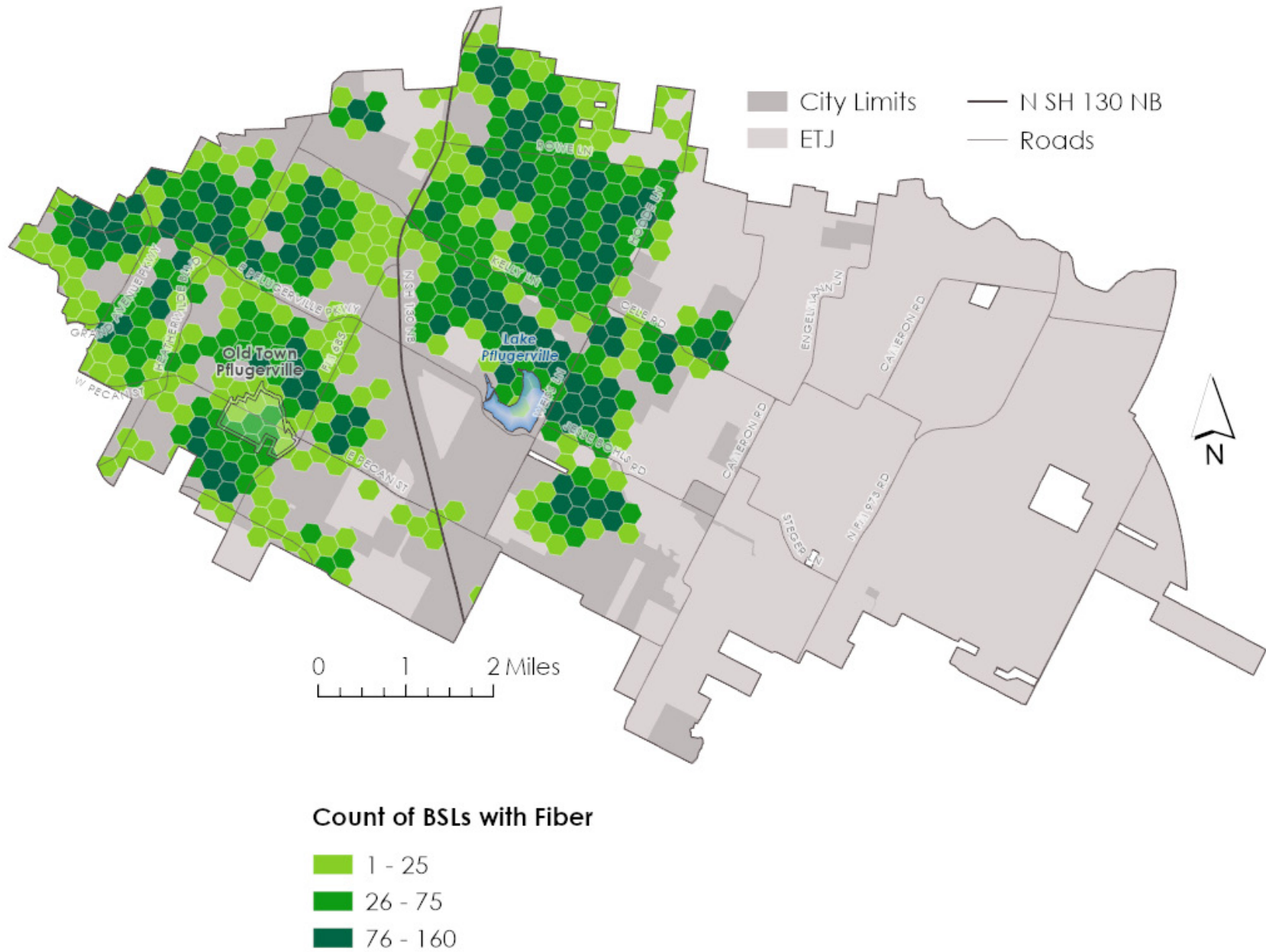


Figure 3 and **Table 9** provide a detailed assessment of fiber internet coverage across residential subdivisions in Pflugerville, Texas. **Figure 3** uses a color-coded scale to illustrate the share of BSLs within each subdivision that has access to fiber service. Black indicates 0% fiber coverage, while green represents areas where 100% of BSLs have fiber access. Intermediate shades of blue represent varying levels of partial coverage, with lighter blue indicating lower percentages and darker blue reflecting higher percentages, ranging from 1% to 99%. The legend in the figure provides the exact breakdown of these color categories. Additionally, 30 subdivisions contain no BSLs; these areas have been symbolized on the map for reference and visibility but are not the focus of the analysis.

It is important to note that this map only reflects fiber access for locations within subdivision boundaries as defined by the City of Pflugerville. Some BSLs fall outside of these subdivisions, particularly within the ETJ. Within the ETJ, 1,082 BSLs are located outside of subdivisions, with only 14.8% having fiber-to-the-premises service. Within Pflugerville city limits, 230 BSLs fall outside of subdivisions, with 18.7% having fiber access. These areas outside subdivision boundaries are not symbolized in the same color categories (e.g., 1%–33% range) on the map, as

this could misrepresent the data due to the disproportionately large land area associated with these outlying BSLs.

Table 9 summarizes the distribution of subdivisions based on the percentage of BSLs with fiber service. The data show that 100 subdivisions (3,109 BSLs) have no fiber access, while 63 subdivisions

(7,229 BSLs) have full fiber availability. The largest number of BSLs (14,418) are in subdivisions where 67%–99% of locations have fiber access, indicating a high degree of partial coverage.

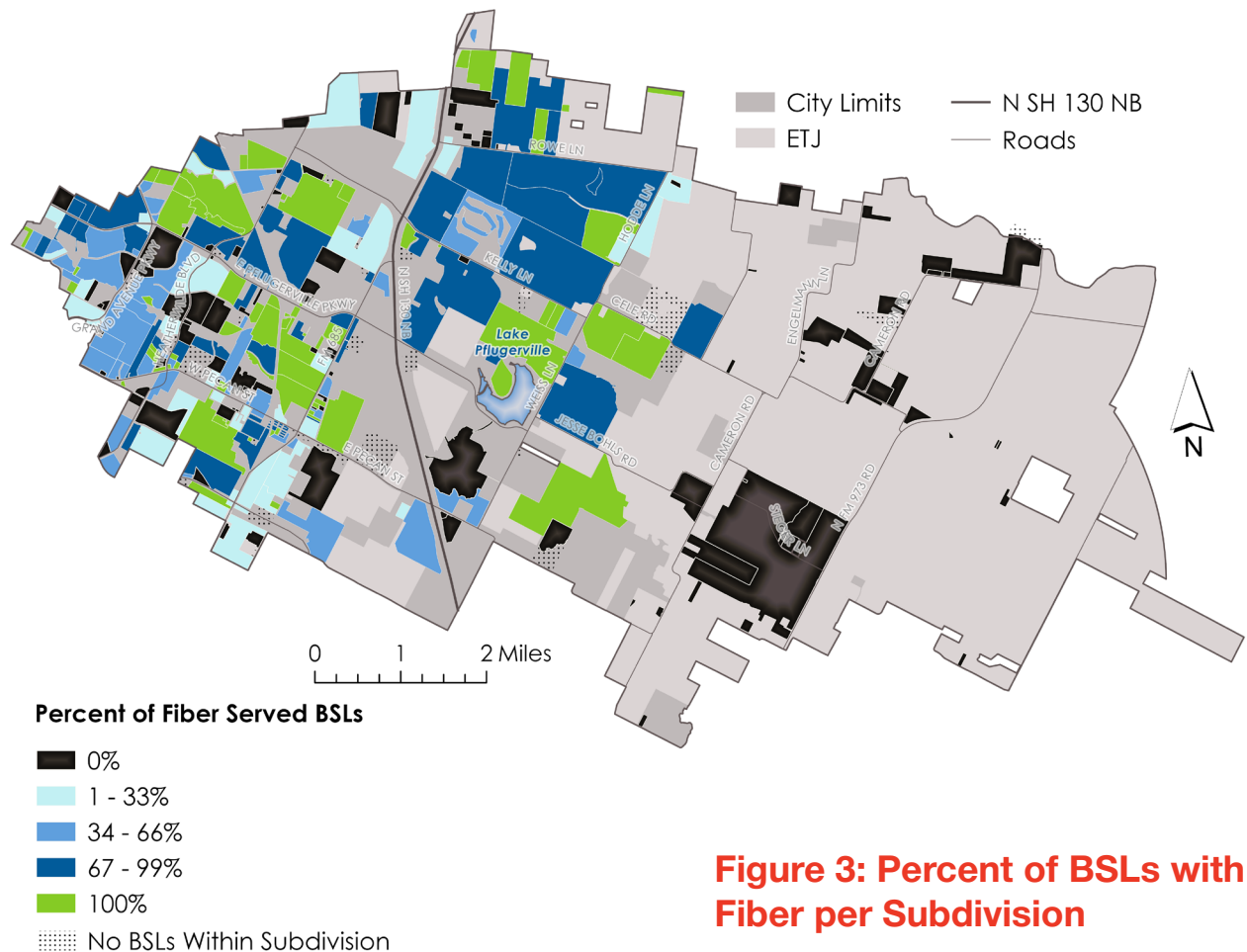


Figure 3: Percent of BSLs with Fiber per Subdivision

This analysis highlights both the significant presence of fiber within many subdivisions and the persistent service gaps that remain in others. While a substantial portion of BSLs already benefit from strong fiber coverage, more than 6,000 BSLs (spread across 168 subdivisions) currently lack reliable fiber access, underscoring areas of opportunity for targeted broadband investment.

The data also show that coverage is not evenly distributed: nearly one-quarter of all subdivisions have no fiber service at all, while another sizable share has only limited coverage. These areas represent the most critical gaps, where investment would have the greatest impact in bridging the digital divide.

At the same time, the 42 subdivisions with 67%–99% coverage represent “nearly

Table 9: Percent of BSLs with Fiber per Subdivision

Percent of BSLs with Fiber	Number of Residential Subdivisions	Total Count of BSLs within Subdivisions
0%	100	3,109
1%-33%	34	3,061
34%-66%	34	3,342
67%-99%	42	14,418
100%	63	7,228

complete” service zones, where relatively modest infrastructure buildouts could bring universal coverage to more than 14,000 BSLs. Finally, the 63 subdivisions with 100% fiber coverage demonstrate that citywide universal access is achievable and already a reality in many neighborhoods.

4.1.2.2 Coaxial Coverage

Figure 4 illustrates the distribution of coaxial broadband serviceable locations across Pflugerville, Texas. Similar to the fiber map, each hexagon represents the number of BSLs with coaxial access. The shading shows how coverage density varies:

- **Light blue (1–32 BSLs with coaxial):** Sparse availability, typically on the edges of service zones.
- **Medium blue (33–80 BSLs with coaxial):** Moderate coverage areas, where coaxial is more consistently available.
- **Dark blue (81–158 BSLs with coaxial):** Dense service zones with widespread coaxial availability.
- **Gray (No coaxial within area):** Areas lacking coaxial broadband access.

The map shows that coaxial service in Pflugerville is concentrated in the western and central portions of the city, overlapping with some of the same areas where fiber is present. However, large portions of the

eastern and southern sections are without coaxial coverage, paralleling the gaps seen in fiber availability. This highlights that while coaxial has historically served as the backbone of broadband in Pflugerville, its coverage is uneven and is gradually being overtaken by fiber deployments.

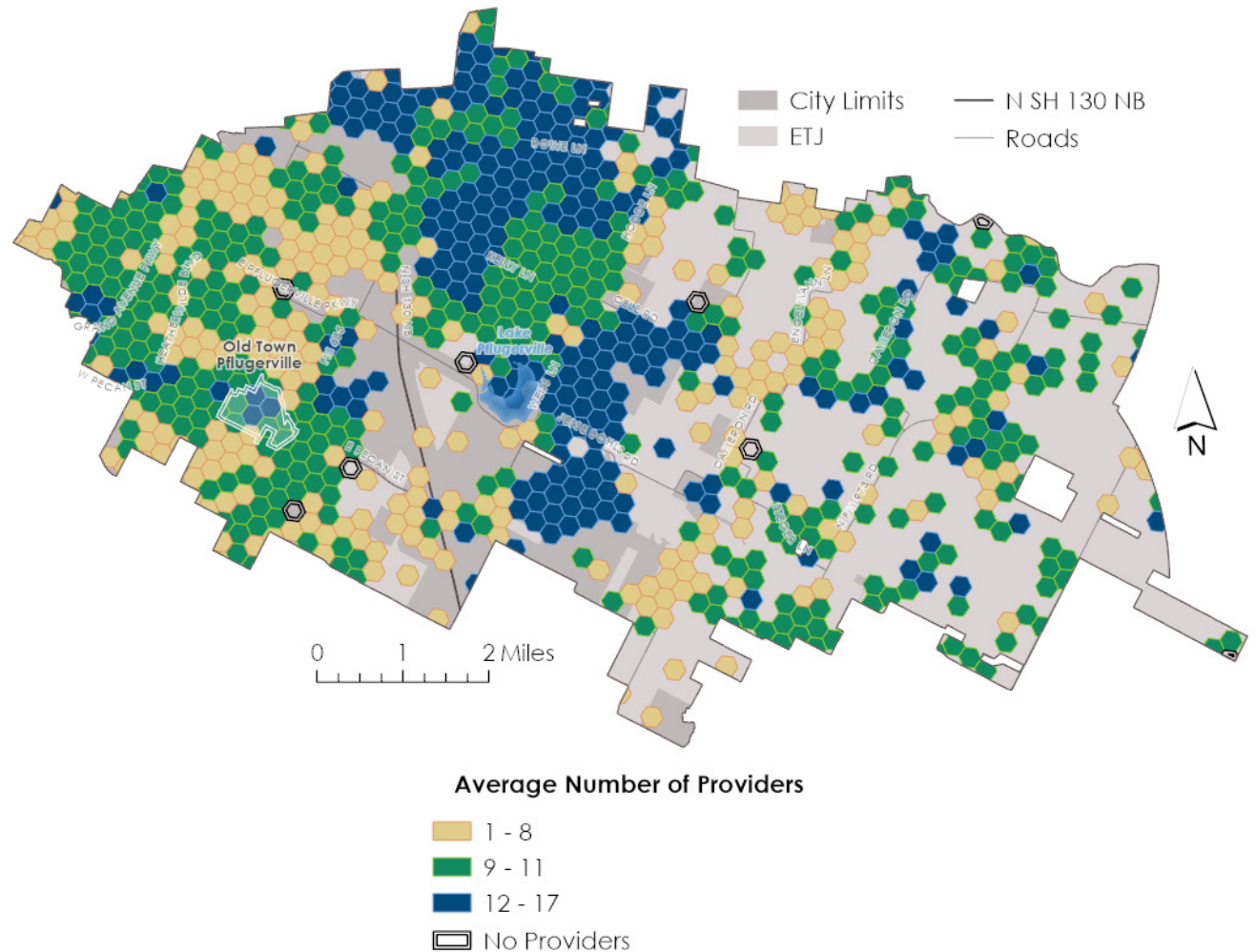
4.1.2.3 Number of Providers in Pflugerville, TX

Figure 5 illustrates the average number of broadband providers within different areas of the city using a hexagonal grid system. Areas with fewer providers, particularly those shaded in yellow (1–8 providers), are concentrated along the western and southern parts of the city, as well as scattered throughout the outskirts. In contrast, more central and northern regions, particularly near Lake Pflugerville and to the east, show a higher average number of providers, indicated by the darker green and blue hexagons (9–17 providers). Some areas, notably those marked with white hexagons bordered in black, show no providers at all, highlighting broadband service gaps.

The number of broadband providers directly impacts affordability by influencing competition. In areas with more providers, such as those in the central and northeastern parts of Pflugerville, increased competition can drive down prices and improve service quality, making broadband more affordable and accessible. Conversely, in regions with fewer or no providers, residents have limited options and may face higher prices and slower internet speeds due to lack of competition. These disparities can contribute to a digital divide, where lower-income or more rural communities

are disproportionately affected by limited access to affordable broadband. Addressing these imbalances is critical for ensuring equitable access to education, employment, and essential digital services.

Figure 5: Average Number of Providers Within Area



4.1.2.4 Rurality/Development

Figure 6, categorizes the city into USDA-defined urban (dark blue) and rural (green) areas. The majority of Pflugerville's central and western regions are classified as urban, while the eastern and northeastern portions, including areas around Cele, New Sweden, and Carlson, remain rural. This distinction is critical for broadband expansion and funding eligibility, as rural areas often face challenges in accessing high-speed internet due to lower population densities and infrastructure limitations. Broadband providers may leverage this data to identify underserved rural zones and apply for federal and state funding to improve connectivity. Additionally, policymakers can use this urban-rural divide to strategize broadband deployment, ensuring equitable internet access for residents across Pflugerville.

As Pflugerville continues to grow, the distinction between urban and rural areas is likely to shift, with current rural regions on the eastern side transitioning into more developed areas. The city's expansion will bring increased residential and commercial activity to places like Cele, New Sweden, and Carlson, driving a greater demand for reliable broadband infrastructure. As development spreads eastward, ensuring that these currently rural areas have access to high-speed internet will be crucial for economic

growth, education, and telecommunication services. Proactive planning for broadband expansion will help bridge the digital divide, preventing future connectivity gaps as rural sections urbanize. Investments in fiber-optic networks and other broadband technologies will be essential to accommodate Pflugerville's growing population and business needs.

4.1.2.5 Topography

Pflugerville's topography is generally characterized by flat to gently rolling terrain, typical of Central Texas. The city lies within the Blackland Prairie region, known for its fertile clay soils and relatively low elevation changes. This relatively even landscape is beneficial for broadband deployment, as it minimizes the need for costly infrastructure adjustments that would be necessary in more rugged or hilly areas. Flat terrain allows for easier installation of fiber-optic cables and wireless towers, reducing construction complexity and improving connectivity reliability. However, the presence of creeks, floodplains, and areas of dense development could still pose localized challenges for broadband infrastructure, requiring strategic planning to ensure seamless coverage.

Despite the overall favorable topography, Pflugerville's expansion into more rural and agricultural areas in the east may

introduce new broadband deployment considerations. These regions tend to have larger land parcels with lower population densities, which can make broadband investment less immediately profitable for providers. Additionally, soil conditions, particularly the heavy clay of the Blackland Prairie, can affect underground fiber-optic installations, requiring careful engineering to prevent damage from soil movement or expansion. As Pflugerville grows, addressing these topographical and geographical factors will be key to ensuring that high-speed internet access keeps pace with development, supporting both existing and future residents.

4.1.2.6 Residential Affordability

Pflugerville's broadband affordability in residential areas reveals a range of pricing options as seen in **Table 10**, with notable disparities in access and cost across various service providers. Based on the data gathered from ISP websites, there is a range of costs for residential broadband services, with some providers offering competitive rates while others may require additional calls for specific pricing details.

The issue of broadband affordability in Pflugerville emerged as a significant concern during the public meeting on March 26th, 2025. Attendees shared their frustrations with rising internet costs, with

Figure 6: Urban/Rural Indicator

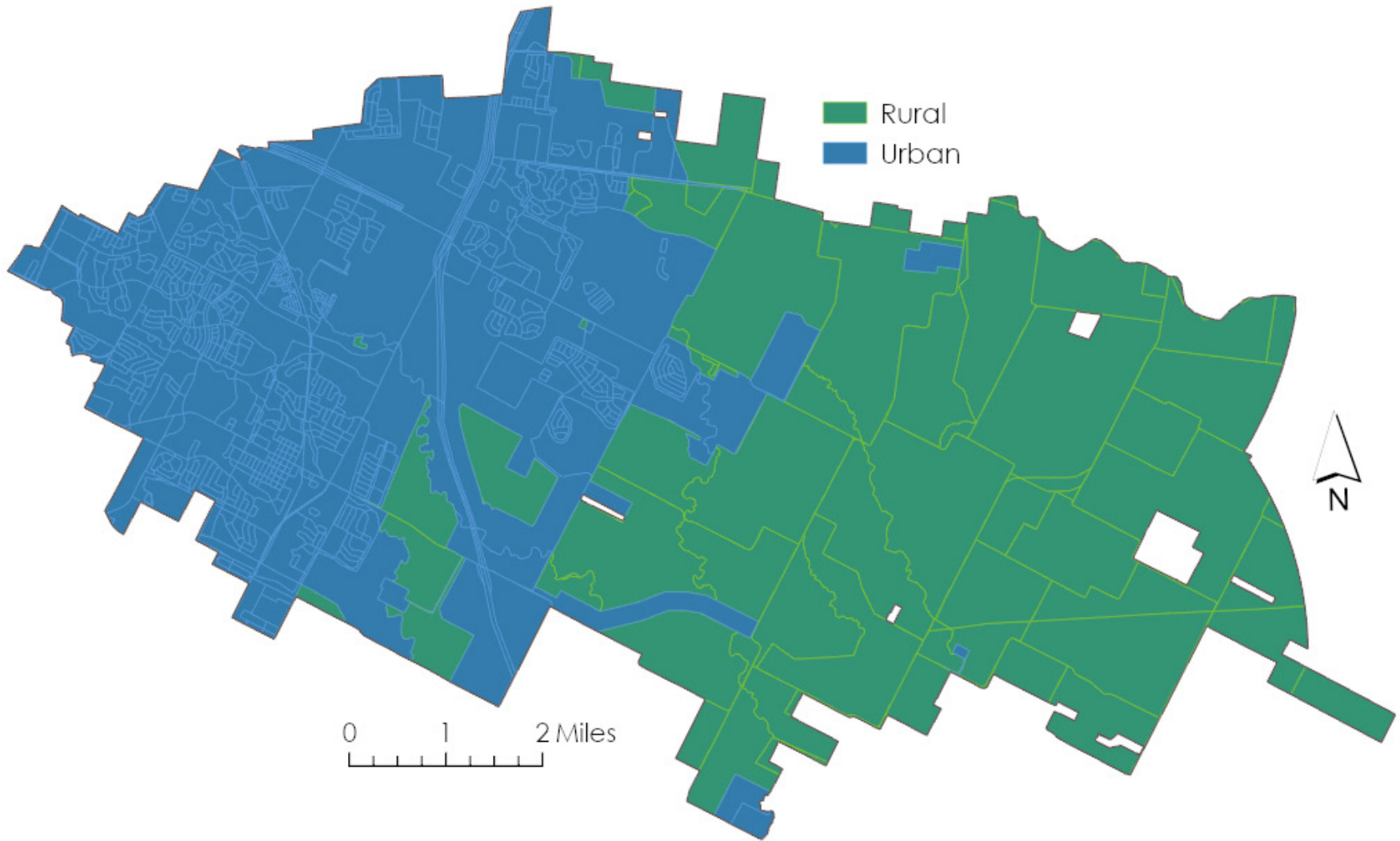


Table 10: Residential Advertised Cost for Internet Plans

Pflugerville Residential Advertised Cost			
Provider	Connection Type	Residential Cost (Lowest - Highest)	Speeds Advertised
Astound Broadband	Fixed Wireless, Fiber	\$20.00 - \$55.00	300Mbps - 1500Mbps
AT&T	Fixed Wireless, Fiber	\$55.00 - \$80.00	300Mbps - 1Gig
Brightspeed	Fixed Wireless, Fiber		200Mbps - 2Gig
Optimum	N/A	\$40.00 - \$70.00	300Mbps - 1Gig
PCs For People	Fixed Wireless, 4G LTE, 5G	\$10.00 - \$15.00	
RISE Broadband	N/A	\$35.00	25Mbps - 50Mbps
SOS Communications LLC	N/A		
Southwest Texas Comm.	Fiber	\$36.99 - \$145.99	10Mbps - 2Gig
Sparklight	Redirected to Different ISP		
Spectrum	Redirected to Different ISP		
T-Mobile		\$50.00 - \$70.00	133Mbps - 415Mbps
TPx Communications	IT Services		
Verizon		\$50.00 - \$70.00	100Mbps - 300Mbps
VGI Technology Inc.		\$150.00	1Gig
VTX Comm. LLC	Fiber	\$59.99 - \$99.00	300Mbps - 1Gbps
	Wireless	\$55.00	400Mbps
	Residential Fiber Internet & Phone Bundles	\$99.98 - \$139.98	300Mbps - 1Gbps
Western Broadband	Fixed Wireless	N/A	



Source: Midjourney

Disclaimer*:

This table was populated based on findings from the respective Internet Service Provider (ISP) websites. If any pricing options are missing, it may be due to the following reasons:

- The pricing required a direct call to the ISP for more information.
- The cost was not publicly advertised on the ISP's website.
- The ISP offers personalized pricing based on location or service packages that are not disclosed online.
- The ISP website did not provide sufficient details regarding business or residential costs.

All data presented in this table was sourced directly from the respective ISP websites.

some reporting bills as high as \$147 per month. The lack of competition in the city was highlighted as a major barrier to better pricing, with residents feeling trapped by limited-service options and significant price hikes. Participants expressed a desire for more affordable and competitive pricing, with some pointing out that their current internet service, while adequate for minimal use, could be unreliable and come at an increasingly high cost. The meeting underscored the need for improved competition among service providers and highlighted the city's ongoing efforts to incentivize providers to expand service to underserved areas, which could potentially address both service quality and affordability concerns in the future.

Overall, while Pflugerville is making strides toward broadband expansion, affordability remains a significant barrier for many residents, especially in areas without access to fiber-based internet.

4.1.2.7 Unserved + Underserved Broadband Serviceable Locations

Figure 7 focuses on residential locations in Pflugerville that lack sufficient broadband access, meaning they are either unserved (no broadband meeting the Federal Communications Commission's minimum standard of 25 Mbps download and 3 Mbps upload) or underserved (service

available but below modern benchmarks such as 100 Mbps download and 20 Mbps upload).

Each hexagon represents the number of affected residential BSL's:

- **Dark blue (1–10 BSLs):** Small clusters of households without adequate broadband.
- **Green (11–37 BSLs):** Larger pockets where dozens of homes remain unserved or underserved.

The distribution shows that while Pflugerville has extensive broadband coverage overall, gaps are scattered across the city. These gaps are not concentrated in one area but instead appear in smaller pockets—particularly in the southern, northeastern, and far western edges of the community. This pattern reflects how infrastructure buildout has historically prioritized denser, more commercially viable neighborhoods while leaving less densely populated or harder-to-reach areas behind.

The presence of these underserved and unserved areas is significant because even small clusters represent real barriers for affected households. Families without reliable high-speed internet face challenges in remote work, online learning, and access to telehealth services. Moreover, as the city continues to grow,

these coverage gaps risk widening the **digital divide** between residents who can fully participate in modern digital life and those who cannot.

Affordability, Adoption, + Access in Residential Areas

The significant number of unserved and underserved residential BSLs (**1,613**) indicates a potential barrier to broadband adoption and digital equity for Pflugerville residents. Access remains a core issue, as these households either do not have internet service or are limited by inadequate speeds that do not meet modern needs for remote work, education, and entertainment. Affordability is also a concern, as some residents may be unable to subscribe to available services even when infrastructure is present. Additionally, lack of digital literacy and awareness about service options can limit broadband adoption, exacerbating the digital divide. Expanding infrastructure in these underserved areas will be crucial in ensuring all households have equitable access to high-speed internet.

4.2.2 City Facilities

4.2.2.1 Areas of Need for Fiber to the Premises (FTTP) based on Stakeholder Engagement

Figure 8 highlights areas in Pflugerville identified as needing Fiber to the Premises (FTTP) based on stakeholder engagement efforts. It showcases key locations where broadband infrastructure improvements are essential to support the city's growth and digital connectivity needs. The stakeholder meetings included discussions with various city departments and entities to assess priority areas for fiber deployment.

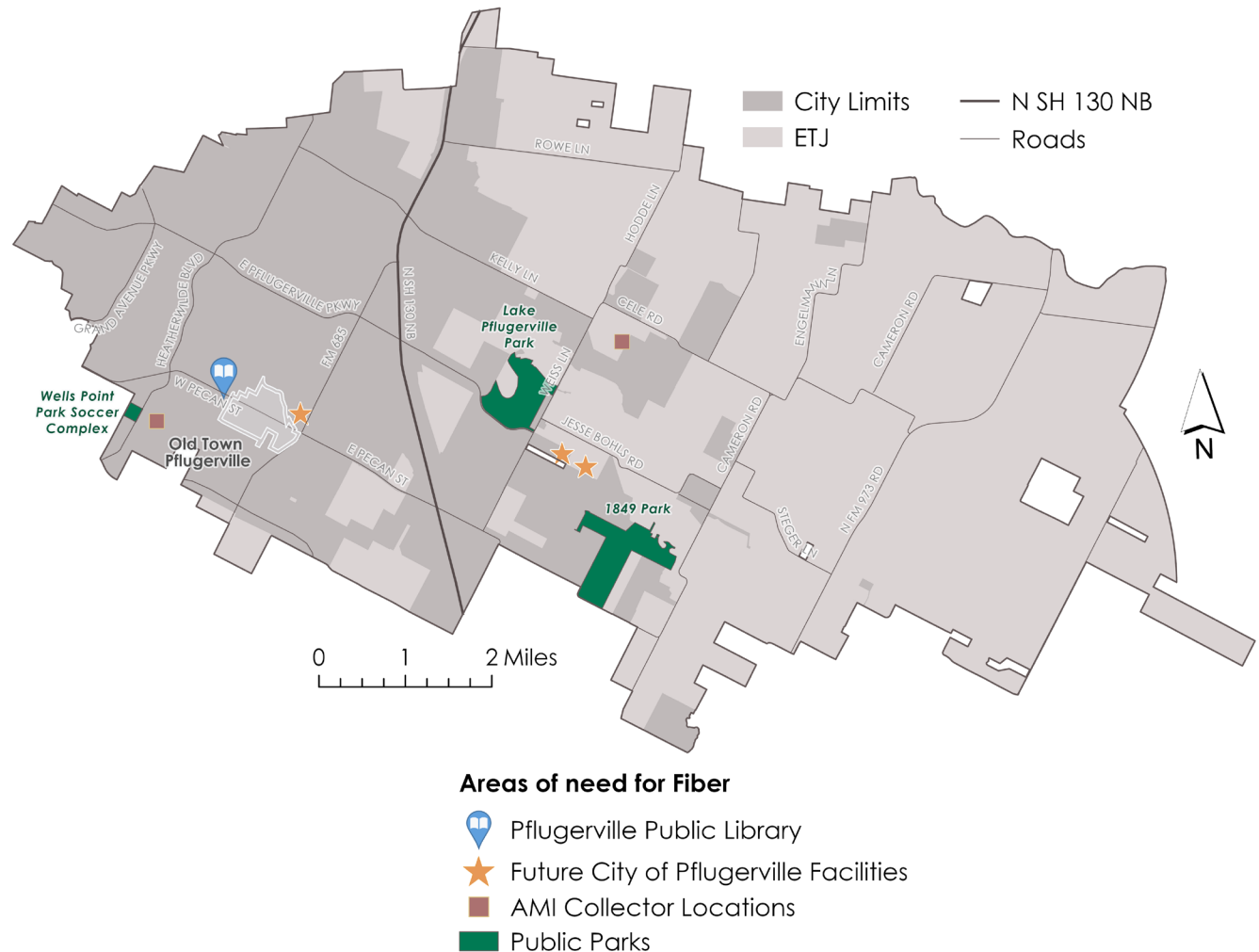
The identified locations include:

- Future City of Pflugerville Facilities (3) (marked with gold stars)
- AMI (Advanced Metering Infrastructure) Collector Locations (2) (marked with maroon squares)
- Public Parks:
 - Lake Pflugerville Park
 - 1849 Park
 - Wells Point Park Soccer Complex

These locations were prioritized due to their role in public services, utility management, and community access to broadband. The need for fiber in these areas was determined through discussions with Pflugerville stakeholders, recognizing the necessity of future-proof broadband infrastructure. Expanding fiber to these

critical locations will enhance government efficiency, improve public utilities, and provide better connectivity for residents and businesses. These efforts align with Pflugerville's broader strategy to develop a smart, connected city capable of supporting economic development and digital inclusion initiatives.

Figure 8: Areas of Need for FTTP Based on Stakeholder Engagement



4.2.2.2 Public Wi-Fi

Public Wi-Fi works by providing internet access to the public at no cost through wireless networks that are set up in public spaces. Typically, these networks are secured with encryption to prevent unauthorized access. People in these areas can connect their devices (like smartphones, laptops, or tablets) to the Wi-Fi network for free, enabling them to access the internet for work, study, entertainment, or communication.

Figure 9 details locations that were identified based on stakeholder engagement to ensure that public Wi-Fi is strategically placed where it will have the most impact.

- Pflugerville Public Library
- Lake Pflugerville Park
- 1849 Park
- Future City of Pflugerville Facilities

Benefits for These Locations:

- Pflugerville Public Library: Offering public Wi-Fi at the library ensures that people have access to digital resources, educational tools, and online learning platforms. This is especially beneficial for students, job seekers, and those needing access to information.
- Lake Pflugerville Park: By providing Wi-Fi here, visitors can stay connected while enjoying outdoor activities, such

as watching streaming content or using the internet for fitness apps, maps, and weather updates. It also enhances the overall experience for visitors who need to access internet services while at the park. Critically, when the City of Pflugerville is putting on events, city staff will have access to internet for registration/check-in and other needs.

- 1849 Park: Public Wi-Fi in this park allows users to stay connected while

attending events, picnicking, or enjoying other park amenities. It also facilitates access to social media, helping to increase the park's visibility and encouraging greater engagement with the community. Additionally, when the City of Pflugerville is putting on events, city staff will have access to internet for registration/check-in and other needs.

- Future City of Pflugerville Facilities:

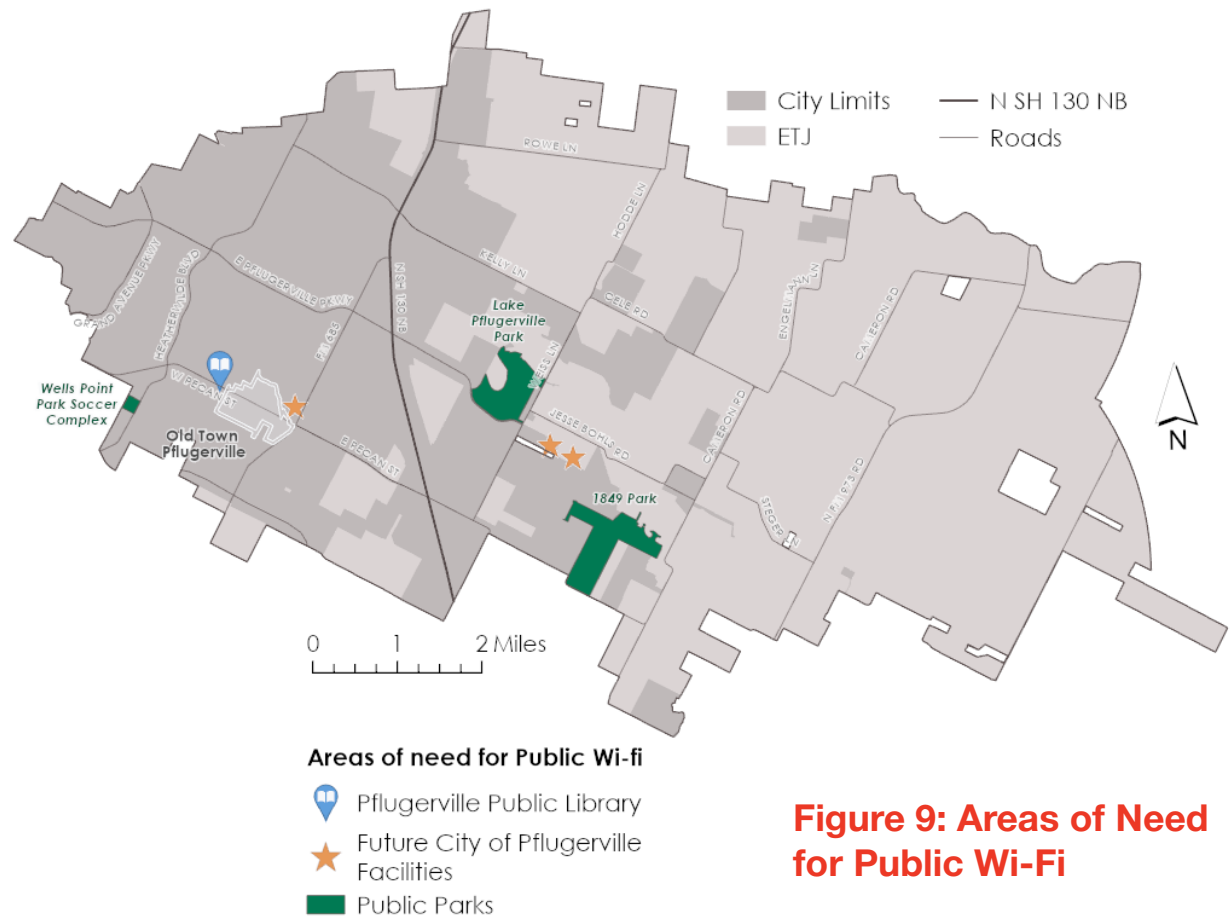


Figure 9: Areas of Need for Public Wi-Fi

Wi-Fi at these future locations would ensure that new public facilities are fully equipped to meet the digital needs of the community. It would benefit visitors and ensure that those working or visiting these new spaces can easily access the internet for work, leisure, or information.

4.2.3 Economic Development

4.2.3.1 Current Broadband Coverage

According to **Figure 10**, there is a substantial presence of long-haul middle mile providers including AT&T, Zayo North America, and Windstream. These long-haul networks provide the backbone infrastructure for high-speed internet across the region and state, primarily running parallel to major highways and main routes connecting Pflugerville with other parts of the Austin metro area.

Figure 11, which highlights metro fiber networks, shows that several providers, such as AT&T, Consolidated Communications, and Crown Castle, have metro fiber networks extending into the city. These networks provide local connectivity, typically offering faster speeds and more reliable internet within Pflugerville itself.

While these networks are critical, the coverage is not entirely uniform. The

maps show areas with both high and low fiber availability, indicating that some regions may have access to multiple service providers, while others could face limited options or slower speeds. This is particularly important for areas outside the central city, where fewer providers might be offering service.

Despite the growth of fiber infrastructure in Pflugerville, broadband access remains a challenge in certain parts of the city. Some residents report difficulties with connection reliability, especially in areas where only a few providers are available. These gaps in coverage can impact not only residential customers but also businesses that require high-speed internet for daily operations, including remote work, streaming, and cloud-based services.

Additionally, some areas in Pflugerville may not yet have access to high-speed fiber-optic internet, which is crucial for future-proofing the city as more residents and businesses rely on broadband for essential services. Rural areas surrounding the city, and particularly in the City of Pflugerville's ETJ, are likely to face more significant challenges, as extending fiber networks into less densely populated areas can be cost-prohibitive for providers.

(NOTE: **Figure 10** and **Figure 11** contain data from FiberLocator. This data is included only if the ISP or infrastructure owner has chosen to make it public, it does not represent a complete view of existing broadband infrastructure as some assets may not be listed.)

Figure 10: Long Haul Networks



- Long Haul Networks
- Arellion - North America
 - AT&T
 - EXA Infrastructure - Leased
 - FiberLight
 - Flo Networks
 - Gold Data
 - redIT
 - Sprint
 - Uniti Fiber
 - Windstream
 - Zayo North America

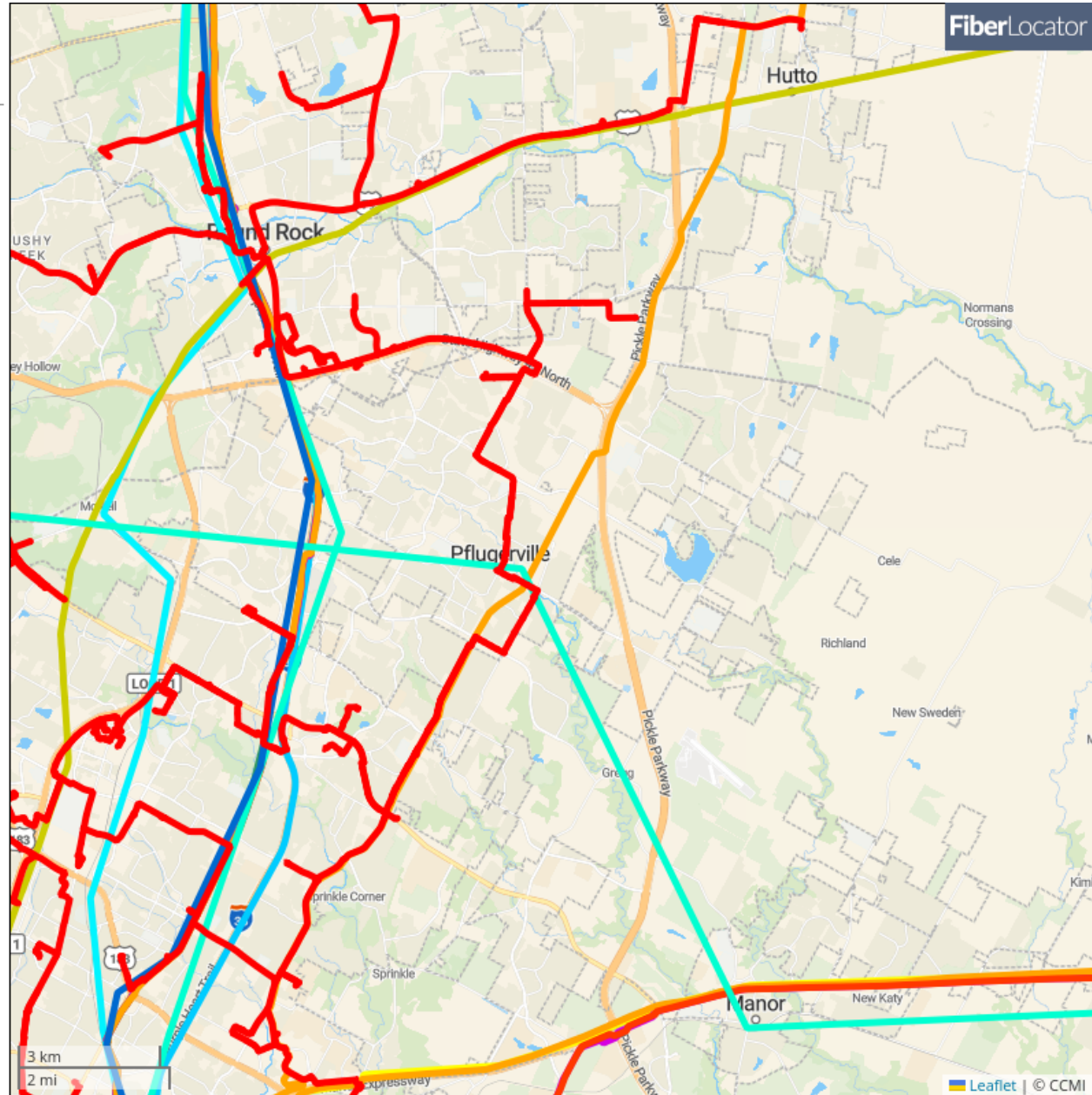
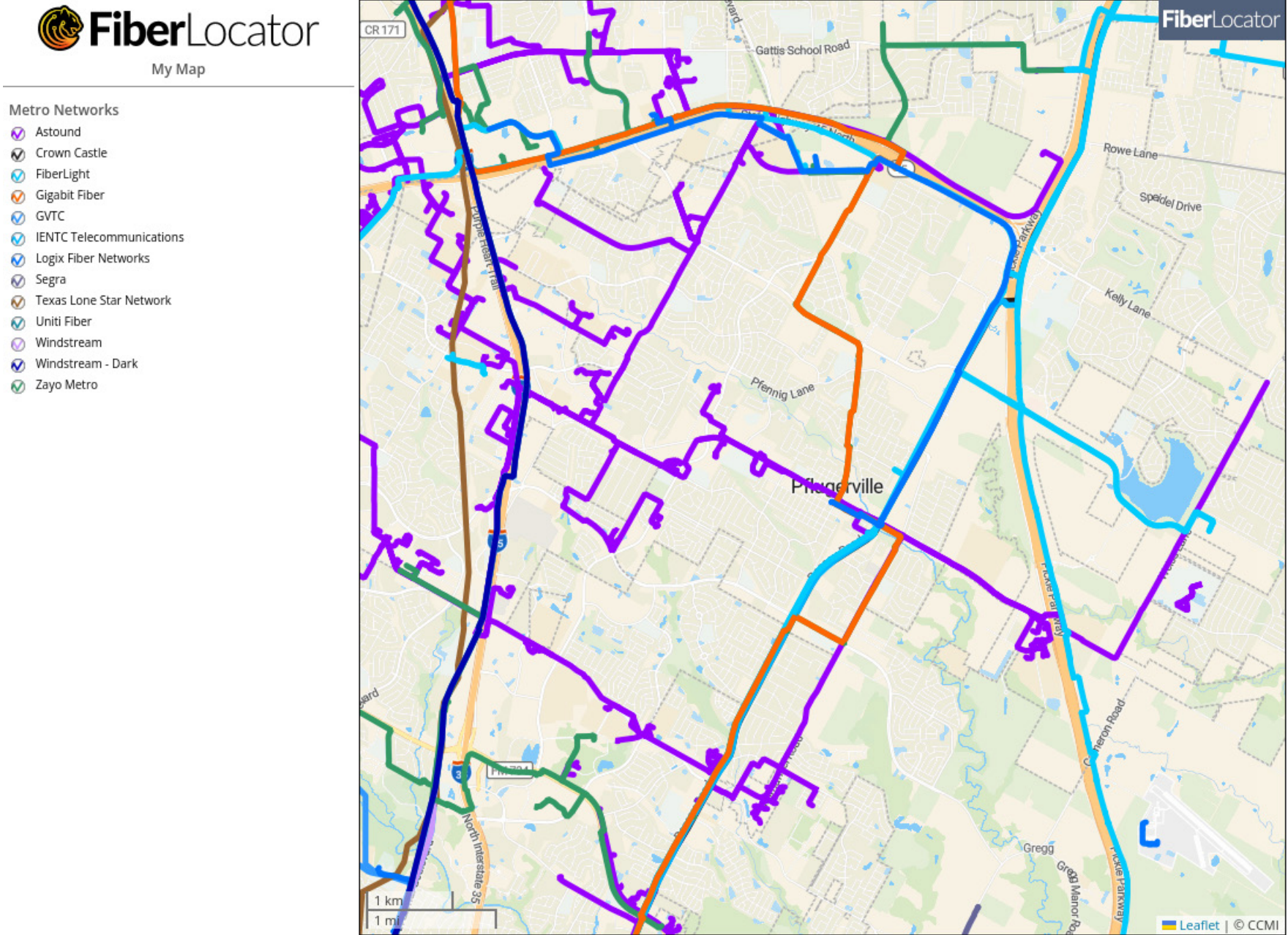


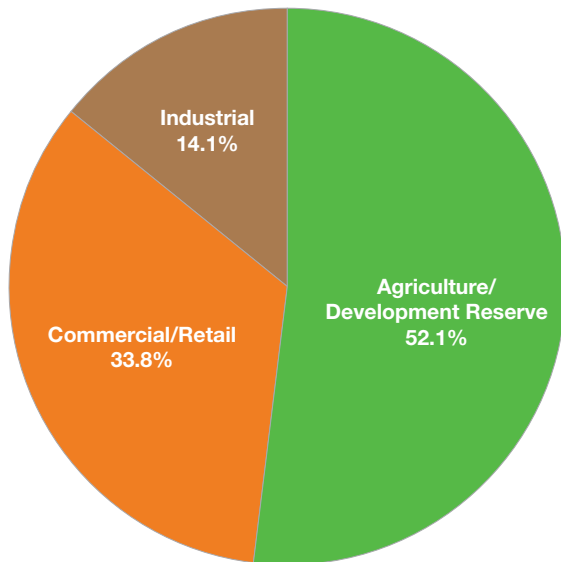
Figure 11: Metro Networks



4.2.3.2 Unserved + Underserved BSLs

Figure 12 illustrates the distribution of unserved and underserved Economic Development BSLs in Pflugerville using a hexagonal grid to show density. The map highlights critical BSL categories—Agriculture/Development Reserve, Commercial/Retail, and Industrial—that are essential to the city's economic vitality. While broadband deficiencies appear somewhat scattered, distinct patterns emerge: the ETJ contains 63% (94) of all deficient BSL locations, aligning with previously identified rural zones. These underserved areas are particularly significant in the Agriculture/

Figure 12: Distribution of Unserved & Underserved BSLs by Economic Development



Development Reserve category, where 52.1% (74) of BSLs fall below broadband standards, indicating major gaps in digital infrastructure across rural zones.

Figure 13 shows Commercial/Retail BSL gaps, which account for 33.8% (48) of locations falling below standard, are primarily within city limits but also extend along the ETJ border, forming a notable hotspot. Industrial BSLs show fewer deficiencies overall, at 14.1% (20), but these are dispersed across both city limits and the ETJ, suggesting a need for broader infrastructure planning. These deficiencies cut across multiple economic sectors, impeding business operations, limiting remote work capacity, and discouraging investment. Addressing these BSL gaps through targeted broadband expansion is critical to supporting Pflugerville's long-term growth, economic competitiveness, and digital equity.

Business Broadband Challenges and Economic Impact

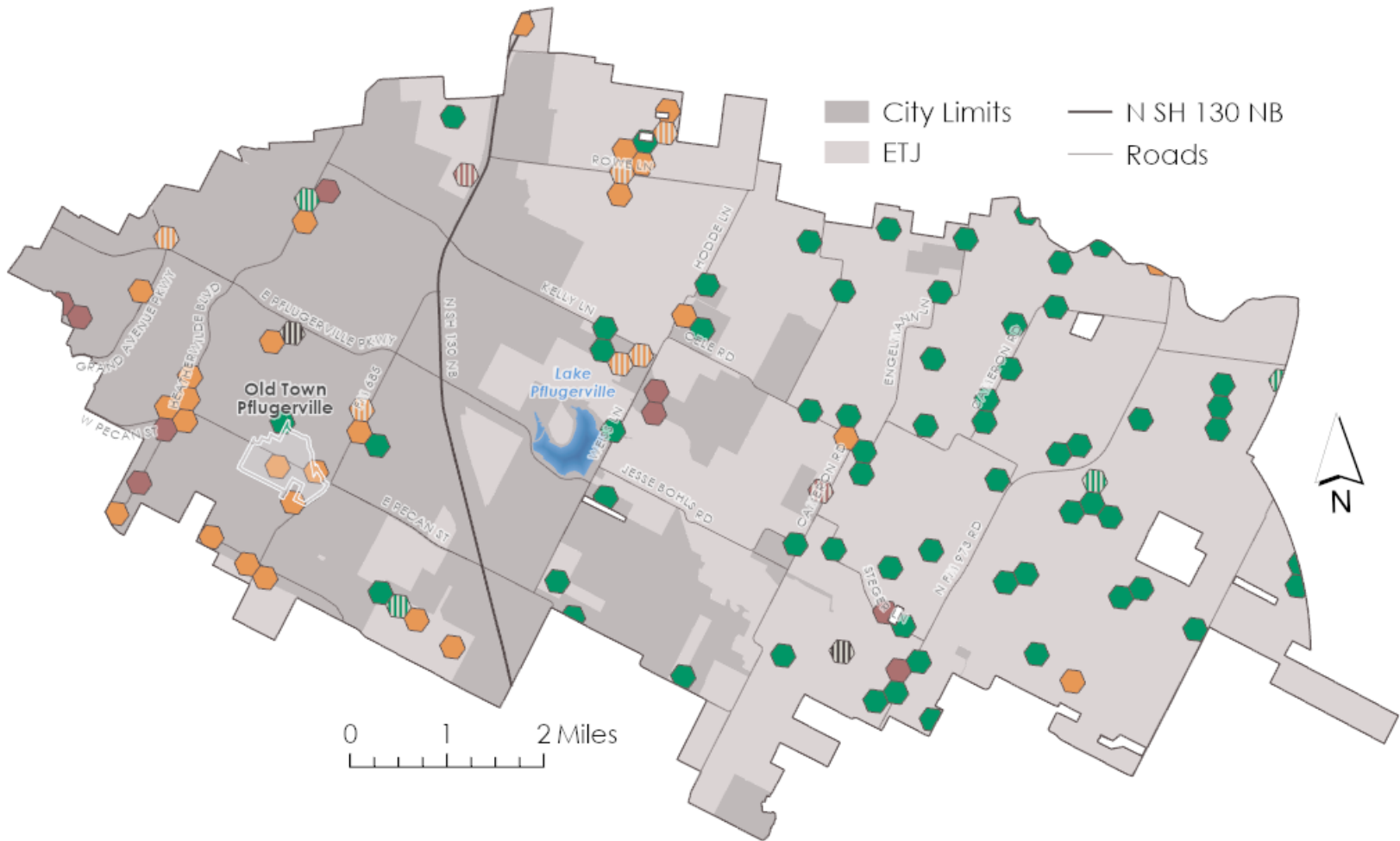
Unserved and underserved business locations represent a smaller portion of the total, with 142 identified across Pflugerville. However, these are part of a much larger set of 653 BSLs located within the city's three primary Economic Development Zones: Agriculture/Development Reserve, Commercial/Retail, and Industrial. With 22% of these locations falling below

broadband standards, the potential impact on economic activity is significant. Reliable broadband is essential for businesses to operate efficiently, process transactions, communicate with customers, and leverage cloud-based technologies. Areas with deficiencies may struggle to attract new investment, slowing economic growth and limiting job creation.

In the Commercial/Retail zone, broadband access is especially critical because these businesses rely heavily on digital platforms to interact with customers, manage sales, and support day-to-day operations. The fact that 33.8% of these BSLs are underserved means that many small shops, restaurants, and service providers face barriers to competing in an increasingly digital marketplace. This deficiency not only affects individual business performance but also diminishes the vibrancy of Pflugerville's retail corridors, potentially discouraging further commercial investment.

The Industrial zone, although smaller in total BSL count, plays an outsized role in sustaining economic growth. Only 14.1% of Industrial BSLs fall below broadband standards, but the scattered nature of these underserved sites creates challenges for supply chain connectivity and operational efficiency. Industrial firms often require robust broadband for inventory

Figure 13: Unserved + Underserved Economic Development BSLs



Count of Unserved & Underserved Economic Development BSLs

- 1
- ▨ 2 - 8

Majority Zoning Type within Area

- Agriculture / Development Reserve
- Commercial / Retail
- Industrial
- Industrial & Agriculture / Development Reserve

systems, logistics coordination, and advanced manufacturing processes. Even a small number of underserved industrial sites can disrupt these operations and limit the city's ability to attract or retain manufacturers.

Finally, the Agriculture/ Development Reserve zone shows the highest share of underserved BSLs, with 52.1% falling below broadband standards. While these locations are concentrated in the ETJ and more rural areas, their impact on Pflugerville's long-term development cannot be overlooked. Agricultural businesses increasingly depend on broadband for precision farming, data-driven crop management, and online market access. Furthermore, this zone represents land that may transition to future development, meaning today's broadband deficiencies could shape tomorrow's economic opportunities. Ensuring adequate service in these areas is essential for both current agricultural users and the city's future growth trajectory.

4.2.3.3 Existing Middle Mile

The Existing Middle Mile Map (**Figure 14**) highlights an important issue: the need for expanded fiber routes, particularly on the eastern side of the city. The fiber route lines in blue and orange on this map represent existing infrastructure. Areas where additional fiber infrastructure are

needed are indicated by a lack of presence of fiber routes. As shown on the map, much of the eastern portion of Pflugerville (primarily in the ETJ) is lacking sufficient middle mile fiber infrastructure, which is crucial for provision of high-speed internet access to businesses, residences, and public facilities.

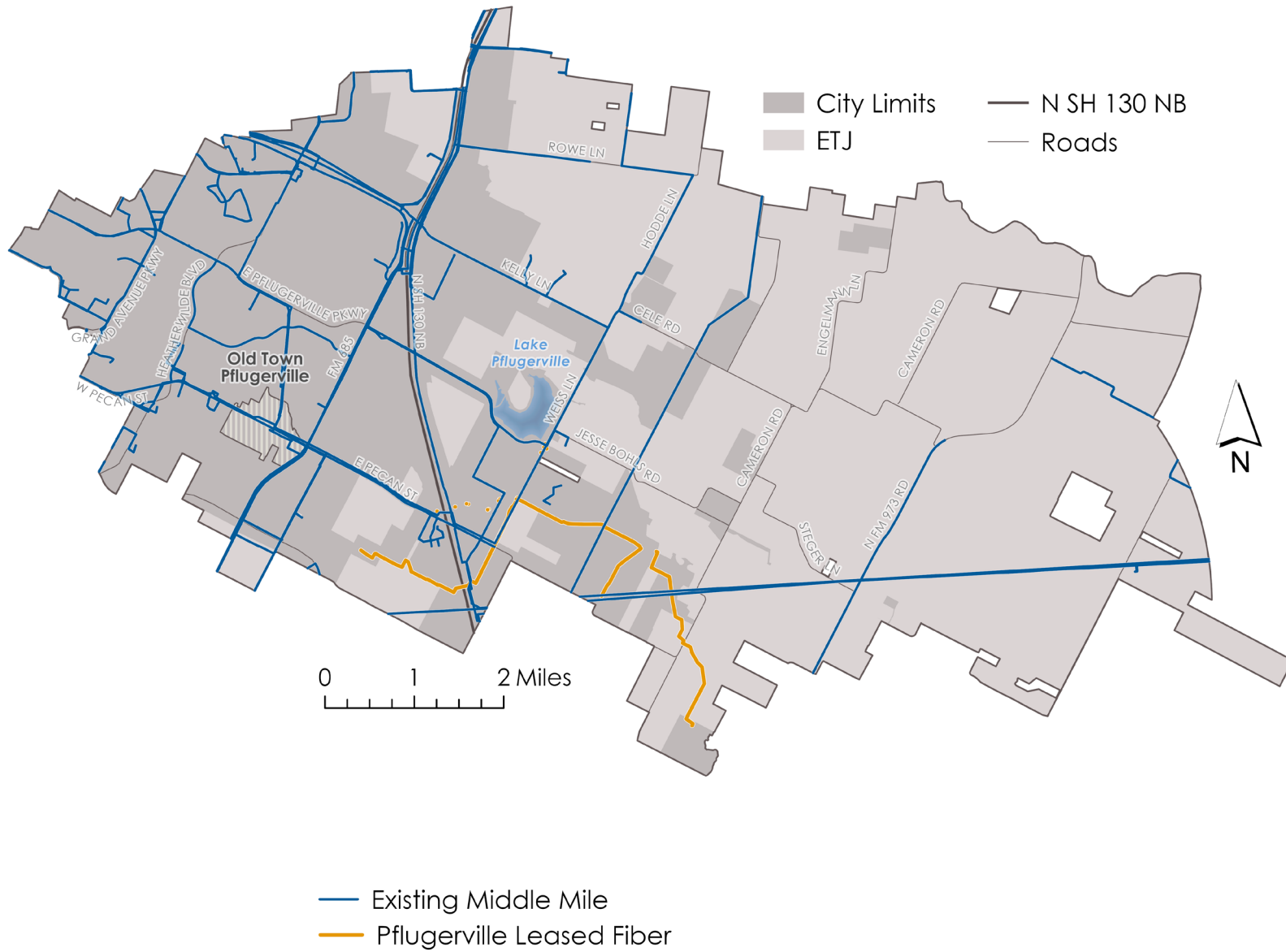
In the context of the city's growth, this gap in the middle mile network presents a challenge. As Pflugerville continues to expand, particularly in the rural areas on the eastern side of the city, there will be an increased demand for better broadband access. The map identifies middle mile needs and indicates that the rural areas of Pflugerville contain the most middle mile gaps. As rural areas in the city become more urbanized and populated, the need for robust broadband infrastructure, including middle mile connections, will become even more critical.

Middle mile broadband infrastructure serves as the backbone for connecting local networks to the internet. Without it, last mile providers cannot offer reliable internet services to customers. Given that rural areas are seeing sustained urban development, increasing fiber capacity in these areas will support both the existing demand and future growth, providing more residents and businesses with the high-speed internet necessary for

education, business operations, and daily communication. Additionally, expanding middle mile infrastructure enables competition among internet service providers, giving businesses and residents more options for high-speed internet service. This competition is essential for driving down prices and improving service quality.

To meet the city's broadband needs, it is imperative to focus on filling in these gaps in the middle mile network, ensuring that both current residents and those moving into Pflugerville's growing neighborhoods have access to fast and reliable internet. As the city continues to grow, addressing these infrastructure gaps will be key to ensuring that broadband keeps pace with the city's development.

Figure 14: Existing Middle Mile + Middle Mile Needs





05

**FUTURE
PLANNING**

5.0 FUTURE PLANNING

As the City of Pflugerville looks towards its future, it is critical to evaluate all the potential possibilities and scenarios for that future. This Future Planning section uses both data and estimation to anticipate the possible futures for Pflugerville. Broadband and connectivity needs are assessed here as well as demographic trends, economic development data, and advanced technology themes. The goal is to produce a more narrowed focus in order to produce targeted high-level connectivity solutions.

Future Planning in this context refers to the strategic, forward-looking approach to designing and deploying digital infrastructure—particularly fiber-optic networks for broadband internet delivery—in a way that aligns with long-term development goals. It aims to ensure that connectivity solutions are not only sufficient for current needs but also scalable, sustainable, and adaptable to future demands in the Pflugerville community. This approach integrates elements of scenario planning, broadband planning, telecom engineering, and urban and regional planning to help the city look forward toward the future of community connectivity.

Scenario Planning is a strategic planning method used to explore and prepare for multiple possible futures. Rather than trying to predict one specific outcome, it involves developing a set of diverse, plausible scenarios that reflect different ways the future could unfold. This helps organizations or individuals anticipate uncertainties, identify risks and opportunities, and make more resilient long-term decisions.

5.1 Planning Scenario Frameworks

Key Features of Scenario Planning:

- **Focus on Uncertainty:** It's especially useful in complex or unpredictable environments where trends, technologies, or policies may shift rapidly.
- **Multiple Scenarios:** Typically includes several distinct narratives, each based on different combinations of key drivers or uncertainties.
- **Not Predictions:** Scenarios are not forecasts; they are stories about what could happen, not what will happen.
- **Strategic Insight:** Helps leaders test strategies against different futures, identify early warning signs, and remain flexible.

Scenario Structure + Data Sources:

Three scenarios (A: steady state, B: large-scale growth, C: alternative/future-focused) were developed for each category (residential, city facilities, economic development), using available quantitative data, trend information, and qualitative data gathered during city stakeholder outreach. These scenarios are outlined in **Table 11**.

Data Sources Used

- **Residential:** FCC Data, Comprehensive Plan, Census Bureau
- **City Facilities:** City of Pflugerville Stakeholder Outreach
- **Economic Development:** FCC Data, Pflugerville Community Development Corporation (PCDC), Pflugerville Mobility Master Plan, Pflugerville Capital Improvement Program (CIP)

Table 11: Pflugerville Broadband Planning Scenario Frameworks

<p style="text-align: center;">A) Continued Development & Stability</p> <ul style="list-style-type: none"> • 5-10% population growth • 400+ new broadband locations yearly - Steady population and development growth. - Continue current pace of development/permitting. 	<p style="text-align: center;">B) Accelerated Growth</p> <ul style="list-style-type: none"> • 20% increase in population between 2025 and 2035 • 800+ new broadband locations yearly - Higher than Texas average annual growth. - On pace with 2010-2020 Pflugerville growth. 	<p style="text-align: center;">C) Stagnated Growth</p> <ul style="list-style-type: none"> • Negative population growth rate • Stalled development, vacancy rate higher than 10% - Any Year on Year decline in population. - Full halt of development projects. - Elevated vacancy rate.
<p style="text-align: center;">A) Existing and Planned City Facilities</p> <ul style="list-style-type: none"> • Current Facilities, 2 AMI locations • 3 planned facilities - Fiber deployment to key existing facilities, prioritized parks, and current planned facilities. 	<p style="text-align: center;">B) Future Pfiber Footprint</p> <ul style="list-style-type: none"> • Current facilities, 2 AMI locations, 3 priority parks, 3 planned facilities and general eastward expansion - Fiber deployment to an expanded set of current facilities/parks plus planning for future sites. 	<p style="text-align: center;">C) Status Quo Connectivity</p> <ul style="list-style-type: none"> • Current facilities receive same service • 3 planned facilities - City continues using existing cable, wireless, fiber, and SD-WAN options technology mix for existing facilities.
<p style="text-align: center;">A) Maintained Economic Growth</p> <ul style="list-style-type: none"> • Business Growth: 3-5% • Unserved and underserved business locations, 2 data centers - Focuses on providing high-speed internet to current business and commercial needs. - Future business start rate is on par with current rate. 	<p style="text-align: center;">B) Full Digital Expansion</p> <ul style="list-style-type: none"> • Business Growth: 6+% • 3+ of data centers, additional transport needed - Increased presence of datacenter, industrial, and high-capcity commercial operations. - Requires added middle-mile capacity. 	<p style="text-align: center;">C) Economic Downturn</p> <ul style="list-style-type: none"> • Negative business growth rate • Stalled business permitting, increased unemployment - Regional and national economic impacts harm the city’s business growth. - Commercial footprint is reduced within the city and economic expansion stalls.

Basic Steps in Scenario Planning:

1. Define the issue or decision to be explored.
2. Identify key drivers of change (e.g., political, economic, technological, environmental).
3. Assess critical uncertainties—factors that could have a big impact but whose future direction is uncertain.
4. Build scenario frameworks by combining different outcomes of key uncertainties.
5. Develop narrative scenarios—detailed stories or descriptions of each future world.
6. Explore implications and strategic options for each scenario.
7. Monitor indicators that may signal which scenario is unfolding.

Selection of Scenarios: Based on population projections indicating an upward trend in population growth persisting over the next 20 to 40 years, the residential scenarios of A and B are considered relevant to address current growth and potential ETJ expansion. In terms of city facilities, the focus is on serving current and planned facilities. Given the increase in business permits and the city’s vision to become a “Connected Smart City” as identified in the Pflugerville Strategic Action Plan 2026–2030, the Full Digital Expansion scenario was chosen to support anticipated growth, particularly

along the SH130 corridor and along major thoroughfares. This narrowed set of scenarios will be utilized to develop high-level connectivity options.

Selected Residential Scenarios

A) Continued Development & Stability

In this scenario, the City of Pflugerville experiences steady population and development growth, maintaining its current pace of development and permitting activities. As new housing and commercial projects continue to be approved and built, the area anticipates a moderate increase in broadband serviceable locations each year. However, this expansion in broadband access remains nominal, not keeping pace with the overall growth. Population projections suggest a 5–10% increase over the planning period, reflecting a stable but gradual rise in demand for infrastructure and services. Based on development and FCC broadband data the City of Pflugerville could see 400 or more new broadband locations on a yearly basis.

B) Accelerated Growth

In this scenario, the city will experience higher-than-average annual growth compared to the Texas state average, aligning with the rapid pace observed between 2010 and 2020. This accelerated growth drives a significant increase in

broadband serviceable locations, with projections estimating the addition of over 800 new broadband locations annually. Supporting this trend, population forecasts indicate a substantial 20% increase between 2025 and 2035. This level of expansion reflects strong residential and commercial development, necessitating proactive infrastructure planning to keep pace with growing demand for connectivity and services.

Selected City Facility Scenario

B) Future Pfiber Footprint

This scenario is focused on expanding connectivity to a broader set of existing facilities and parks, while also incorporating strategic planning for future facilities development and needed capacity. There is an emphasis on current infrastructure needs being met by serving existing facilities, including two Advanced Metering Infrastructure (AMI) locations and three high-priority parks. In addition to addressing these immediate needs, the scenario includes extending fiber service to three planned new facilities, supporting anticipated growth. A key component of the strategy also involves accommodating general eastward expansion of city facilities positioning the network to effectively support future development in that direction.

Selected Economic Development Scenario

B Full Digital Expansion

This scenario accounts for increased presence of datacenter, industrial, and high capacity commercial operations. With an increase in demand for internet connectivity and communications infrastructure, added middle mile capacity will be required. Full Digital Expansion anticipates business growth of 6% or more, determined by number of added commercial permits. This scenario anticipates and plans for a future that sees heavy data usage and a need for fiber capacity to ensure that the City of Pflugerville remains a competitive market for employers, businesses, and next generation technology.

Scenario Application to Broadband Connectivity Improvement Option

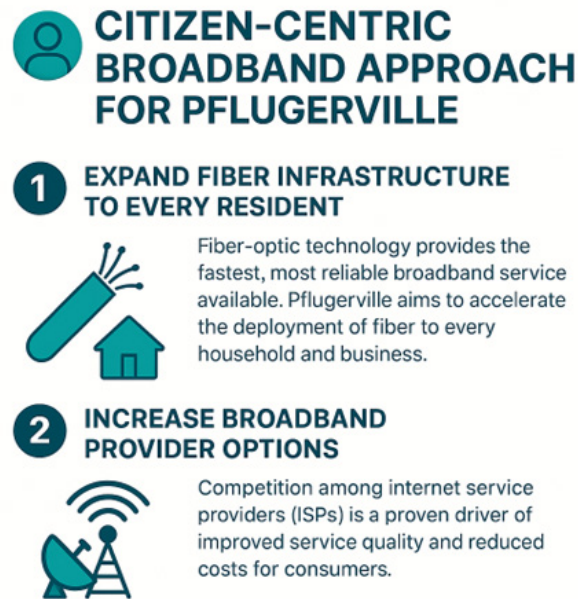
High-Level Designs (HLDs): The selected scenarios directly inform the creation of high-level designs for each category, with the intent to identify viable broadband connectivity solutions and prioritize infrastructure investments. These scenarios outlined above in combination with the needs and gaps evaluation, broadband data, asset mapping of existing infrastructure, and review of future city projects delineate the networks Pflugerville will need to be prepared for any possible future. A first step was looking at some

technologies that may populate any of these potential futures

5.2 Citizen-Centric Broadband Approach for Pflugerville

The City of Pflugerville recognizes that broadband is no longer a luxury but an essential service—integral to education, health care, commerce, and overall quality of life. A citizen-centric approach ensures that broadband planning and investment are guided by the needs and priorities of residents rather than solely by market forces. This approach focuses

Figure 15: Citizen-centric Broadband Approach



on inclusivity, equity, and long-term infrastructure resilience, ensuring that every household and business benefits from reliable, high-speed connectivity.

To achieve this, the city has identified two primary goals:

- **Expand Fiber Infrastructure to Every Resident:** Fiber-optic technology provides the fastest, most reliable broadband service available, with the capacity to meet both current and future data demands. Pflugerville aims to work with both public and private stakeholders to accelerate the deployment of fiber to every household and business. This includes targeted infrastructure investments, permitting efficiencies, and the strategic use of public rights-of-way. By expanding fiber availability, the city can ensure that residents have access to gigabit-capable service, reducing digital divides and supporting long-term economic growth.
- **Increase Broadband Options:** Competition among internet service providers (ISPs) is a proven driver of improved service quality and reduced costs for consumers. Pflugerville intends to foster an environment that encourages new ISPs to enter the market while supporting the expansion of existing providers. This will involve policy measures to lower barriers to

market entry, encourage infrastructure sharing where feasible, and promote transparent service and pricing information for residents. More provider options will empower consumers to choose services that best meet their needs, furthering both affordability and innovation.

A citizen-centric broadband strategy strengthens community resilience, enables greater participation in the digital economy, and ensures that all residents—regardless of income, location, or current service availability—have equal opportunities to connect. Pflugerville’s vision is not simply to improve internet service but to build a digital foundation that supports education, business, civic engagement, and quality of life for decades to come.

5.3 The Internet of Things (IoT) + The Future

IoT refers to the network of interconnected devices that collect, transmit, and act on data using embedded sensors, software, and other technologies. These devices range from everyday consumer items—like thermostats, appliances, and doorbell cameras—to industrial and municipal systems that monitor water usage, traffic flows, and air quality. What connects them all is their reliance on fast, reliable, and secure internet connectivity to function effectively.

As Pflugerville continues to grow both in population and infrastructure, IoT represents a vital opportunity to modernize city systems, streamline operations, and enhance residents’ quality of life. From smarter public safety tools to more efficient water systems and energy use, the expansion of IoT can support cost savings, improve responsiveness, and increase transparency in city services. However, the ability to fully leverage IoT depends on having robust broadband infrastructure that provides low latency, high bandwidth, and scalable capacity across the city.

5.3.1 IoT Applications in a Community Context

In Pflugerville, the potential use cases for IoT span multiple sectors:

- **Public Safety and Emergency Response:** IoT-enabled surveillance systems, gunshot detection sensors, and automated alert systems can help law enforcement and emergency services respond more quickly and with better information. Integration with smart streetlights and traffic systems can further assist with routing and coordination during emergencies.
- **Traffic and Mobility:** Smart traffic lights and vehicle detection sensors can reduce congestion and optimize signal timing based on real-time patterns. These systems depend on

consistent high-speed connectivity to communicate across networks and make dynamic decisions in near real time.

- **Water and Waste Management:** IoT-enabled meters and sensors can help monitor water usage, detect leaks, and optimize irrigation systems in public parks. Smart waste collection systems can adjust pickup schedules based on bin fill levels, reducing operational costs and emissions.
- **Energy Management and Smart Buildings:** Sensors that monitor HVAC systems, lighting, and energy usage in public buildings can significantly reduce energy consumption and costs. These systems require constant, reliable connectivity to function properly and deliver actionable data.
- **Environmental Monitoring:** Air quality sensors, flood detectors, and weather stations placed throughout the city can provide real-time data to help inform public health responses and climate resiliency planning.

5.3.2 The Broadband-IoT Link

None of the use cases above are possible without adequate broadband to support them. For IoT to function efficiently, networks must support:

- **Low Latency:** Many IoT applications,

such as public safety alerts or autonomous traffic signals, require data to be transmitted and acted upon in milliseconds. Latency above acceptable thresholds can render these applications ineffective or even unsafe.

- **Ubiquitous Coverage:** To ensure equity in service and access, all areas of Pflugerville—residential, commercial, and industrial—must have reliable internet coverage. Gaps in broadband coverage will translate directly into gaps in IoT service availability and reliability.
- **Device Density and Scalability:** A single square mile in a smart city environment may host thousands of connected devices. Network infrastructure must be designed to handle these high densities without degradation in performance.
- **Security and Reliability:** IoT devices increase the number of potential entry points for cyber threats. As such, broadband networks must integrate modern security protocols and resilience strategies to protect public infrastructure and personal data.

Integrating IoT into public and private operations should be a strategic goal for Pflugerville, but it requires intentional broadband planning and investment. Network infrastructure must be built not

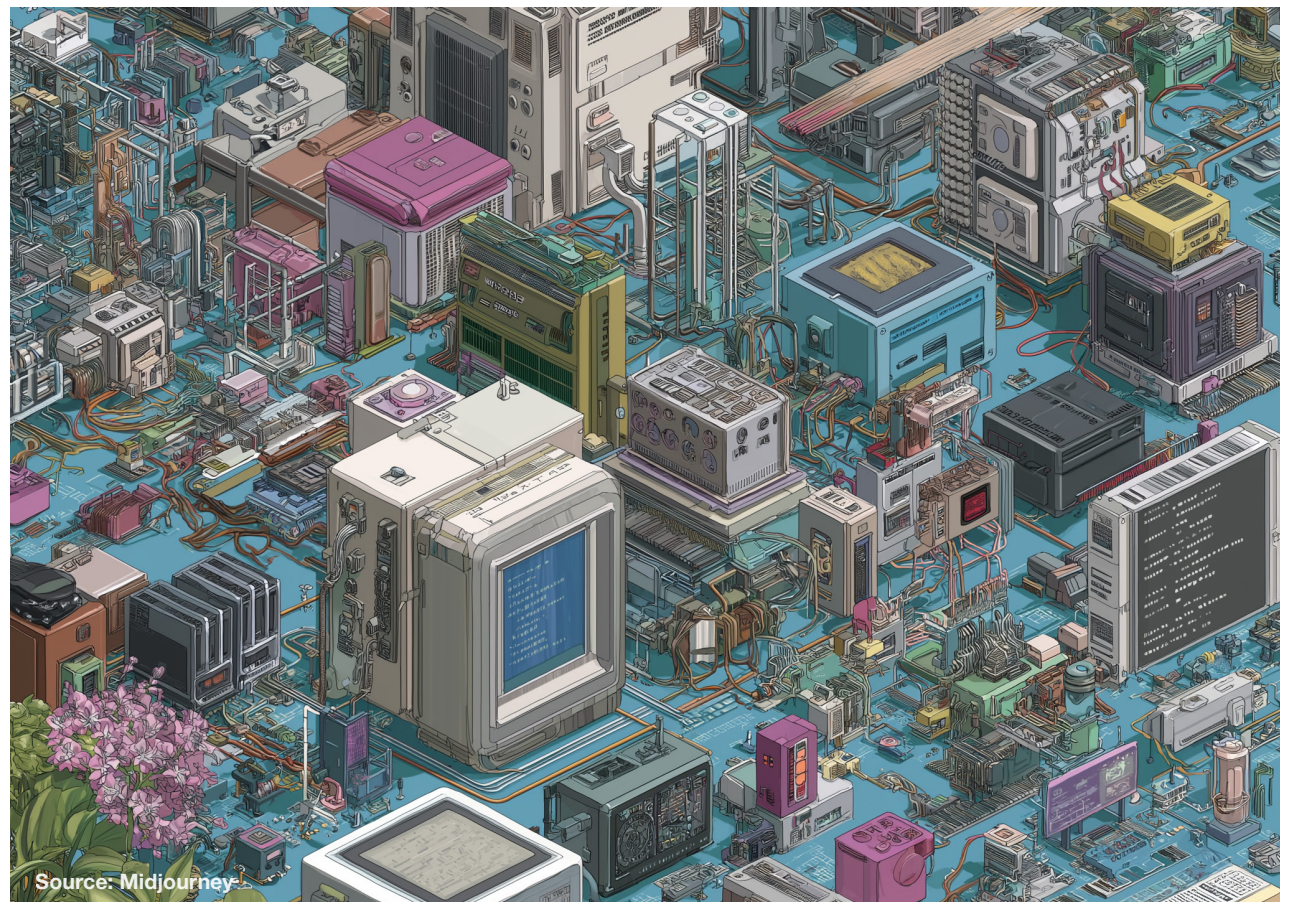
just to meet today’s demands but to accommodate the exponential growth of connected devices and services. This includes:

- Expanding fiber networks to support high-capacity backhaul.
- Ensuring equitable deployment across all neighborhoods.
- Engaging with industry and utility partners to anticipate future

connectivity requirements.

Additionally, P3 can be leveraged to pilot smart city initiatives that demonstrate the benefits of IoT while minimizing initial costs to taxpayers. These pilots can serve as proof-of-concept projects to secure further funding or attract technology investment.

IoT is not simply a futuristic concept—it is already shaping how cities function



Source: Midjourney

and serve their residents. For Pflugerville, thoughtful integration of IoT solutions offers a pathway to more efficient city operations, improved public services, and better quality of life. However, the success of any IoT initiative depends on the strength and reach of the broadband infrastructure that supports it. As such, investing in high-capacity, reliable internet access throughout Pflugerville is not only a technology upgrade—it is a foundational step toward building a smarter, more responsive, and more resilient community.



06

**CONNECTIVITY
IMPROVEMENT**

6.0 CONNECTIVITY IMPROVEMENT

A **High-Level Design (HLD)** serves as the foundational framework for evaluating how a fiber broadband network could be developed in Pflugerville. Unlike a detailed engineering design, which specifies construction-level details such as splice points, vault placements, and precise fiber counts, a high-level design outlines the conceptual architecture and routes of the network. Its purpose is to provide a technical roadmap that can be used to assess feasibility, cost, scalability, and alignment with community planning initiatives. The HLD allows decision makers to understand how a fiber system can be structured, where major routes and connections would be located, and how the network can serve both current and future demand.

For this feasibility study, a ring topology method was chosen as the guiding design principle. A ring topology provides multiple pathways for data to travel, which increases reliability and minimizes downtime in the event of a cut or failure in one part of the network. This redundancy is particularly important for municipal and community broadband systems, where resiliency directly supports critical services, businesses, and residents.

Beyond reliability, the ring design allows for efficient scaling as demand grows, ensuring that the network can adapt to future bandwidth requirements without a complete redesign. It also simplifies network management by creating clear, redundant loops that can be monitored and maintained more effectively.

To ensure a well-rounded approach, the HLDs were divided into four categories, each addressing specific community priorities. These include the Residential HLD, which evaluates how homes and neighborhoods can be connected; the City Facilities HLD which considers government buildings, public safety, and municipal services; and the Economic Development HLD, which looks at opportunities to support business growth and attract new employers through enhanced connectivity. These three components were then integrated into a comprehensive plan, referred to as the Pflugerville Pfiber Plan, which brings together the technical and strategic elements into a unified vision for broadband deployment across the city.

In developing these designs, this study incorporated existing planning efforts within the City of Pflugerville. The Mobility

Master Plan was analyzed and integrated to identify opportunities to align fiber routes with anticipated roadway and transportation improvements. This overlap reduces construction costs and minimizes community disruption by coordinating underground work. Similarly, the City's Capital Improvement Plans (CIP) were reviewed to locate synergies between upcoming infrastructure projects and proposed fiber pathways. This approach ensures that broadband planning is not siloed but instead works in concert with the city's broader development goals.

Together, the **High-Level Designs** establish a technically sound, cost-conscious, and future-proof framework for fiber broadband in Pflugerville. By leveraging a resilient ring topology, dividing the designs into focused categories, and aligning with city planning initiatives, the Pflugerville Pfiber Plan provides a roadmap for how Pflugerville can meet growing connectivity needs while maximizing the efficiency of its infrastructure investments. This introduction frames the design process not as a stand-alone exercise, but as a coordinated strategy that places broadband at the center of long-term community growth and resilience.

6.1 High-Level Designs

6.1.1 Residential High-Level Design

6.1.1.1. Scenario A: Continued Development + Stability

The Residential High-Level Design for Pflugerville establishes a 432-fiber count backbone route structured on a ring topology. This topology was selected due to its inherent resiliency and redundancy; in the event of a network disruption or fiber cut, data traffic can be rerouted in the opposite direction around the ring, minimizing service interruptions. This design approach ensures network stability while providing sufficient capacity to support both current residential demand and anticipated growth in broadband utilization. The total linear footage of this fiber route extends 142,972 feet, providing comprehensive coverage across the study area.

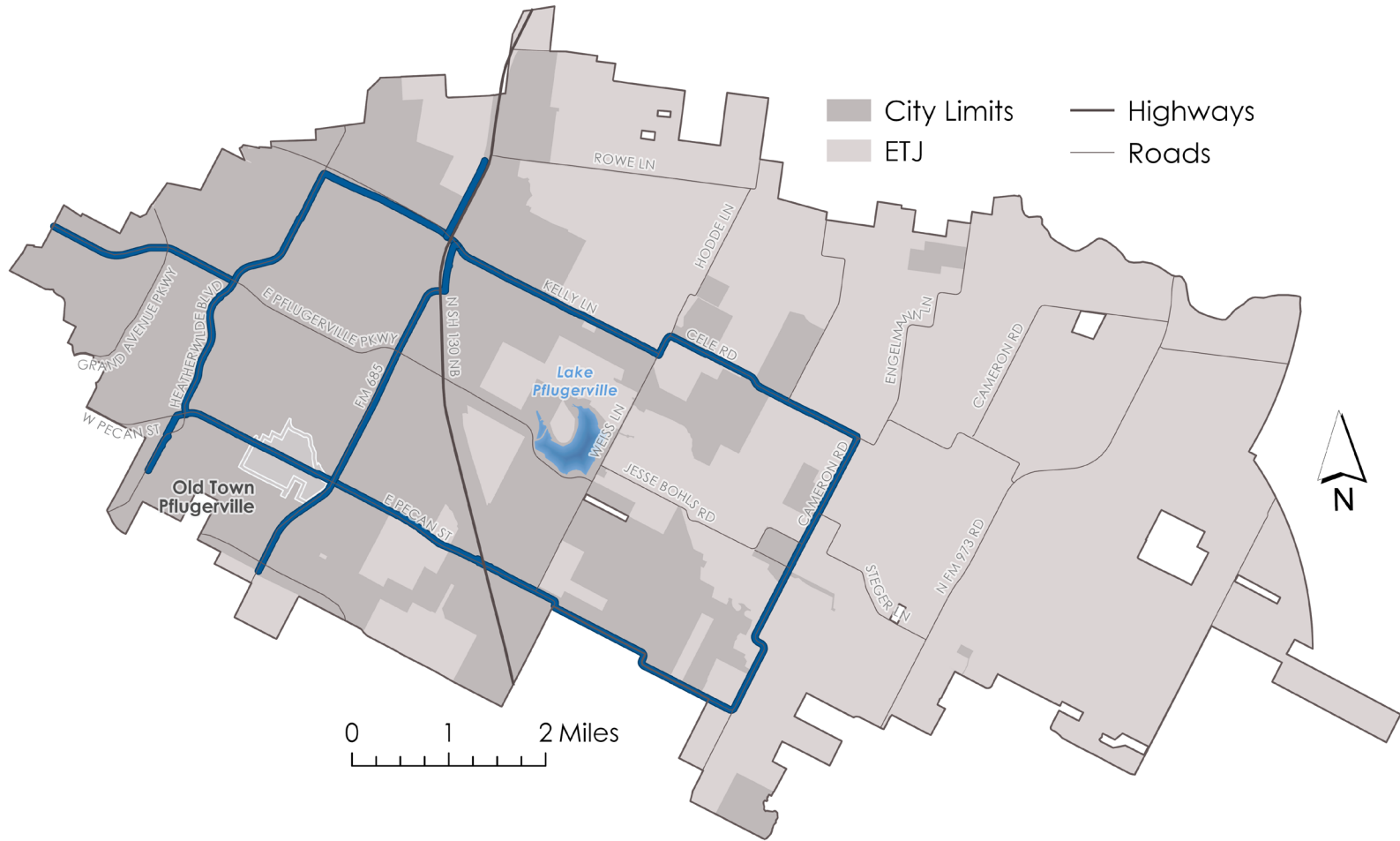
To extend service beyond the primary backbone, the design incorporates four lateral connections. These laterals branch outward from the ring to provide targeted reach into underserved and unserved areas within the city's jurisdiction. The inclusion of these laterals ensures that high-capacity infrastructure is directed where it is most needed, closing service gaps and enabling

equitable access to broadband across the community. By distributing fiber pathways in this manner, the design balances efficiency, reliability, and cost-effectiveness while maintaining scalability.

The combination of a robust ring backbone and strategically placed laterals positions Pflugerville for long-term broadband sustainability. The 432-fiber count capacity, coupled with the 142,972 linear feet of planned construction, provides substantial headroom for residential growth, service provider interconnections, and potential future applications requiring high bandwidth. This high-level design establishes a foundation capable of supporting advanced broadband services, enhancing network resiliency, and promoting economic development while meeting the city's goal of ensuring reliable, high-speed connectivity for all residents.

**Figure 16: Residential HLD -
Continued Development + Stability**

**Price Per Linear Foot: \$59.43
Total Linear Footage: 142,972**



— Scenario A: Continued Development & Stability (432 Fiber Count)

6.1.1.2 Scenario B: Accelerated Growth

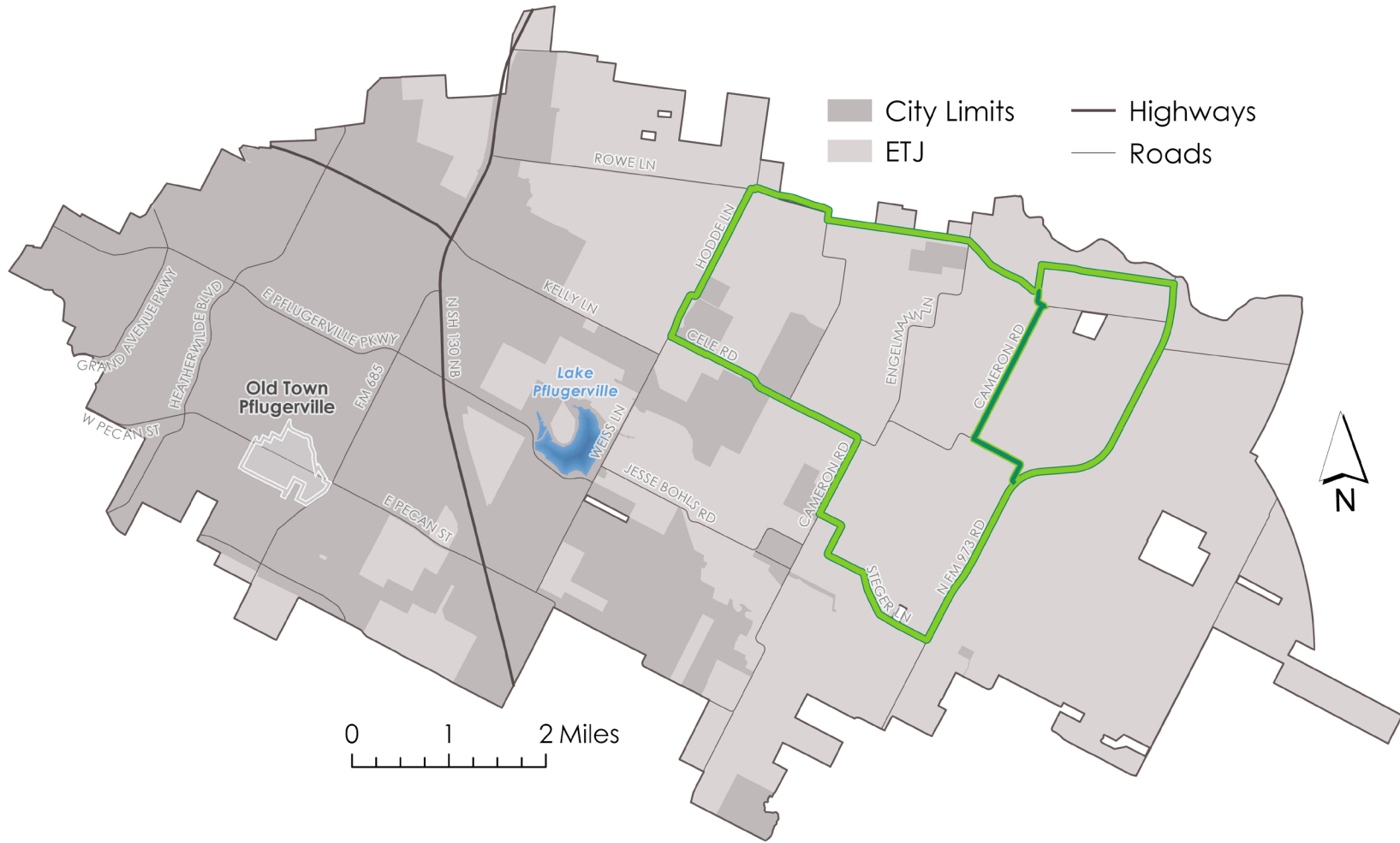
The Residential Scenario B: Accelerated Growth High-Level Design (HLD) is structured to extend broadband infrastructure primarily into Pflugerville’s extraterritorial jurisdiction (ETJ), where demand for new residential development and connectivity is rapidly increasing. This design utilizes a backbone composed of both 432-fiber and 288-fiber count segments, providing flexibility in capacity where full-scale deployment may not be immediately required. The total linear footage of the network extends 101,295 feet, reflecting the scale of investment needed to serve the ETJ effectively while maintaining a high-capacity backbone that supports accelerated community growth.

By prioritizing ETJ coverage, the Accelerated Growth design addresses underserved and unserved areas on the city’s periphery, ensuring that high-speed broadband keeps pace with residential expansion. The design maintains a ring topology, which enhances resiliency by providing redundancy in case of service interruptions, while also allowing for scalable lateral extensions as development expands outward. Incorporating both 432-fiber and 288-fiber routes allows the network to balance cost efficiency with the ability to scale, directing larger fiber capacity to core routes and reserving mid-size routes for areas with emerging demand.

This HLD positions Pflugerville to proactively meet future broadband needs by aligning infrastructure development with population growth patterns. The 101,295 feet of planned construction represents a significant capital investment, but the targeted nature of this deployment ensures that resources are directed where they are most needed—on the city’s growth edges. Furthermore, this configuration allows Pflugerville to leverage state and federal broadband funding programs to offset construction costs. By covering the ETJ with a mix of high-capacity and mid-capacity fiber, this design provides a sustainable and resilient framework to support accelerated growth while ensuring long-term reliability and equitable broadband access.

Figure 17: Residential HLD - Accelerated Growth

Price Per Linear Foot: \$55
Total Linear Footage: 101,295



Residential Scenario B: Accelerated Growth

— 432 Fiber Size — 288 Fiber Size

6.1.1.3 Residential Scenario A + B with Fiber Subdivision Overlay

The combined overlay of Residential Scenario A: Continued Development & Stability and Residential Scenario B: Accelerated Growth illustrates how Pflugerville's proposed fiber routes intersect with existing subdivisions, highlighting both well-served and underserved areas. Scenario A, shown in dark blue, introduces a 432-fiber backbone that forms a resilient ring within the city limits, providing the primary framework for connectivity. Scenario B, shown in green, expands outward with a mix of 432-fiber and 288-fiber routes, addressing anticipated growth in the ETJ and ensuring that outlying residential areas are incorporated into the network plan.

The overlay with subdivision data introduces an important layer of analysis: the percentage of BSLs within each subdivision currently served by fiber. Subdivisions are categorized as follows:

- **0 percent fiber** – subdivisions with no fiber presence.
- **1–33 percent fiber** – subdivisions with minimal fiber deployment, leaving most residents underserved.
- **34–66 percent fiber** – subdivisions with partial fiber coverage, where a significant portion of residents rely on older technologies such as coaxial or DSL.

- **67–99 percent fiber** – subdivisions with near-complete coverage but small service gaps.
- **100 percent fiber** – subdivisions fully served by fiber-to-the-home (FTTH).

Subdivisions in the 0–33 percent categories are of particular concern, as they represent neighborhoods with either no access to fiber or only limited access. Many of these areas are located along the edges of existing development or within rapidly expanding residential corridors where new housing is being added at a faster rate than infrastructure has been deployed. Without intervention, these areas are at risk of falling further behind, widening the digital divide within the city.

The Residential HLDs directly address these gaps by aligning backbone and lateral routes with subdivisions in the lowest coverage tiers. In Scenario A, the establishment of the fiber ring ensures that subdivisions currently below 33 percent fiber coverage within the city limits are provided with connection points along the main route. Scenario B extends this principle into the ETJ, where accelerated growth is creating entire subdivisions with limited or no fiber. By introducing 288-fiber extensions in these areas, Scenario B reduces the number of subdivisions in the 0–33 percent category and transitions them toward majority or full coverage. Equally important, the HLD passes

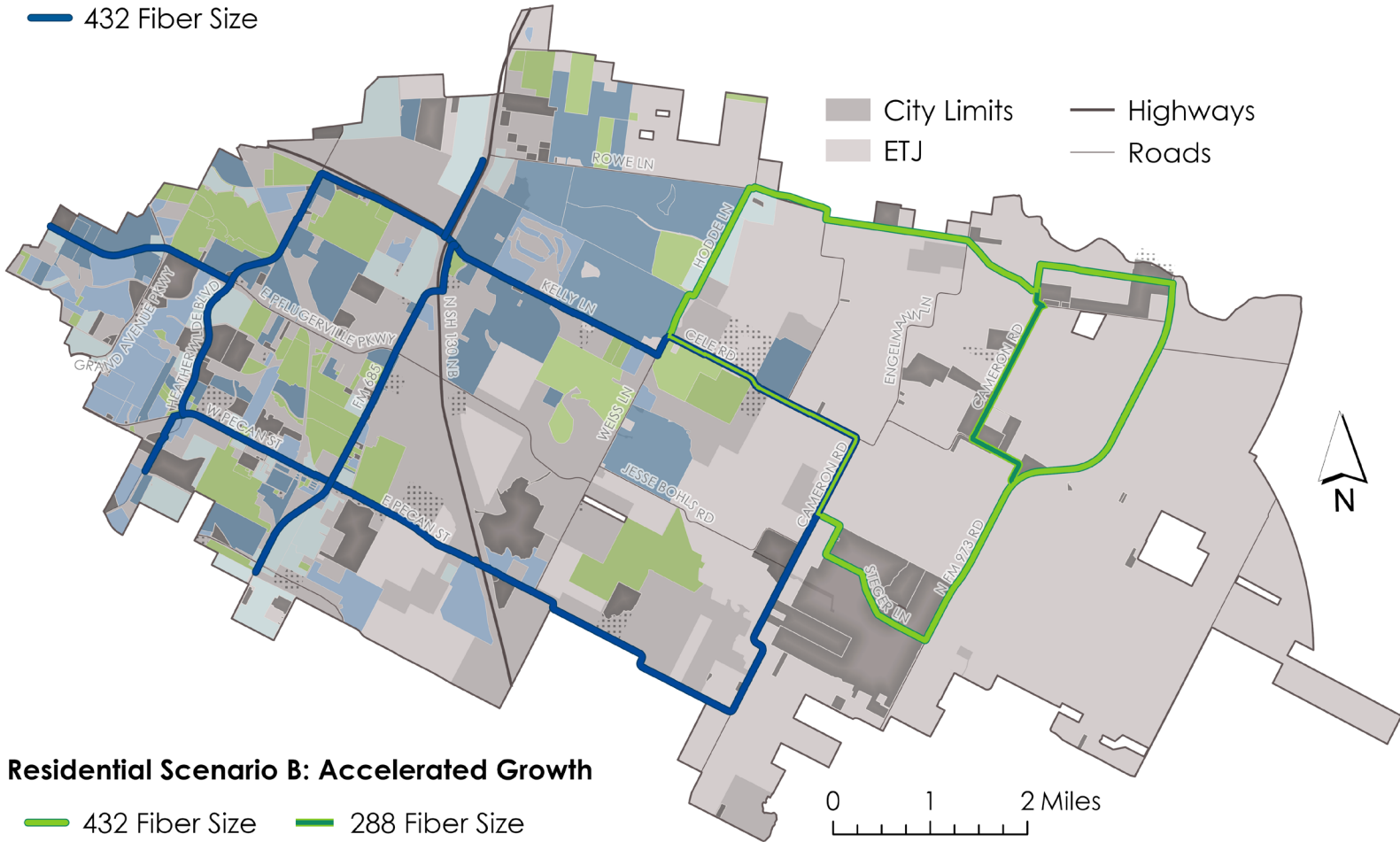
strategically through subdivisions with 34–66 percent coverage, closing service gaps that can leave residents within the same neighborhood experiencing vastly different broadband speeds and reliability. The ring and branching design ensure that these partially served subdivisions can be upgraded efficiently, converting them into 67–100 percent fiber-served areas without the need for isolated or piecemeal deployments.

By directly targeting subdivisions with low fiber percentages, the Residential HLDs not only expand service availability but also reinforce the ring topology's redundancy and scalability. This ensures that new and existing neighborhoods are brought into the network in a way that is both technically efficient and aligned with Pflugerville's long-term growth patterns.

Figure 18: Residential Scenario A + B, overlaid with Fiber Subdivision Layer

Residential Scenario A: Continued Development & Stability

— 432 Fiber Size



Residential Scenario B: Accelerated Growth

— 432 Fiber Size — 288 Fiber Size

Percent of Fiber Served BSLs



Price Per Linear Foot: \$135
Total Linear Footage: 227,921

6.1.1.4 Residential Scenario A + B with CIP + Master Mobility Plan

The overlay of Residential Scenario A: Continued Development & Stability and Residential Scenario B: Accelerated Growth with Pflugerville’s Capital Improvement Projects (CIP) and Master Mobility Plan highlights the importance of coordinating broadband deployment with ongoing and planned infrastructure investments. By aligning fiber construction with roadway projects, the City can reduce costs, avoid redundant construction, and minimize disruption for residents and businesses while ensuring future broadband scalability.

Scenario A establishes a 432-fiber backbone ring through central Pflugerville, while Scenario B extends capacity outward using both 432- and 288-fiber segments to serve accelerated growth areas and subdivisions in the ETJ. These HLD routes are not planned in isolation; they directly overlap with several transportation corridors identified in the Master Mobility Plan and CIP. Importantly, fiber routes follow rights-of-way already targeted for roadway upgrades, allowing the City to integrate broadband deployment into broader mobility and development strategies.

The types of projects crossed by the HLD include:

- Highways – long-haul corridors that provide regional connections and opportunities for scalable backbone placement.
- Arterial Roadways – major city connectors that move high traffic volumes and are crucial for distributing fiber to both commercial and residential nodes.
- Major Collectors – neighborhood-to-arterial routes that provide distribution points for extending fiber deeper into subdivisions.
- Minor Collectors – local connections where fiber deployment enhances last-mile residential service.
- Critical Connections – strategic roadway segments where mobility and utility upgrades converge, making them essential for shared infrastructure deployment.
- Urban Corridors – dense mixed-use areas where broadband demand is high and fiber investment supports both residents and businesses.
- Special Corridor Areas – targeted development corridors where coordinated roadway and broadband improvements are expected to accelerate economic development.
- Future TxDOT Road Improvements – planned state-led projects, such as expansions near Kelly Lane and

FM 685, which provide cost-sharing opportunities for trenching and conduit.

- Transportation CIP Projects – local roadway enhancements where fiber can be laid during reconstruction or expansion.

By crossing these corridors, the Residential HLDs ensure that broadband infrastructure is installed alongside the very projects that will define Pflugerville’s mobility and growth over the next decade. This integration not only extends service coverage but also leverages public investment in roadways to futureproof digital infrastructure.

6.1.2 City-Facilities HLD

6.1.2.1 Scenario A: Existing and Planned Facilities

The City Facilities HLD for Pflugerville focuses on building a 288-fiber count backbone that connects both existing and future municipal facilities. This network extends a total of 28,494 linear feet and is specifically designed to strengthen city operations and public service delivery. Importantly, this design is supported by the broader Residential Scenario A: Continued Development and Stability (432-fiber count) backbone, which establishes the ring topology necessary to provide reliable connections to the municipal routes shown in City Facility Scenario A. Without the residential ring, the facility-specific

extensions would lack the resiliency and redundancy required for long-term sustainability.

As shown in the map, the HLD strategically connects critical locations such as the Pflugerville Public Library (blue), planned city facilities (orange stars), and AMI (Advanced Metering Infrastructure) collector locations (gold squares), which are essential for advancing smart utility operations. Additionally, the design links to community assets including Lake Pflugerville Park, 1849 Park, and Wells Point Park Soccer Complex (green), ensuring that both recreational and civic spaces are equipped with robust digital infrastructure. By leveraging the Residential Scenario A ring as its backbone, these connections gain the benefit of a resilient and scalable foundation.

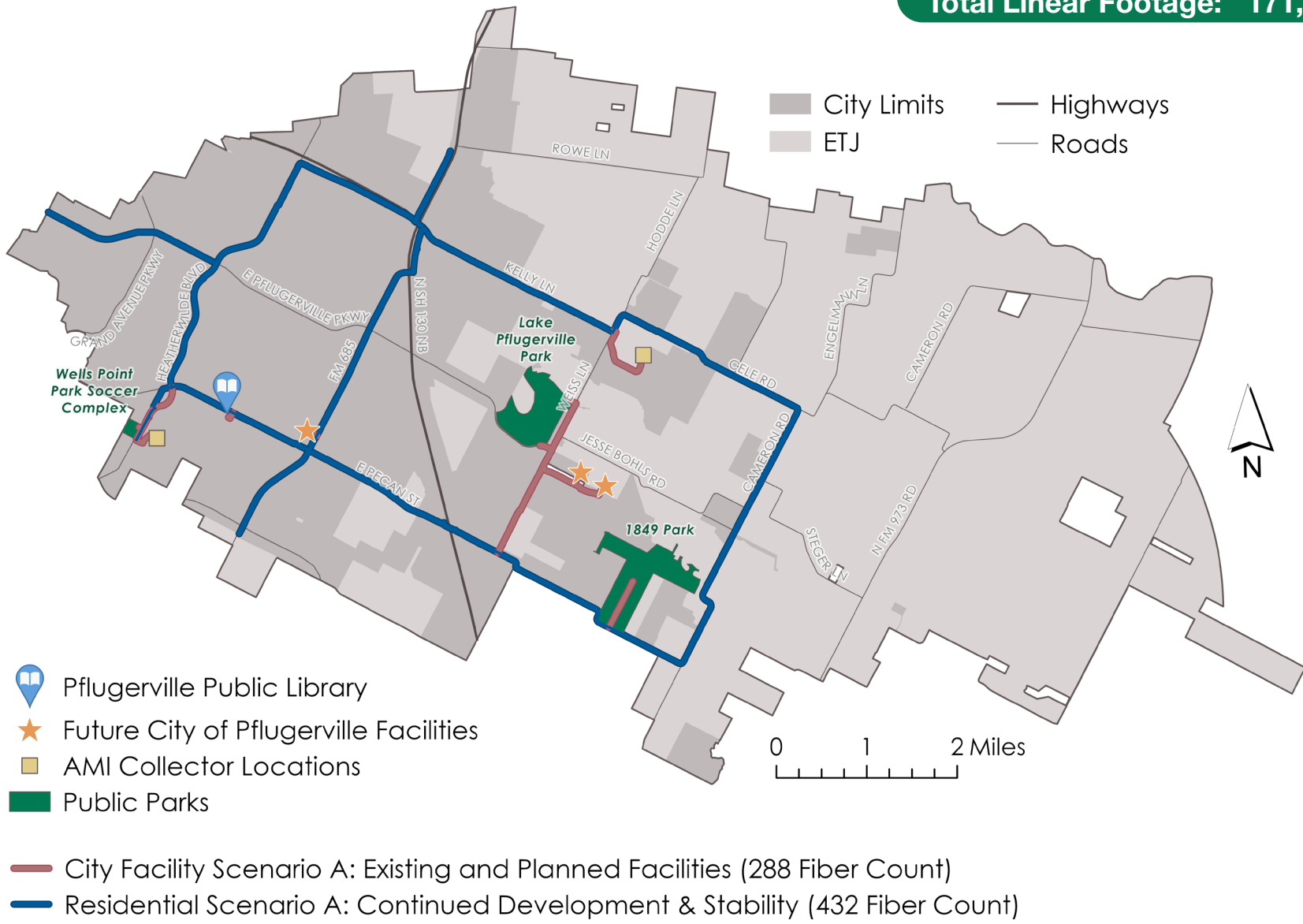
Direct fiber connectivity to these facilities is essential for modern municipal operations. It supports bandwidth-intensive applications such as public Wi-Fi, real-time security systems, advanced data management, and the integration of smart city technologies. Just as importantly, it enhances interdepartmental communication, reduces reliance on third-party providers, and strengthens cybersecurity for sensitive municipal data. By aligning the 28,494 feet of city facility fiber with the 432-fiber residential ring,

Pflugerville ensures that its government assets are not only interconnected but also supported by a resilient backbone capable of adapting to future growth, technological change, and community needs.

Connecting city facilities is particularly important because these assets serve as the backbone of local government operations and public service delivery. A dedicated fiber network enables faster interdepartmental communication, reduces reliance on third-party providers, and increases security for sensitive municipal data. It also supports smart city initiatives such as real-time traffic management, advanced utility monitoring, and digital inclusion programs offered through public libraries and parks. By ensuring that municipal facilities are interconnected through a resilient and scalable broadband network, Pflugerville can provide more efficient, reliable, and innovative services to residents while reducing long-term operational costs.

Figure 19: City Facilities HLD

Price Per Linear Foot: \$59
Total Linear Footage: 171,468



6.1.3 Economic Development HLD

6.1.3.1 Scenario B: Full Digital Expansion

Scenario B represents a full digital expansion of the Pflugerville broadband network, designed to support the city's long-term economic development goals. This design utilizes a 432-fiber count backbone that extends across major corridors within the city and its ETJ. The alignment strategically follows growth areas, commercial zones, and key transportation corridors, ensuring that businesses and industrial developments can access reliable and scalable broadband infrastructure.

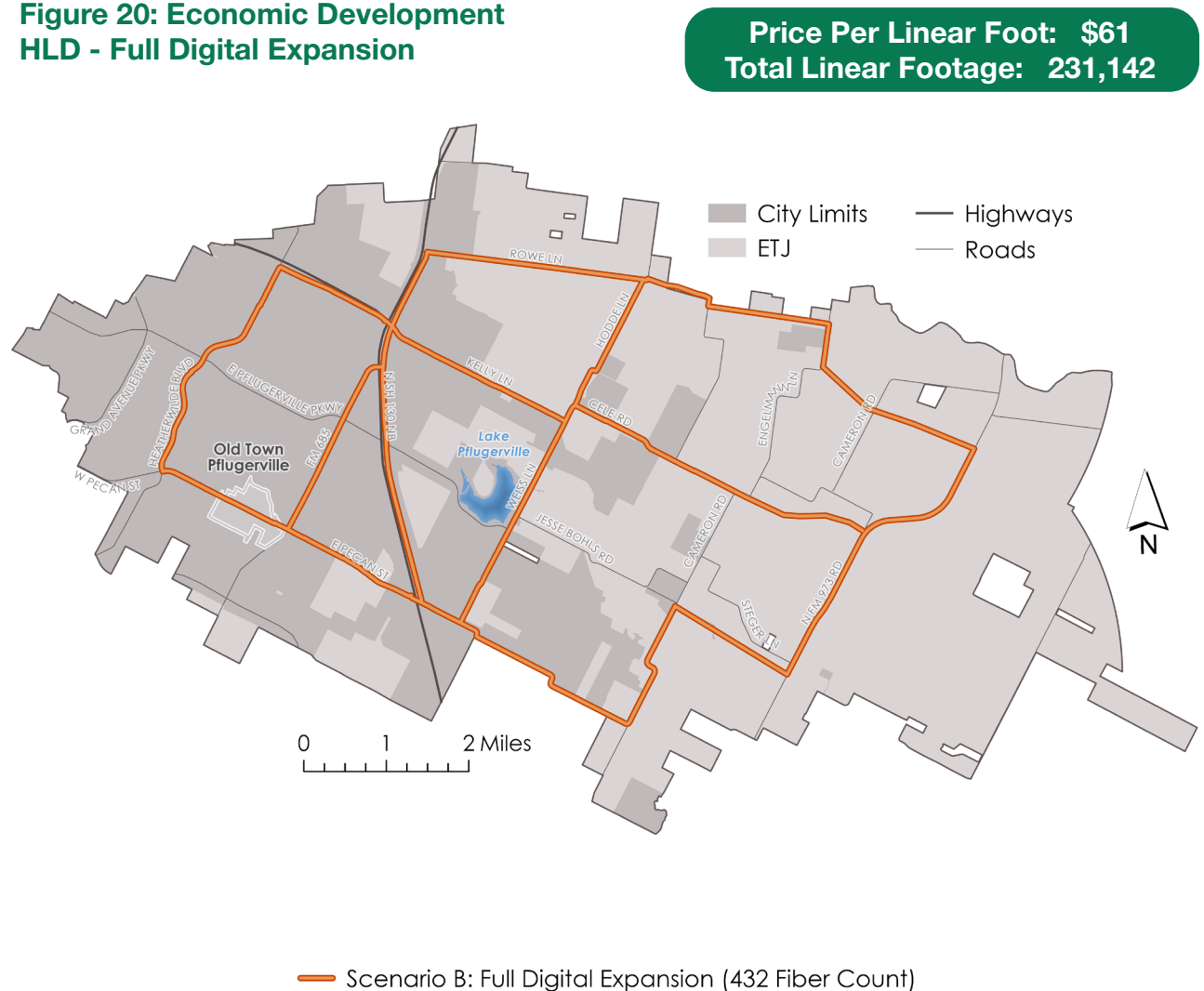
The network is structured using ring topologies, a design approach that ensures redundancy and resiliency. In the event of a fiber cut or service disruption, the ring architecture allows traffic to reroute automatically in the opposite direction, minimizing downtime and maintaining service continuity. This redundancy is particularly critical for economic development areas where consistent and uninterrupted broadband access is vital to operations, including logistics centers, business parks, and technology-driven industries.

By implementing Scenario B, Pflugerville positions itself to meet the demands of both current employers and future

economic opportunities. High-capacity fiber connectivity not only attracts new businesses but also supports existing enterprises with advanced digital tools, cloud services, and high-speed data transfer capabilities. This digital expansion

enhances the city's competitiveness and strengthens its foundation as a forward-looking, innovation-driven community.

Figure 20: Economic Development HLD - Full Digital Expansion



6.1.3.2 Economic Development HLD with CIP and Master Mobility Plan

The Economic Development High-Level Design, Scenario B: Full Digital Expansion integrates a 432-fiber backbone across Pflugerville, strategically positioned to align with the City’s Capital Improvement Projects (CIP) and Master Mobility Plan. This alignment ensures that broadband deployment supports not only residential and institutional needs but also the long-term growth of commercial and industrial corridors. By co-locating fiber along planned mobility and infrastructure projects, Pflugerville reduces construction redundancy, lowers deployment costs, and ensures that future business districts, employment centers, and innovation hubs are served with reliable and scalable connectivity.

Scenario B is designed as a full digital expansion, extending fiber into both established economic districts and areas planned for future commercial growth. The HLD strengthens corridors like SH 130, FM 685, Pecan Street, and Pflugerville Parkway, which are already key transportation and employment routes, ensuring that the backbone of Pflugerville’s economy is future-proofed. By pairing broadband expansion with mobility planning, the City positions itself to meet the connectivity needs of advanced manufacturing, logistics, office parks, and

technology-driven enterprises while also supporting small businesses and mixed-use developments that will shape the community’s future.

The types of projects crossed by the HLD include:

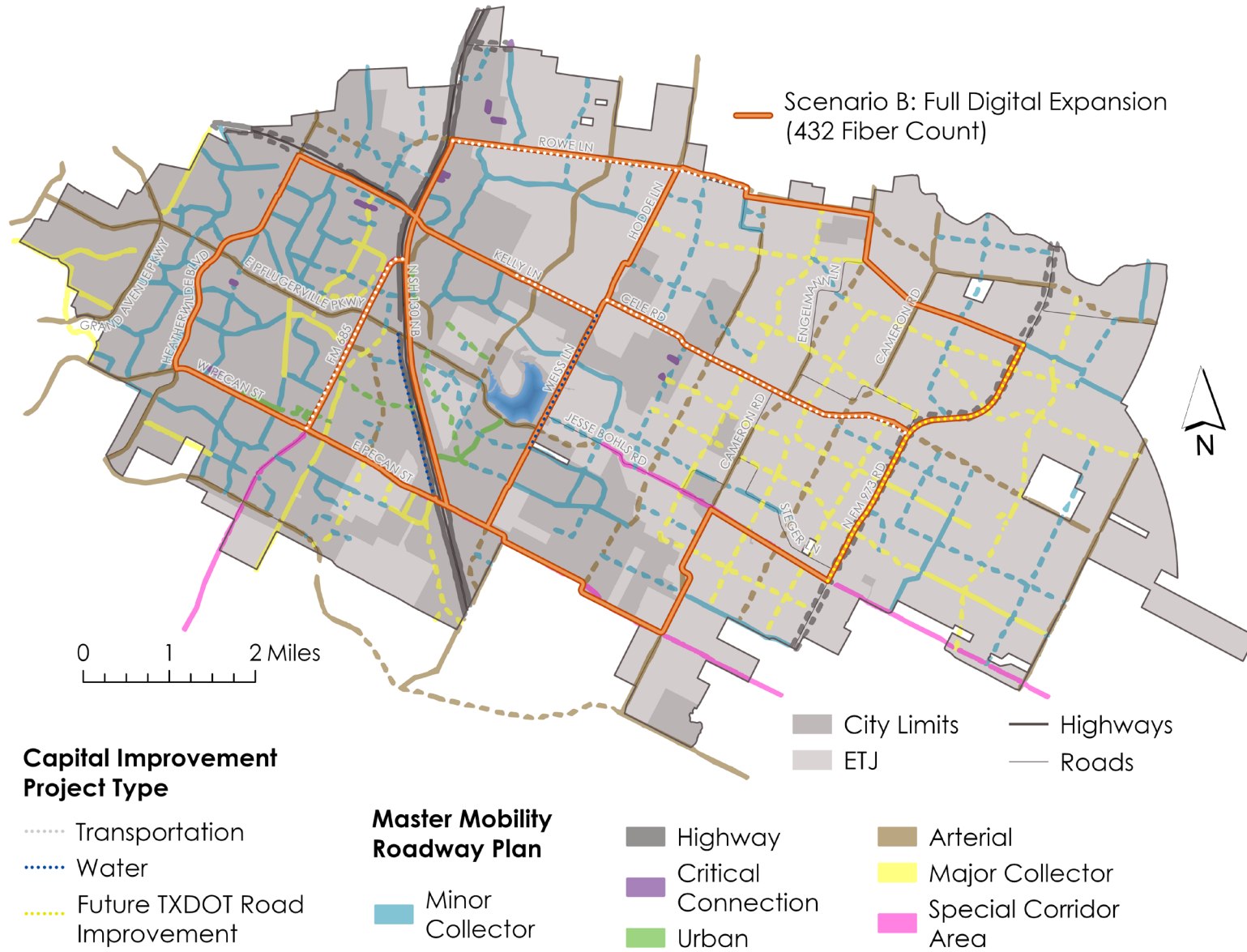
- **Highways** – critical regional connectors, including SH 130, where broadband access supports freight, logistics, and business expansion.
- **Arterials** – major city connectors such as Pecan Street and Kelly Lane that serve as anchors for commercial and mixed-use growth.
- **Major Collectors** – routes that distribute traffic and services into business parks and retail centers, providing access points for extending fiber to employers.
- **Minor Collectors** – localized connections ensuring small-scale commercial sites and neighborhood-serving businesses are not overlooked.
- **Critical Connections** – roadway segments that bridge economic districts and enable both mobility and broadband redundancy.
- **Urban Corridors** – high-density mixed-use areas where office, retail, and residential uses overlap, demanding robust, high-capacity broadband.
- **Special Corridor Areas** – targeted

development zones, such as along Pflugerville Parkway, where coordinated infrastructure upgrades accelerate investment.

- **Transportation CIP Projects** – mobility improvements where trenching for fiber can be integrated with street work to minimize disruption.
- **Water CIP Projects** – utility corridors that present shared trenching opportunities for broadband deployment.
- **Future TxDOT Road Improvements** – state-led expansions that offer cost-effective opportunities to install conduit and fiber at scale.

By intersecting these mobility and infrastructure corridors, the Economic Development HLD ensures that broadband is not only available where people live but also where they work, shop, and innovate. This integration is especially important for employment centers, industrial zones, and innovation districts, which require resilient, high-speed connections to compete in regional and global markets. The result is a broadband system that underpins Pflugerville’s ability to attract and retain businesses, support workforce development, and promote sustained economic vitality.

Figure 21: Economic HLD, Scenario B - Full Digital Expansion Overlaid with Master Mobility Plan + CIP Lines



6.1.3.3 Economic Development HLD, Scenario B with Future Land Use

The Economic Development HLD under Scenario B: Full Digital Expansion represents one of the most critical components of the Pflugerville Pfiber Plan. Built on a 432-fiber count backbone, this scenario leverages a citywide ring topology to extend high-capacity broadband infrastructure throughout Pflugerville, strategically aligning with the city's Future Land Use Plan. The integration of broadband planning with land use designations ensures that as Pflugerville grows, its economic hubs, neighborhoods, and mixed-use corridors are supported by a reliable and scalable digital framework.

Broadband Infrastructure + Land Use Integration

Overlaying broadband expansion with the city's land use plan highlights the importance of placing fiber along routes that serve economic, residential, and institutional growth zones. By planning around future development patterns, Pflugerville can ensure its broadband investments align with population growth, employment demand, and community needs. This design approach not only maximizes infrastructure efficiency but also strengthens the city's position for attracting state and federal broadband funding by demonstrating coordination across planning domains.

The use of ring topologies in Scenario B adds resiliency to the system by providing redundant routing. If one section of fiber is compromised, traffic can be rerouted through alternate paths, maintaining uninterrupted service. This feature is essential for areas that depend heavily on reliable connectivity, such as employment districts, industrial zones, and innovation centers, where service disruptions could result in economic losses and operational inefficiencies.

Land Use Categories + Connectivity Priorities.

The overlay map illustrates the alignment between broadband expansion and specific land use designations. Each category plays a unique role in shaping Pflugerville's growth and highlights why targeted broadband deployment is essential.

- **Suburban Residential (light gray):** Represents low- to medium-density housing developments located primarily at the city's periphery. Connecting these areas ensures residents benefit from equitable access to broadband for remote work, online learning, and telehealth.
- **Traditional Neighborhood (purple crosshatch):** Older or more established residential areas with grid-style layouts. Fiber deployment here

supports digital equity by upgrading legacy infrastructure and improving connectivity in established parts of the city.

- **Mixed-Density Neighborhood (blue crosshatch):** Areas combining single-family homes, townhomes, and small multi-family units. Broadband access in these areas ensures flexibility for diverse housing types and supports moderate population density.
- **Mixed-Use Neighborhood (lavender):** Developments that integrate residential living with retail, restaurants, or office space. High-capacity broadband is essential here to support both residents and small businesses in a single, blended community environment.
- **Neighborhood Retail/Office/Commercial (red):** Smaller-scale business corridors embedded within neighborhoods. These areas require strong broadband connections to support local business operations, customer Wi-Fi, and service reliability.
- **Mixed-Use Commercial (brown):** Higher-intensity commercial areas often integrating offices, retail, and professional services. Fiber connectivity in these zones is crucial for attracting tenants and sustaining competitive digital services.
- **Innovation Centers (dark blue):** Planned hubs for technology, research,

and entrepreneurship. Broadband is a core requirement for these areas, supporting high-tech operations, data-intensive industries, and collaboration spaces.

- **Employment (navy):** Areas designated for job centers and business activity. Fiber in these areas ensures employers can operate with uninterrupted high-speed connectivity, vital for competitiveness and workforce productivity.
- **Industrial (blue-gray):** Warehousing, logistics, and manufacturing centers. These facilities increasingly depend on broadband for automation, supply chain management, and real-time data sharing.
- **Institutional (gray):** Schools, government buildings, and other public facilities. Broadband deployment here supports education, city services, and public-sector efficiency.
- **Parks and Open Space (light green):** Recreational and conservation areas such as Lake Pflugerville Park. While not a direct broadband driver, surrounding fiber routes can support amenities such as public Wi-Fi, smart lighting, and environmental monitoring.
- **Utilities (dark crosshatch):** Critical service areas, including water, power, and other utility infrastructure. Fiber supports smart utility management,

system monitoring, and resiliency against outages.

Strategic Value of Scenario B

By extending broadband into each of these land use categories, Pflugerville ensures that its economic development priorities are aligned with its community development needs. The design supports businesses by delivering reliable connectivity to industrial parks, commercial corridors, and innovation districts, while also providing equitable access for residents in both suburban and traditional neighborhoods. Furthermore, connectivity to institutional facilities ensures that schools and government services remain digitally equipped to serve the community.

The 432-fiber count backbone provides sufficient capacity not only for today's needs but also for future expansion as the city continues to grow. This high-capacity design allows the city to scale services to support new businesses, higher residential densities, and data-intensive applications like 5G backhaul, telemedicine, and advanced manufacturing systems.

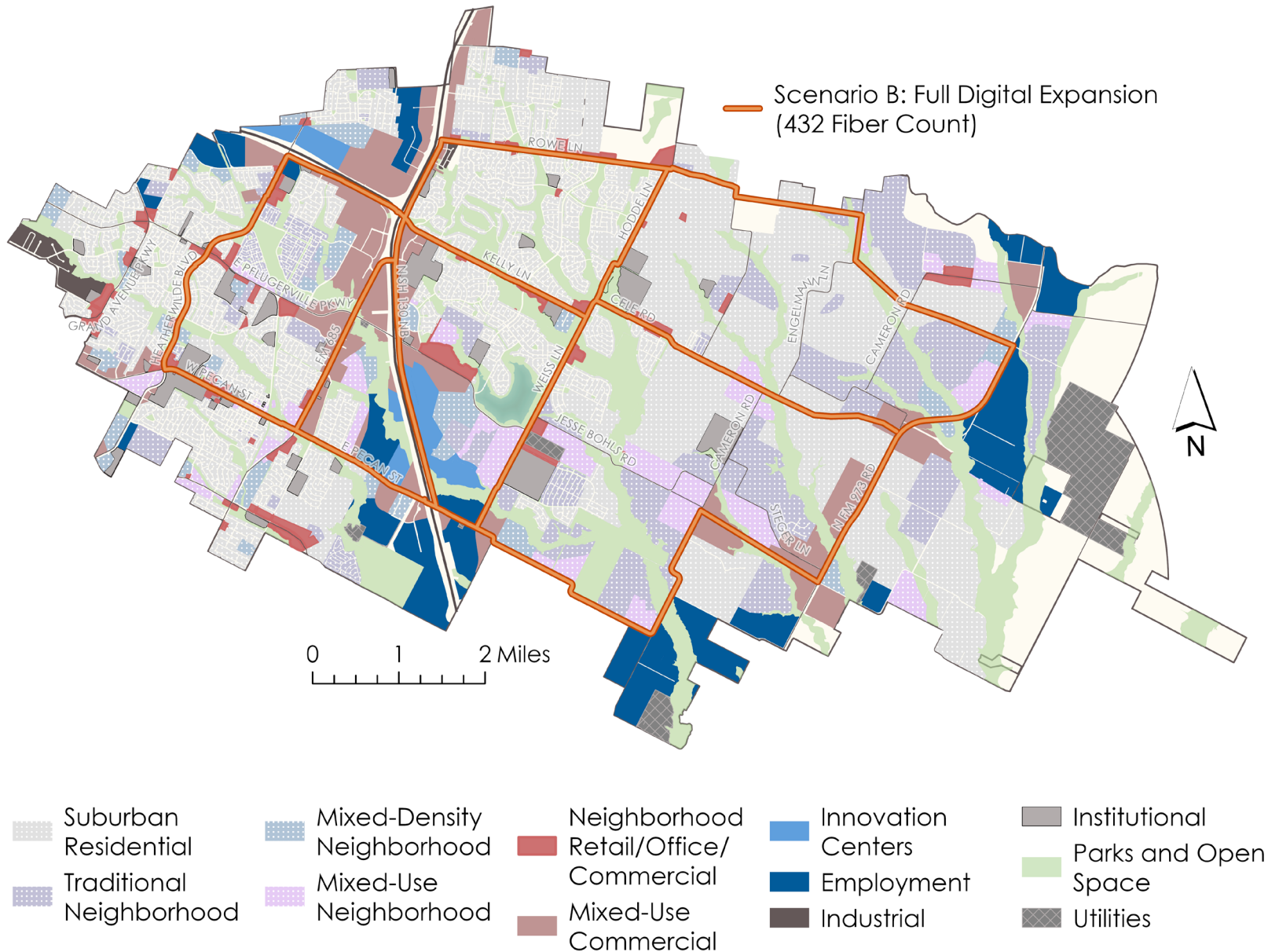
Relationship to the Pflugerville Pfiber Plan.

When considered alongside the Residential High-Level Design, Scenario B demonstrates the strength of the unified Pflugerville Pfiber Plan. The residential design ensures households

and neighborhoods receive equitable, reliable broadband service, while the economic development design ensures that employment centers, mixed-use developments, and innovation hubs are digitally empowered. Together, they form a comprehensive, citywide broadband ecosystem built on redundancy, scalability, and resiliency.

By aligning broadband expansion with land use planning, Pflugerville is creating more than just a network—it is building a digital foundation that underpins economic growth, educational advancement, community connectivity, and long-term resiliency. Scenario B ensures that Pflugerville's future workforce, residents, and businesses are positioned to thrive in a digitally driven economy.

Figure 22: Economic HLD, Scenario B - Full Digital Expansion Overlaid with Future Land Use



6.1.4 Pflugerville Pfiber Plan

The Pflugerville Pfiber Plan represents the comprehensive integration of residential, city facility, and economic development high-level designs into a single, unified broadband network. At its foundation, the plan deploys a 432-fiber backbone extending 142,974 linear feet, strategically routed to form resilient ring topologies across the city and its ETJ. This backbone provides the primary capacity needed to serve residential neighborhoods, business corridors, and innovation hubs with scalable, future-ready broadband infrastructure.

In addition to the main backbone, the Pfiber Plan incorporates 288-fiber facility connections totaling 18,695 linear feet. These connections ensure direct integration of existing and planned city facilities, including libraries, parks, and municipal service buildings, into the broader network. By embedding municipal assets into the backbone design, the plan not only strengthens the city's operational resiliency but also improves the delivery of services such as public safety, smart utilities, and community connectivity.

The Pflugerville Pfiber Plan ultimately serves as a digital foundation for the city's growth, aligning broadband infrastructure with land use priorities

and future development needs. Its ring-based design provides redundancy for uninterrupted service, while its capacity ensures long-term scalability to support population growth, business expansion, and emerging technologies. By combining high-capacity residential coverage with targeted city facility connections, the Pfiber Plan positions Pflugerville as a leader in community-driven broadband development.

This Pfiber Plan is designed to be comprehensive and robust to deliver high capacity internet service across the city. Certain sections of the design are redundant with existing middle mile as shown in the Existing Middle Mile Map (Figure 14). There may be opportunities to

reduce the greenfield, or new construction, elements of this Pfiber Plan. A map of a greenfield version of the Pflugerville Pfiber Plan is outlined in Figure 24. Working with existing middle mile providers to increase strand count or lease existing capacity could assist in reducing the overall capital expenditure for any new build segments

Additionally, there may be opportunities to leverage future CIP projects and TXDOT projects to assist with this buildout. Figure 23 outlines an example of overlap between the network design and future roadway improvement projects. Planning ahead for inclusion of conduit or duct installation in these planned road improvements can reduce right-of-way disturbance events in a phased buildout.

Figure 23: Pflugerville Pfiber Plan (Greenfield) CIP and TxDOT Opportunities

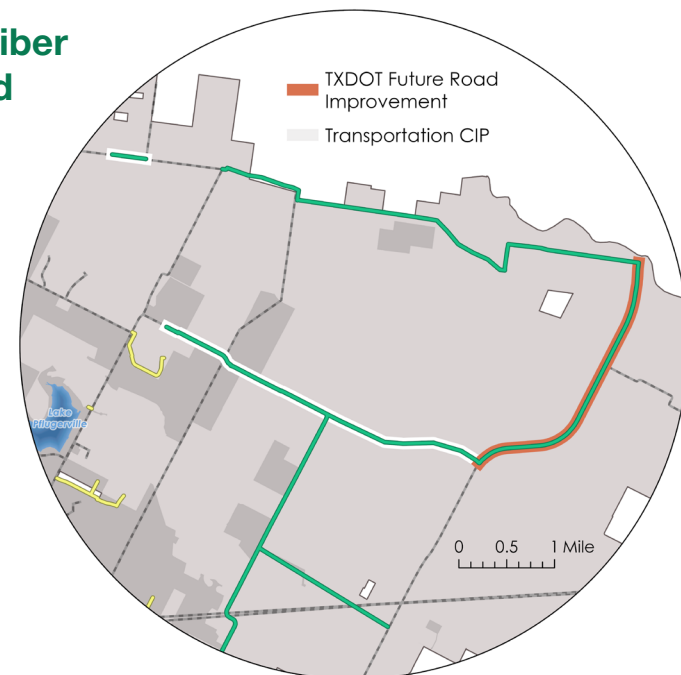
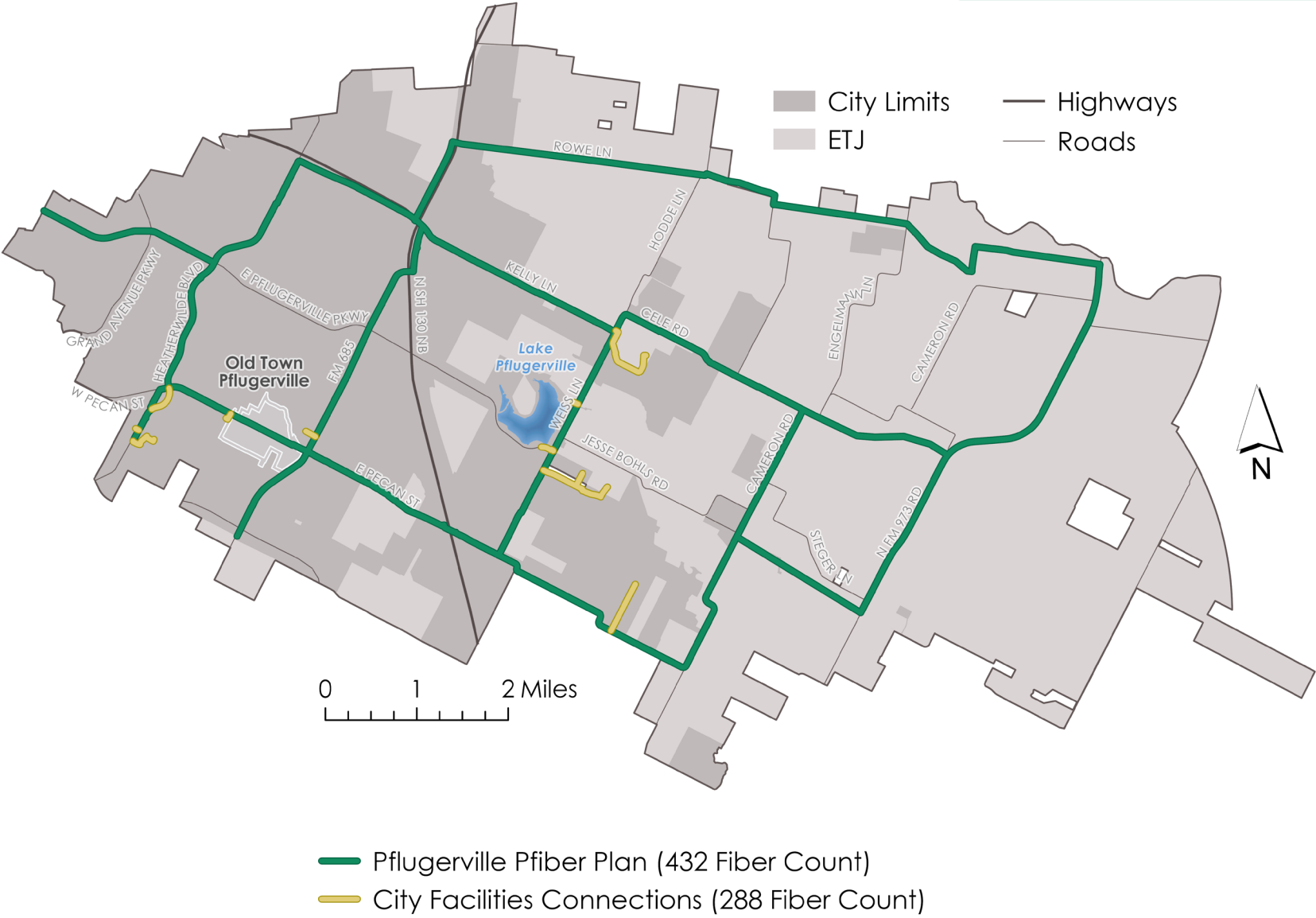


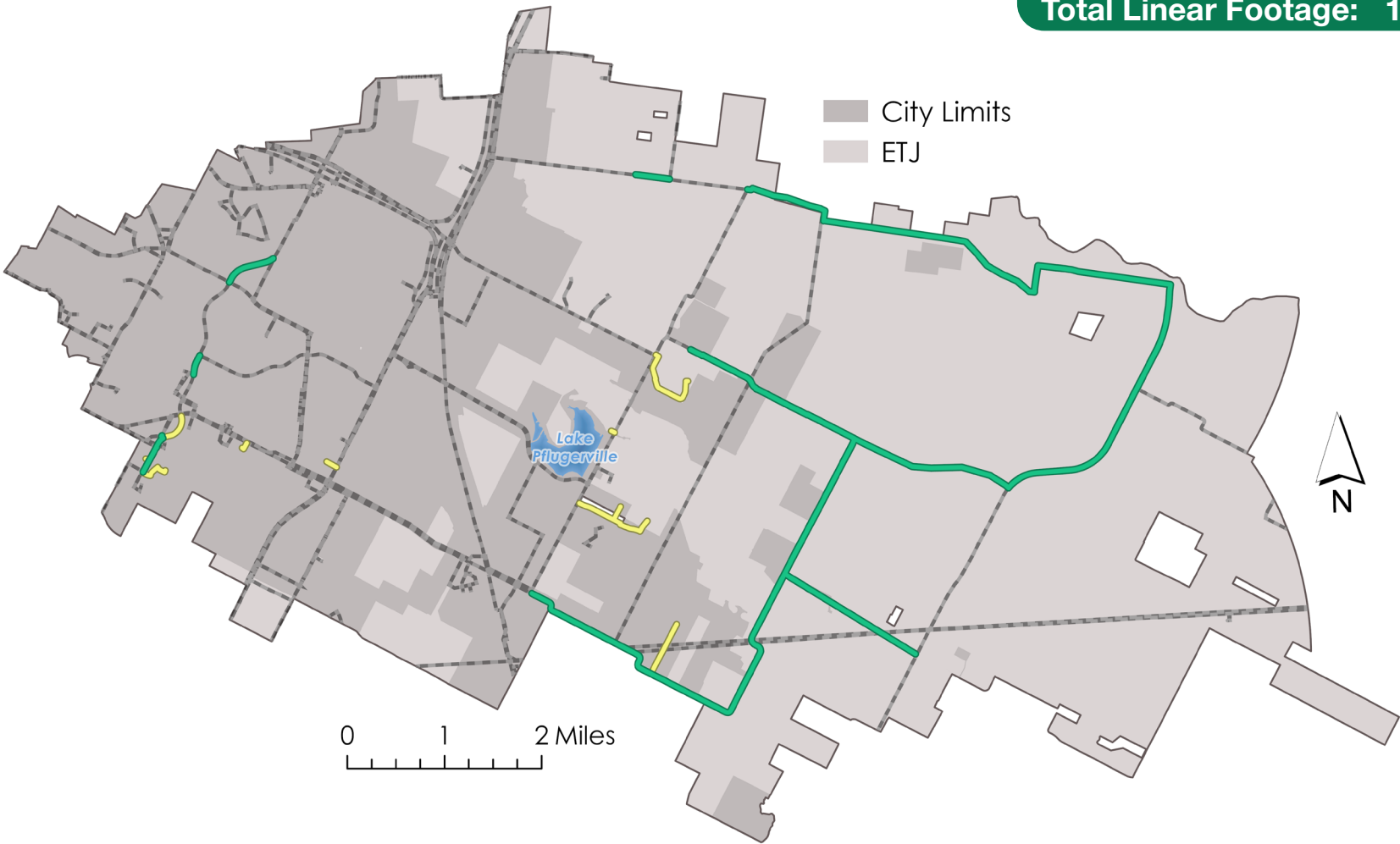
Figure 24: Pflugerville Pfiber Plan

Price Per Linear Foot: \$60
Total Linear Footage: 262,266



**Figure 25: Pflugerville
Pfiber Plan (Greenfield)**

Price Per Linear Foot: \$60
Total Linear Footage: 126,970



- Existing Middle Mile
- City Facilities Connections (288 Fiber Count)
- Pflugerville Pfiber Plan (432 Fiber Count)

6.1.5 Network Topologies + Methodologies

Pflugerville's network design includes multiple topologies to serve both urban and rural areas effectively:

- **Ring-Based Topology:** Provides redundancy and self-healing capabilities, reducing downtime for network maintenance or damage. This topology is beneficial for both business and residential properties, ensuring continuous service.
- **Aerial and Underground Routes:** The design balances the use of buried conduits and aerial pole infrastructure. While aerial attachments are faster and cheaper, buried fiber is preferred for its safety and protection from environmental hazards. The designs included in this section are costed for underground builds

6.1.6 Material + Capacity Considerations

The network design a minimum of two 2" HDPE conduit pipes to allow for future growth, maintenance, and potential leasing of spare capacity. Fiber cables are upsized to accommodate anticipated future demand, promoting scalability and cost-efficiency. Inside plant facilities, such as cabinets and distribution points, are strategically placed for optimal connectivity and scalability.

6.1.7 Implementation Strategy

The implementation strategy emphasizes flexibility in meeting current and future connectivity demands. The network's capacity is designed to scale up based on demand analysis, ensuring cost savings while providing room for growth. The HLD's considers both immediate and long-term needs, balancing time-efficient solutions with future-proofing the network against technological changes. One pathway to implementation is a Public-Private Partnership.

07

**PUBLIC-PRIVATE
PARTNERSHIPS**

7.0 PUBLIC-PRIVATE PARTNERSHIPS

When ISPs work together with local governments to share responsibility for operating and maintaining broadband infrastructure, the relationship is generally referred to as a Public-Private Partnership (P3). These partnerships between city 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.

This section identifies opportunities and options for local public jurisdictions to establish formal and informal relationships and partnerships with private providers. The research outlines the process of identifying and developing 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 are outlined alongside advantages resulting from the identified potential P3s. Preparation for the facilitation of RFEIs for partnering opportunities is also included. Through this process, one of the results is helping the city reach goals by coordinating P3 relationships throughout the city.

P3s take the best of both worlds where all parties focus on their areas of expertise and share the risks and benefits associated with the network development. P3s can allow counties/municipalities

to attract private capital when it would not be feasible otherwise.¹ Collectively, the partnership compartmentalizes and accommodates all aspects of the network, leveraging assets from both the private and public sectors for mutual benefit. The initial infrastructure investment, operational and maintenance costs, and revenue sharing are all considered in the following P3 contracts.

Table 12: Various Forms of Broadband Public-Private Partnerships

Contract	Network Funding	Network Operations	Subscription Fees Collected By	Revenue Share To
Third-Party Run	City	Private Operator	City	Private Operator
Lease	City	Private Operator	Private Operator	City
Special Purpose Vehicle	Both	Contract	Both	Both
Build Operate Transfer	Private Operator	Private Operator	City	Private Operator
Concession	Private Operator	Private Operator	Private Operator	City

As one moves along the continuum from the fully public side over 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, budgetary or bond limitations, staff capacity, and political will. Understanding these distinctions and how they fit the City can help leadership make a knowledgeable choice on which direction to pursue, should it become advantageous to enter into a P3 for broadband improvements.

7.1 Available Business Model Options

7.1.1 Ownership + Operations Models

To better understand the options the City of Pflugerville 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 maintaining:

1. **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** — 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.

An entity does not have to own, operate, and maintain all five components of a network. 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 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 Request for Proposal (RFP).

1. **Full Municipal Broadband** — Texas municipalities and counties who 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 promote a consumer-friendly environment wherein customers of the

network have access to more than one option for 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.

7.1.2 Accessory Models

In relatively rural and sparsely populated counties, 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 (ROI) through Irrefutable Right of Use (IRU) 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 in Eastern and more rural parts of Pflugerville, the city is 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:

1. Providing an incentive for developers to install conduit on commercial and residential sites.
2. 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. Requiring a deposit prior to beginning work to protect against poor quality repairs.
4. 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.

7.1.3 Dig Once Ordinances

The City of Pflugerville is within its authority to preserve the physical integrity of its streets and state routes, 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 city 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.

The city 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 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. Running fiber strands through existing conduit is cheaper than a new aerial build. 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 city 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 promote 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, promoting 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.”

7.1.4 Middle Mile "Broadband Currency"

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

- If the city decides 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 (CIP) 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).

Table 13: Accessory Model Table

Accessory Model	Benefits	Drawbacks	Investment
Ordinance and/or Policy (e.g., Dig Once)	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
Broadband Currency	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
Combined Ordinance and/or Policy with Broadband Currency	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

7.1.5 Business Model Funding

There are multiple avenues available to local governments when it comes to funding a network deployment 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 City 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 promote 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:

7.1.5.1 Federal and State Grants

Programs like the BEAD within the

Infrastructure Investment and Jobs Act, American Rescue Plan Act (ARPA), BEAD, and the Texas BDO Middle Mile Program provide significant funding for broadband projects. However, time is of the essence with this approach as ARPA funds must be spent by December 31st, 2026, and many grant programs like BEAD and the Texas BDO Middle Mile program are due before the end of 2025. Typically, these types of projects must be pursued in collaboration with a private partner who would apply for the funds with the city's support.

7.1.5.2 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. TIFs work 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 promoting the long-term sustainability of the investment.

7.1.5.3 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 a 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, supporting 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.

7.1.5.4 Leasing Infrastructure

Leasing agreements can be used to finance the procurement and construction of broadband infrastructure. This approach is not a stand-alone means of funding a network deployment, but rather the revenue backstop used to prove financial viability when pursuing loans 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.

7.1.6 Various Partnership Models

This section provides more details on the four partnership models that do not leave broadband deployment fully in the hands of one third-party entity independent of other providers or the city.

7.1.6.1 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 US, customers that have access to more than one wireline service provider live in homes which are passed by more than one physical network, each owned and operated by different companies. Since 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, who 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. However, 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 built by either municipalities or infrastructure companies who 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.

7.1.6.2 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 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 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.

7.1.6.3 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.

7.1.6.4 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.

In a Third Party Run Service Contract, the network is funded and built by a city, but the connectivity and end-user services are provided by a private operator. Subscription fees are collected by the city, possibly through existing utility billing services. The city then transfers a share of the revenue to a private operator to cover costs of operations, maintenance, and quality of service (QOS) expenditures. Allows for a return on capital.

In a Lease Contract, the network is funded and built by the city and then leased by the private operator, who in turn provides connectivity and services. Subscription fees are collected by a private operator and a portion of the revenue is transferred to the city to cover the network rental fees.

In a Special Purpose Vehicle Contract, the network is co-financed, built, and operated

by the city and private operator, who both share in the return on investment.

In a Build Operate Transfer (BOT) Contract, the city/region facilitates private investment through a “tender,” such as a Request for Information (RFI), Request for Qualifications (RFQ), or RFP to a private operator to fund, build, and operate the network. Subscription fees are collected by the city/region, possibly through existing utility billing services. The city/region then transfers a share of revenue to the private operator to cover operations, maintenance, and QOS expenditures which may allow for a return on capital.

In a Concession Contract, the network is funded, built, and operated by a private operator. Subscription fees are collected by the private operator as well. This contract requires that the city/region allows the private operator access to its resources or assets such as utility poles and ducts. Concession fees are paid to the city/region for use of their assets.

Managed services are typically catered, modular solutions which fill in the implementation and operational components of the network to include monitoring, troubleshooting, performance analysis, inventory management, cybersecurity, and much more. For a city/region considering more extensive involvement and ownership, or in a

partnership with smaller private operators, managed services companies can assist in standing up the network and making necessary connections to operations and business support systems (OSS/BSS), including billing and notification systems.

Managed services should be considered early in the broadband network development and not as an afterthought when operations suffer or there are delays due to unforeseen complications. Under a Full Retail Service Model, managed services can be essential to round out the city/region team, providing necessary resources and even training leading towards a potential transfer to a city/region-run or sponsored ISP.

7.2 Provider Outreach + Engagement

To assist the city in navigating possible partners and potential offerings, CobbFendley obtained FCC data on the companies already operating in the area and compiled a list of potential entrants to the market who serve similar and proximal communities to those in Pflugerville. The City of Pflugerville then released a Request for Information to gather information and to gauge provider interest in potential future partnership opportunities. What follows is a summary of those efforts, including contact information for the various entities we spoke with or attempted to reach.

7.2.1 Potential Partners in City of Pflugerville

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 oxygen to the individual cells of the body. Or similarly, long-haul and middle mile networks are comparable to highways or arterial roads and last mile networks are similar to the collector roads.

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. 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.

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.

Partnerships are not limited to private operators or providers but can also include broadband services companies that do not necessarily own or provide direct internet services. These companies can support the city and their partners in the service activation and service assurance aspects of the network. As previously mentioned, broadband networks are dynamic and complex in comparison to traditional utilities and require substantial expertise, in which the city, and sometimes even the operator or internet service provider, needs external resources.

7.2.1.1 Pflugerville Broadband Needs Request for Information

The City of Pflugerville opened a Request for Information (RFI) in June 2025. An RFI is a formal process used to gather general

information from potential suppliers, vendors, or service providers. It is not a binding request and typically precedes more specific procurement processes like Requests for Proposal (RFP) or Requests for Quotation (RFQ). It typically takes the form a document issued by an organization to collect written information about the capabilities, products, services, or qualifications of potential providers. The goal is to better understand the market, explore possible solutions, and make informed decisions in the early stages of a procurement or project planning process. An RFI is exploratory, meaning it is used as a preliminary tool to compare potential providers and solutions. RFIs are also informational and non-binding. The focus is on gathering knowledge and does not obligate the city to any kind of contractual or financial arrangement.

The purpose of the RFI was to:

1. Gather information from broadband providers on network plans or expansion in the City of Pflugerville
2. Receive feedback on experiences doing business with/within the City of Pflugerville as it relates to communication infrastructure (telecom, wireless, broadband infrastructure, etc..)
3. Allow broadband providers to express interest in or plans related to applying for Broadband Equity, Access, and

Deployment (BEAD) grant funds within the City of Pflugerville.

The RFI sought to obtain input from broadband providers and asset owners on a network scope, design and deployment that ultimately provides adequate levels of high-speed broadband service to the residents and businesses of Pflugerville with a focus on bringing more high-speed, affordable, quality internet to the City of Pflugerville. Any proposal was supposed to describe a high-speed broadband service that delivers a minimum of 100/100 Mbps symmetrical services to the community via wireline or wireless technology with a preference towards high-speed/low latency infrastructure.

The City of Pflugerville received responses from three middle-mile providers.

7.2.1.2 Fiberlight RFI Response

Fiberlight, a middle mile ISP, responded to the RFI. Portions of their response are contained in **Figure 26** and **Figure 27**. Their network is very regional across the State of Texas providing a highway-type system for fiber optic cable. FiberLight indicated that it now operates 13,000 route miles of fiber in Texas and has provided connections for over 200 last mile providers. As a potential partner, FiberLight provides the ability to design and construct middle mile, upgrade and

extend existing infrastructure, operate and maintain a middle mile network, and/or enable last mile deployment to residential neighborhoods. FiberLight notes that their model allows them to negotiate a desirable network scale and size with the city.

Fiberlight provided a network design in the RFI response alongside a map of existing network assets (**Figure 27**) and noted the following: “This design represents a conceptual layout of the proposed broadband network, ensuring coverage for unserved and underserved areas while allowing for future scalability. The design can be adjusted to meet the specific needs of the city, including modifications for coverage areas, capacity requirements, and infrastructure placement. FiberLight is committed to working closely with the City of Pflugerville to refine this design and tailor the network to best serve the community’s connectivity goals.”



Figure 26: FiberLight RFI Response

Proposed Network Design & Infrastructure Solutions

FiberLight supports the City of Pflugerville's objectives to provide symmetrical high-speed broadband with scalable options. Our proposed network deployment strategy aligns with the high-level designs outlined in the Broadband Feasibility Study:

Middle-Mile and Last-Mile Fiber Deployment

- **Fiber Backbone Expansion:** FiberLight proposes to leverage existing fiber infrastructure and strategically expand middle-mile fiber to unserved and underserved areas.
- **Last-Mile Solutions:** FiberLight can bring in trusted partners to support last-mile connections, expanding coverage and ensuring seamless service delivery.
- **Flexible Network Design:** FiberLight can design the network according to the City's specific requirements, ensuring it meets Pflugerville's unique connectivity goals and future scalability needs.

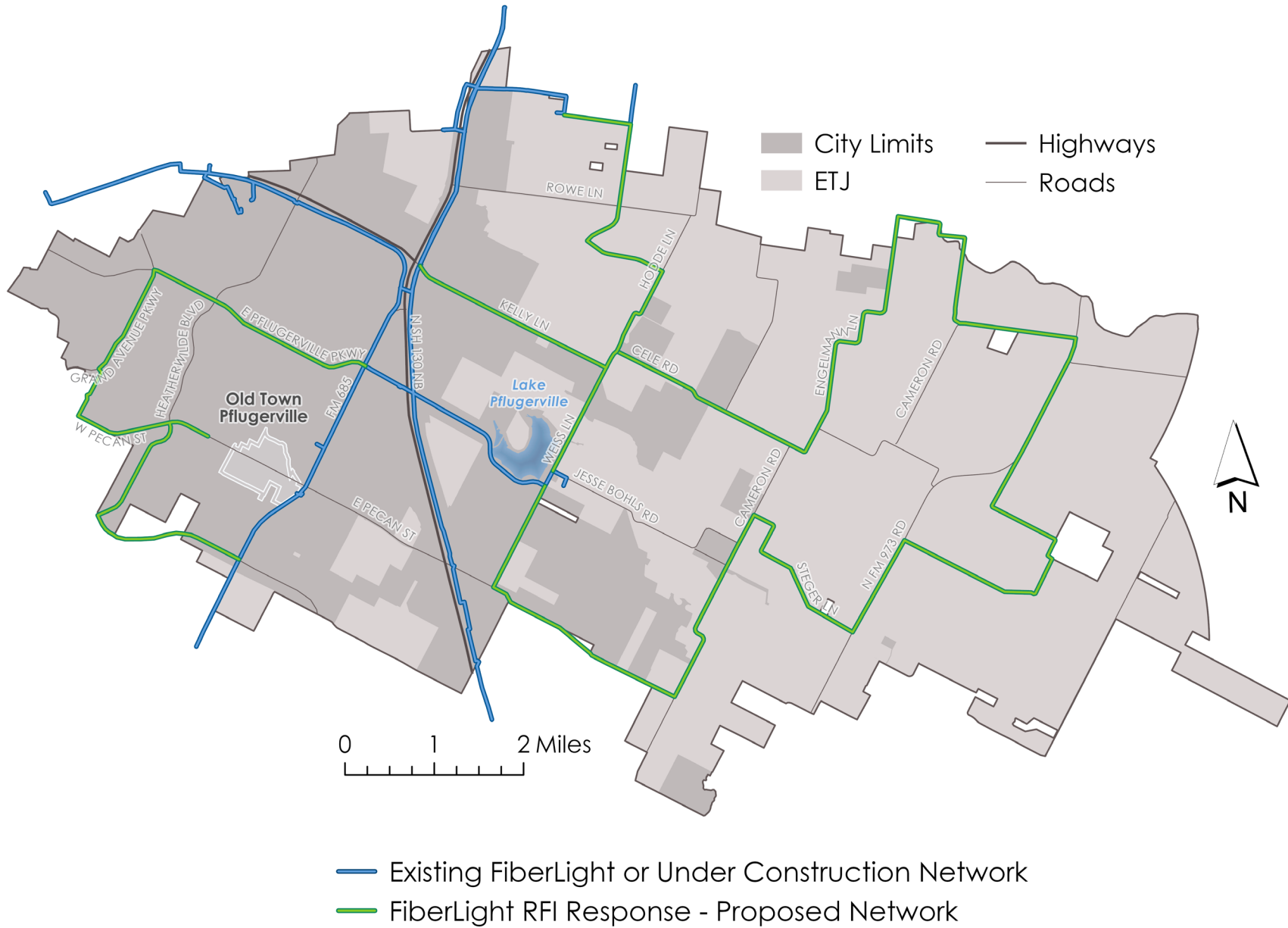
Public-Private Partnership (PPP) Model

- **Access to Established Infrastructure:** FiberLight brings extensive fiber network assets that can be leveraged to accelerate broadband deployment with minimal delays.
- **Operational Expertise:** FiberLight will design, manage, and maintain the network, ensuring optimal performance, security, and reliability.
- **Regulatory and Compliance Support:** FiberLight will assist in navigating federal and state broadband funding programs, ensuring compliance with any regulatory requirements.
- **Community-Centric Approach:** We will collaborate with the City to ensure that the broadband deployment aligns with Pflugerville's specific needs, including prioritizing underserved areas and critical institutions.

Service & Support Commitments

- **High-Quality Service Levels:** A 99.99% uptime SLA with proactive monitoring and a two-hour response time for network issues.
- **Local Engagement:** Dedicated support teams for installation, maintenance, and customer service, ensuring a strong local presence.
- **Affordability & Compliance:** Transparent pricing models to maximize funding opportunities.

**Figure 27: Economic Development
HLD - Full Digital Expansion**



LCRA RFI Response

The Lower Colorado River Authority (LCRA) operates a high-speed and high-capacity fiber optic middle mile broadband network. LCRA seeks partnerships with entities to connect to this middle mile and deliver reliable, high speed and cost-effective last mile internet service. As a middle mile provider, LCRA can also build out fiber and related facilities to provide access points to connect potential middle mile and backhaul customers. Additionally, LCRA can provide internet service providers (ISPs) with the necessary infrastructure to connect to consumers. One potential partnership opportunity with LCRA is through wireless connectivity. LCRA has developed a private long-term evolution (LTE) network capable of providing much higher data throughput across a 68-county service territory to cover mission-critical assets. This network could be utilized in Pflugerville to provide wireless and radio connectivity for public works and other city departments.

LCRA is not and cannot be a local internet service provider but welcomes inquiries from private ISPs or from public/private partnerships that are interested in collaborating with LCRA to deliver fast, reliable, and cost-effective broadband services in specific regions.

LCRA provided a map of existing network assets present in Pflugerville. Additionally, a map of a planned future route that runs through Pflugerville to Hutto was included. LCRA did not provide a specific network design to expand its footprint in Pflugerville.

Figure 28: LCRA RFI Response

Thank you for the opportunity to respond to the City of Pflugerville's Request for Information for Broadband Planning focused on Middle Mile and Last Mile Services. The Lower Colorado River Authority (LCRA) acknowledges receipt of the RFI and welcomes the chance to contribute as the City explores potential public-private partnerships (PPPs) to improve broadband access and resiliency.

LCRA has provided over 90 years of public service as the steward of the lower Colorado River. After being created in 1934 by the Texas Legislature with the goal of taming the Colorado River, LCRA's mission later expanded to include electrifying the Texas Hill Country, and it established the lines that brought electricity to the region's first two electric cooperatives. Through its mission, LCRA has gained extensive experience building, operating, and maintaining a reliable and resilient middle mile fiber network, currently managing and maintaining a network of over 2,700+ miles of optical ground wire (OPGW) fiber. LCRA operates as a wholesale-only, non-common carrier middle mile provider.

We believe LCRA can be a valuable partner to the City of Pflugerville in the following ways:

- **Strategic Infrastructure:** Our existing, high-capacity fiber network may align with City assets or planned broadband routes and can be leveraged to support scalable middle mile capacity.
- **ISP Enablement:** We have active relationships with many regional and local ISPs, WISPs, and co-ops, and we routinely facilitate interconnection, backhaul, and transport to help those entities reach more communities.
- **Carrier-Neutral Access:** LCRA is collocated in major Texas data centers, offering low-latency connectivity to Tier 1 carriers and major cloud providers such as AWS, Azure, and Google Cloud.

To further support your efforts, LCRA would like to offer a no-cost half-day broadband workshop with City staff. This session would allow us to better understand Pflugerville's current connectivity challenges, evaluate infrastructure gaps, and discuss how our infrastructure and partnerships could help attract additional providers or improve existing services.

We are excited about the possibility of supporting the City of Pflugerville's broadband goals and would be happy to discuss next steps at your convenience. Please feel free to contact me anytime.

Thanks,

Figure 29: LCRA RFI Response Existing & Planned Network



Zayo RFI Response

A RFI response was received from Zayo. Zayo is a global communications infrastructure service provider with a Tier 1 network. Zayo noted that they have a history of building high-performing fiber optic networks and managing global, fiber optic network infrastructure – more than 18.7 million fiber miles and 146,000 route miles, globally. Zayo’s communications infrastructure solutions include Dark Fiber, Private Data Networks, Wavelengths, Ethernet, managed edge solutions including SD WAN, Voice and Dedicated Internet Access. As a potential partner, Zayo has the ability to design and construct middle mile, upgrade and extend existing infrastructure, operate and maintain a middle mile network, and/or enable last mile deployment.

Zayo provided a network design in their response alongside a map of existing assets with this comment, "The map below indicates Zayo’s existing fiber footprint, in blue, around the City of Pflugerville and an overlay of Texas Broadband Office’s broadband status as of May 2025. This metro network has numerous access points and network on-ramps to enable last-mile carriers in their delivery of last-mile fiber-to-the-home services. Additionally, Zayo has included a proposed new build that will extend the metro fiber footprint in the unserved areas along North Interstate 35 Frontage Road."

Figure 30: Zayo RFI Response

City of Pflugerville
Broadband Needs RFI, RFI No. 2025-023

Executive Summary

Zayo is grateful for the opportunity to submit a comprehensive response to the City’s Broadband Needs RFI. Zayo has a strong interest in supporting the City’s goal to bridge the digital divide and provide broadband middle-mile fiber infrastructure to serve underserved addresses within the City. Zayo is not a last-mile ISP and does not provide broadband services directly to households and therefore is not eligible for BEAD as a primary applicant. However, Zayo can leverage an existing metro fiber network to provide low-cost backhaul options to last-mile ISPs applying for BEAD funds within the City. Additionally, as Zayo will construct more than 5,000 route miles of fiber in 2025 to meet the AI demands, we’ll include in our proposal a new fiber construction option that best aligns with the unserved and underserved households of the City. Improving the middle-mile availability within the City will enable last-mile ISPs to deliver services faster, more reliably and at a lower cost. Zayo will be responsible for the design, construction, operation, maintenance, and commercialization of the fiber infrastructure.

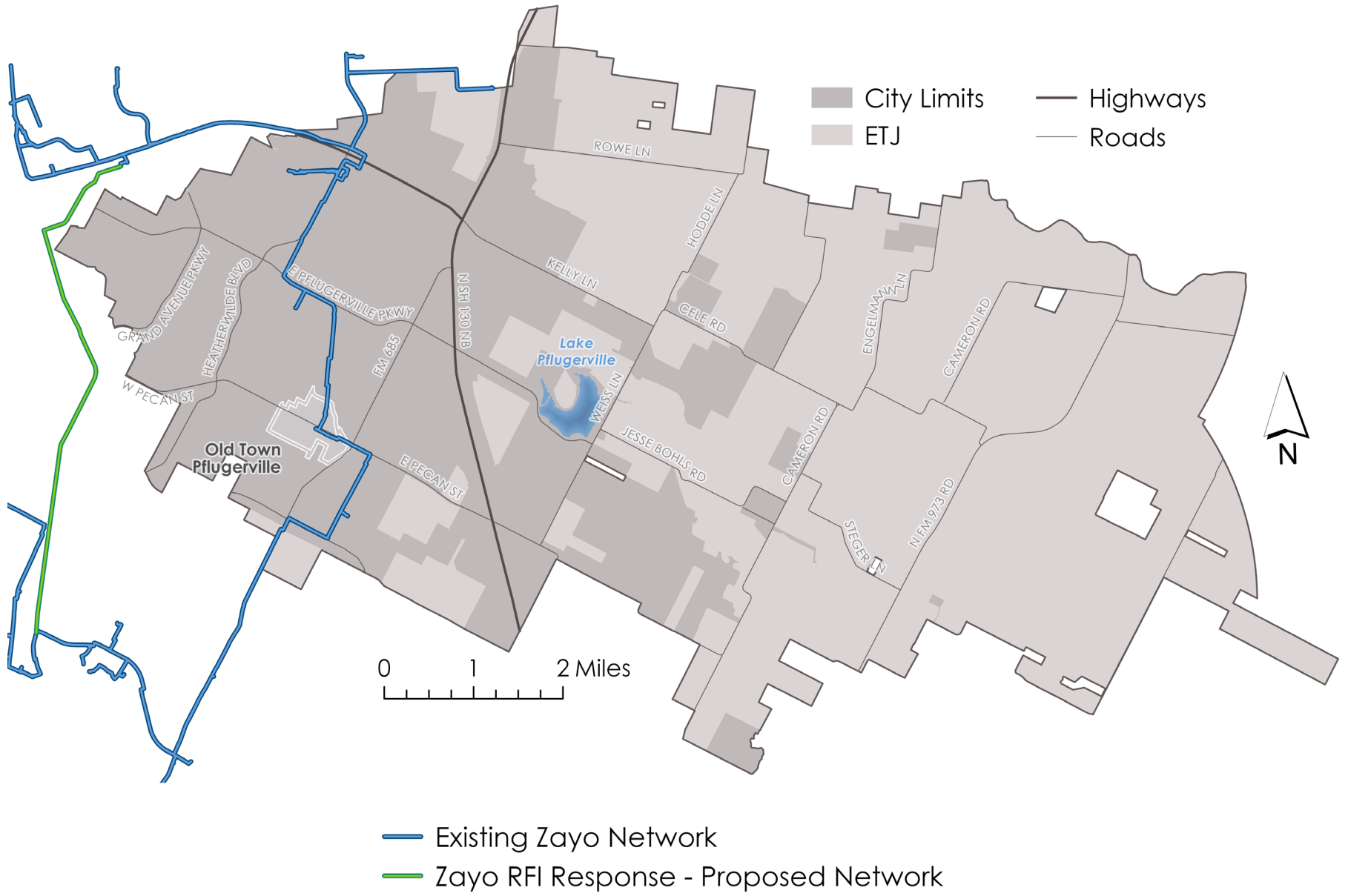
Zayo has a long history of building high-performing fiber optic networks and managing a massive global, fiber optic network infrastructure – more than 18.7 million fiber miles and 146,000 route miles, globally. Founded in 2007, we have assembled a large portfolio of fiber networks and communication assets. Over the years, Zayo has expanded through organic growth and network acquisitions to become an innovative global communications infrastructure service provider with a Tier 1 network. Zayo’s communications infrastructure solutions include Dark Fiber, Private Data Networks, Wavelengths, Ethernet, managed edge solutions including SD-WAN, Voice and Dedicated Internet Access.

We deliver and support an array of services and solutions, giving Zayo ISP customers the option of managing their own network or subscribing to a lit service where technologies run atop our fiber. As the City’s network requirements evolve, Zayo’s full suite of industry-leading networking services will enable the City to pivot and innovate as new technology is introduced.

Zayo recognizes the growing need for more bandwidth. As a result, we built our entire business around fiber and the services that ride this infrastructure. Our business relies on fiber and the endless possibilities that it delivers. With innovation and broadband funding occurring at such a rapid pace, Zayo is in a unique position to deliver fast, reliable, and secure middle-mile connectivity in the City.

In this response, Zayo will demonstrate our flexible and unique approach to supporting public broadband expansion initiatives. This includes the deployment of open-access middle-mile networks to enable our last-mile ISP partners and a dedicated Government Stimulus program to collaborate with commercial and government stakeholders in the successful implementation of broadband funding. This approach encourages competition which is always beneficial to the end user.

Figure 31: Zayo RFI Response Existing & Proposed Network



Section Footnotes

1. Municipal Broadband Networks—Opportunities, Business Models, Challenge. ifc.org. https://www.ifc.org/wps/wcm/connect/publications_ext_content/ifc_external_publication_site/publications_listing_page/municipal+broadband+networks. Published 2022. Accessed June 1, 2022.



08

**DIGITAL
OPPORTUNITY**

8.0 DIGITAL OPPORTUNITY

The Digital Opportunity Ecosystem

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.”¹

This ecosystem-based approach relies on formal and informal organizations to support digital adoption, share resources, and provide ongoing training, support, and community norms around technology use.² The Federal Communications Commission

(FCC) identifies three essential pillars to close the digital divide and advance digital opportunity³:

- **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 Initiatives highlights in its 2023 Annual Report that achieving digital opportunity also requires collaboration with anchor institutions and local stakeholders. These institutions—particularly colleges and universities—act as force multipliers for broadband access, community engagement, and economic vitality.⁴

This report is intended to supplement broader digital opportunity planning efforts.

A successful approach should be tailored to the city’s unique characteristics and informed by both quantitative data (such as coverage maps) and qualitative insights from local stakeholders.

Interviews, focus groups, observations, and open-ended surveys can help inform strategies addressing digital inequities. The importance of learning from community members with lived experience, who can provide insights into the challenges they face in accessing broadband, devices, and digital support can all help inform digital opportunity strategies. Ultimately, digital equity requires inclusive access to high-speed broadband, affordable devices, technical support, and digital literacy education—ensuring that every community can fully participate in the digital world.

8.1 Residential Provider Options

To help residents and businesses in Pflugerville easily identify the availability of and affordability of internet service provider options, a dedicated web application would be valuable for the City of Pflugerville. This initiative builds on Pflugerville’s ongoing commitment to transparency and accessibility, as seen in

previous tools like the Water & Wastewater Utility Provider Search. The new broadband mockup offers full functionality, allowing users to quickly explore their broadband options based on location, continuing the city's goal of empowering its community with clear, location-specific utility information.

By simply entering an address into the “Available Provider Search” tool, users can generate a detailed report showing nearby providers, coverage areas, and available speeds. The app also includes features like printable summaries and optional buffer zones to expand search results for larger properties.

Figure 32: Broadband Provider Search

The screenshot shows a web interface for "Available Provider Search". At the top, there is a search bar with the text "Search for a location in Pflugerville" and a magnifying glass icon. Below the search bar, there is a section for "Buffer distance (optional)" with a dropdown menu set to "0" and "Feet". At the bottom, there are two buttons: "Report" and "Start Over".

Once the report is generated, it provides a comprehensive overview of all identified Internet Service Providers. For each provider, the following information is included:

- Internet Service Provider
- Technology
- Max Download Speed
- Max Upload Speed
- Provider Website

8.1.1 Data Accuracy + Methodology

The Available Provider Search tool is built on the most current datasets available, including the FCC’s Version 6 BDC and Fabric datasets—to provide a reliable estimate of internet service options at

Figure 33: Internet Service Providers Available in Pflugerville

Available Internet Service Providers	
Internet Service Provider:	AT&T
Technology:	Copper
Max Download Speed:	10
Max Upload Speed:	1
Provider Website:	https://www.att.com/internet/
Internet Service Provider:	AT&T
Technology:	Licensed Fixed Wireless
Max Download Speed:	30
Max Upload Speed:	3
Provider Website:	https://www.att.com/internet/
Internet Service Provider:	Optimum
Technology:	Cable
Max Download Speed:	940
Max Upload Speed:	35
Provider Website:	https://www.optimum.com/services/texas/pflugerville

or near your location. These datasets are updated periodically, which means there may be a delay between real-world changes and their reflection in the system. As a result, actual availability may vary slightly due to provider reporting timelines and data update cycles. For the most precise and up-to-date information, users are encouraged to contact providers directly. Despite these limitations, the tool remains a highly dependable resource for gaining location-specific insights.

To generate results, the app uses a uniform grid system that summarizes internet availability and speeds for approximately 1 to 10 nearby addresses surrounding the location entered. If a buffer is applied, the summary expands to include a broader

view of providers and performance in the surrounding area, which is especially useful for properties with larger boundaries.

8.2 Transition From Digital Equity Act Funding to Cross-Sector Collaboration

In light of recent federal budget realignments, the NTIA has announced the discontinuation of dedicated funding under the Digital Equity Act (DEA). This shift marks a significant change in how digital inclusion initiatives will be supported across the country. Originally established under the Infrastructure Investment and Jobs Act (IIJA), the DEA was intended to fund state-led efforts to close the digital divide by addressing barriers to broadband adoption, digital literacy, and online participation, particularly among historically underserved populations. The program included three core components: State Digital Equity Planning Grants, Capacity Grants, and Competitive Grants.

However, due to fiscal constraints and reprioritization of federal resources, DEA implementation funding beyond the planning phase has been curtailed. As a result, many states and localities that invested time and resources into developing digital opportunity plans now face a gap in the anticipated federal

support necessary to carry those plans into action.

With federal funding no longer available, philanthropic grants have become the only remaining option for communities aiming to implement digital inclusion efforts. A growing number of private foundations and corporate philanthropies are stepping in to fill the void—offering limited grant opportunities to support digital skills training, device access, broadband affordability, and local outreach programs. This emerging model—fueled by cross-sector collaboration—is helping to sustain momentum toward digital opportunity. While the long-term implications of reduced federal investment remain a concern, philanthropic engagement offers an opportunity for more flexible, community-driven solutions tailored to local needs.

In addition to these philanthropic opportunities, the City of Pflugerville can also consider funding and partnerships from local workforce organizations, economic development partners, and local technology companies in the greater Austin area. A partnership with such entities could fund or enable digital skills training and other digital opportunity programming to help key covered populations get online.

8.3 Broadband Funding

There are several programs for the city 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.



Table 13: Funding Opportunities Table

Grant Program	Funding Agency	Description	Timeline	Total Allocation
<p>Texas Proposition 8: Broadband Infrastructure Fund Amendment</p>	<p>State of Texas, administered by the Texas Comptroller</p>	<p>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.</p>	<p>November 2023 (Approved by Texas Voters)</p>	<p>\$1.5 billion funding multiple BDO programs.</p>
<p>Texas Middle Mile Program</p>	<p>State of Texas, administered by the Texas Comptroller</p>	<p>Funding for middle mile networks in Texas.</p>	<p>November 20 2025</p>	<p>Grants up to \$50,000,000.</p>

Table 14: Private/Philanthropic Funding Table

Grant Program	Funding Agency	Description	Timeline	Total Allocation
Spectrum Digital Education Grant	Charter Communications	Spectrum Digital Education grants support nonprofits whose work includes digital skills training, professional advancement opportunities, and technology and resources needed for education.	March - July 2025	In 2025, Spectrum is awarding \$1 million in grants that will be distributed to nonprofits. Grants will range from \$2,500 – \$50,000.
Hometown Grant	T-Mobile	Helps fund projects that foster local connections, like technology upgrades, outdoor spaces, the arts, and community centers.	Seasonal	Awards up to \$50,000,000.
Giving and Grants	Verizon	Funding priorities are aligned around Digital Inclusion, Climate Protection and Human Prosperity.	N/A	N/A
Moody Foundation Grants	Moody Foundation	Key areas of giving: education, social services and family well-being, health and wellness, and the arts. However, the Foundation maintains broad flexibility in grantmaking, both geographically and categorically within Texas, which allows timely responses to community needs and concerns.	N/A	Eligible inquiries and applications are presented to the Foundation’s trustees for consideration at one of four regular meetings held each year.
The Meadows Foundation Grants	The Meadows Foundation	Program areas for funding: Arts & Culture, Civic & Public Affairs, Education, Environment, Health, Human Services	N/A	Proposals considered intermittently: January, April, June, September, and November

8.4 Digital Opportunities Planning + Strategy

8.4.1 Needs Assessment

The City of Pflugerville has taken meaningful steps toward bridging the digital divide and supporting digital skills development among residents. Much of this work is channeled through the Pflugerville Public Library and the Pflugerville Community Development Corporation (PCDC).

- **Pflugerville Public Library**

- Digital Resources & Online Learning
 - LinkedIn Learning (formerly Lynda.com): Free access via library card to courses in tech, project management, marketing, HR, accounting and more—offered through a partnership with PCDC for local workforce development.
 - Other platforms: Career Online High School (for adult diploma and certification), Mango Languages, CreativeBug, VetNow, LearningExpress, Peterson’s Test Prep—available remotely with a library card.
- Hotspot & Device Lending
 - The library has explored and promoted Wi-Fi hotspot

lending programs so users can take Internet access home.

- They also provide laptops and hotspot devices for checkout to address access barriers.
- **MakerLab & Tech Training**
 - PFab Lab training sessions teach residents to use the library's 3D printers, laser cutters, electronic cutting machines, and sewing machines. Anyone aged 12+ with a library card may register after completing training.
 - These hands-on offerings help users build digital fabrication and maker skills.
- **Career Support Workshops**
 - Regular drop-in career sessions—help with resumes, job searches, cover letters and employment support.
- **Pflugerville Community Development Corporation (PCDC) — Workforce & Business Tech**
 - LinkedIn Learning through PCDC
 - Blue Career Platform
 - An online resource targeting skilled trades workforce development. It provides:
 - Career assessments
 - Access to trade training

and apprenticeships

- Job listings in over 135 trades
- Certification course connections, geared for local labor demand
- **Startup Support Center (Digital Business Accelerator)**
 - A digital business accelerator, offering free training on entrepreneur planning, marketing, CRM, automation tools (e.g. ChatGPT), business strategies, and small business support infrastructure. Partners include the Chamber, Texas State Small Business Development Center (SBDC), Workforce Solutions, Texas Venture Alliance, and the City.

Covered Populations

Even with the cancellation of the Digital Equity Act, the concept of “covered populations” remains a useful framework for guiding local policy (**Table 23**). In Pflugerville, where overall connectivity is strong, targeted strategies should focus on populations still at risk of exclusion—particularly veterans and individuals with disabilities, who are represented at higher rates locally than in Travis County or Texas overall. Although poverty rates are comparatively low, affordability programs

should remain in place to prevent gaps from widening as costs rise. The low percentage of seniors without computers suggests successful outreach, but ongoing digital literacy efforts will be important to ensure older adults can fully engage with online services. By continuing to track covered populations, Pflugerville can prioritize digital inclusion in local planning, align with state broadband strategies, and strengthen funding proposals to non-federal sources, ensuring that equity goals persist even without federal DEA support.

Table 15: Covered Populations

Covered Populations			
Covered Populations	Texas	Travis County	Pflugerville
Veterans	6.1%	4%	8.0%
Poverty	13.7%	10.2%	4.9%
Individuals Living with Disabilities	12.7%	9.8%	13.2%
Age 65+	13.8%	11.4%	11.8%
Households with a Computer	95.6%	97.6%	99.3%
Households with a Broadband Internet Subscription	90.0%	93.3%	96.7%
Population 65+ with no Computer in Household	9.3%	5.0%	1.4%

8.4.2 Digital Opportunity Strategy

The City of Pflugerville has a strong foundation for advancing digital opportunity through its library, community development corporation, and partnerships. While this ecosystem is robust, there are several key gaps where Pflugerville can expand and strengthen its digital inclusion strategy.

8.4.2.1 Expanding Access to Devices and Connectivity

The library has successfully piloted hotspot and laptop lending, but demand far exceeds supply. Many residents,

including low-income families, older adults, and unhoused individuals, rely on these resources as their only means of reliable internet access. Unfortunately, device circulation is limited by funding, and laptops are not always returned. To address this gap, Pflugerville should secure sustainable funding for device lending, expand the inventory of laptops and hotspots, and explore automated kiosks or vending systems for secure checkout. On the connectivity side, Pflugerville could move beyond library-based Wi-Fi by piloting community Wi-Fi zones in underserved areas, particularly on the east side, and by working with ISPs to strengthen adoption of affordable home internet programs. These initiatives would build on the library’s hotspot program but extend digital access more directly into neighborhoods.

8.4.2.2 Scaling Digital Literacy + Workforce Readiness

The library and PCDC already provide rich digital learning opportunities: online platforms for self-paced learning, Pfab Lab technology training, career readiness workshops, and PCDC’s business accelerator. However, the current training environment at the library is limited in scale—classes seat only about eight people, and older residents often prefer one-on-one instruction. Workforce training has also suffered

from low attendance due to scheduling conflicts, transportation barriers, and outreach challenges. Pflugerville can address these gaps by creating a digital navigator program, where trained staff and volunteers provide personalized assistance, and by developing hybrid/online training modules to complement in-person workshops. Partnerships with PFISD and senior centers could allow training to take place in satellite locations across the city, expanding reach beyond the main library. This would build directly on existing programs while making them more accessible and impactful.

8.4.2.3 Ensuring Equity + Language Accessibility

Pflugerville's diversity is both a strength and a challenge: more than 92 languages are spoken in the community, yet most digital literacy training is only offered in English. This leaves immigrant residents and ESL learners underserved. While new immigrants may be digitally literate in some cases, many face challenges with English-based platforms and trainings. To close this gap, Pflugerville should develop multilingual digital literacy resources and training in Spanish, Vietnamese, Gujarati, and other widely spoken languages. Partnering with community organizations and cultural groups would also help recruit community ambassadors to lead outreach and training. This approach ensures that

digital opportunity is not just available, but also culturally and linguistically accessible.

8.4.2.4 Expanding Infrastructure + Facilities

The Pflugerville Public Library is in high demand as a facility, with limited space to scale up digital programs. Staff have identified a potential need for expansion, and there is community demand for more training rooms, devices, and public computers. Long term, the city should plan for new or expanded digital hubs—either through a library expansion, satellite locations, or partnerships with schools and community centers. Infrastructure planning should also integrate broadband access, such as adding fiber conduit and Wi-Fi-ready infrastructure in future city projects. In the short term, the city could extend the library's Wi-Fi reach outdoors and invest in smart lockers and vending kiosks to make devices more accessible. These efforts would build on the library's current role as Pflugerville's digital anchor while positioning it for future growth.

8.4.2.5 Building Sustainable Partnerships + Funding

Both the library and PCDC have demonstrated the power of partnerships in delivering digital inclusion programs. PCDC's collaborations with Workforce Solutions, and Texas State Small Business

Development Center (SBDC), and the library's partnerships with Mobile Beacon, PFISD, and others show that Pflugerville already has a well-connected ecosystem. However, a formal structure is missing to coordinate digital inclusion citywide. Pflugerville should establish a Digital Inclusion Task Force, bringing together city leaders, ISPs, nonprofits, schools, and employers to align goals, share data, and track progress. At the same time, the city should pursue sustainable funding sources beyond ad-hoc grants, tapping into federal and state broadband programs (BEAD, Texas Broadband Development Office), local business sponsorships, and philanthropy. This would ensure that Pflugerville's digital inclusion efforts are not only innovative but also resilient and long-lasting.

8.5 BEAD Funding

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.⁵

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.⁶ 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.

On June 6, 2025, the NTIA released the BEAD Restructuring Policy Notice (Policy Notice), which outlines significant changes to program requirements and modifies

how states must conduct the subgrantee selection process. In response to this updated federal guidance, the BDO withdrew its initial BEAD Notice of Funding Availability (NOFA) published on May 15 and delayed accepting applications.

The BDO has aligned the Texas BEAD Program with the Policy Notice and published a new NOFA that complies with the new federal requirements.⁷

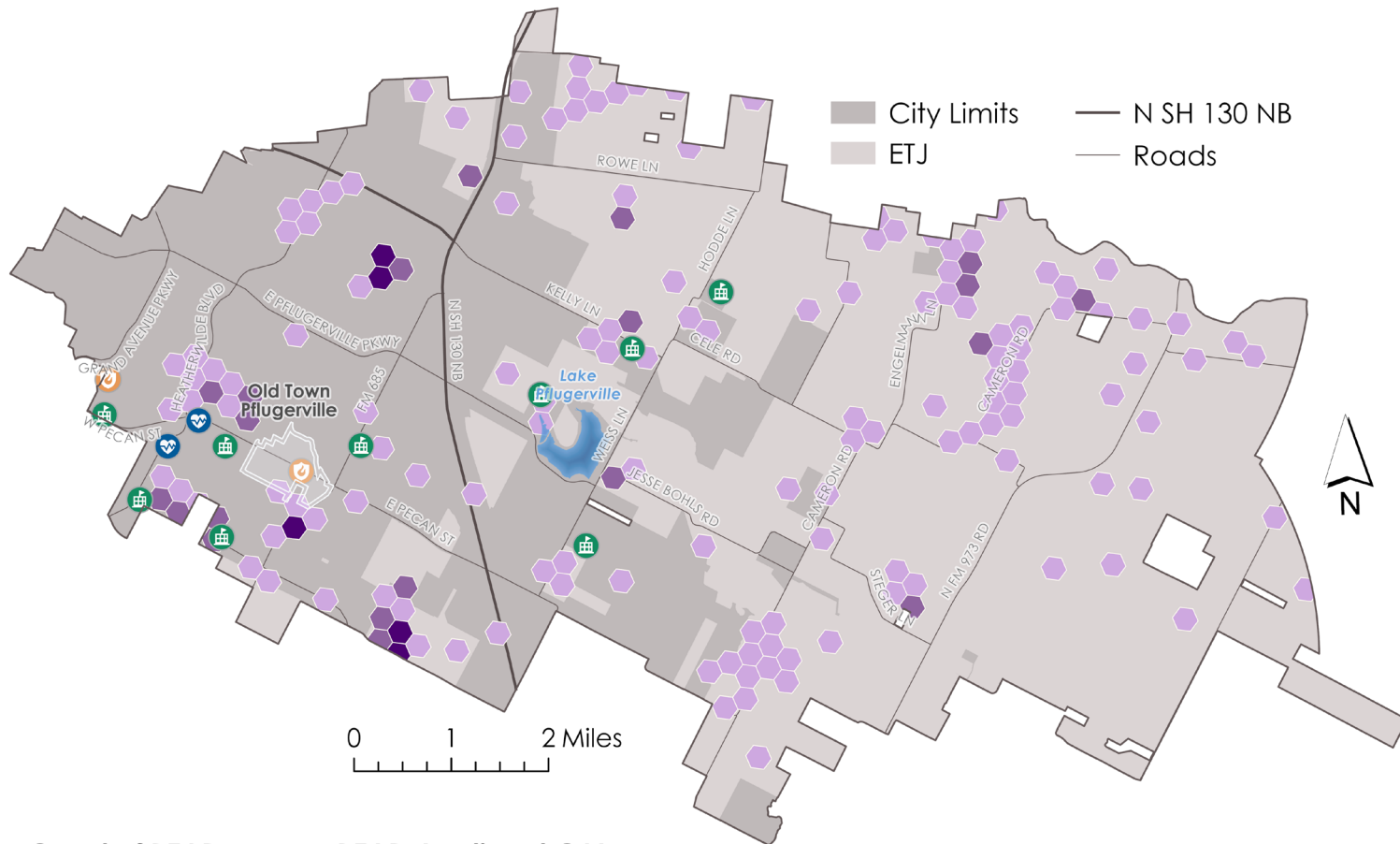
- Texas BEAD applications were due on July 22, 2025.
- The BEAD Final Proposal was released by the BDO for Public Comment in October 2025.
- The Draft Final Proposal was then submitted to NTIA for approval on Oct. 27.
 - 22 applicants were selected to serve over 240,000 BSLs and over 2,700 CAIs awarding \$1.2 billion in federal grant funds and \$177 million in state match funds.
- On December 2, 2025, NTIA approved the BDO's Final Proposal.

The city should monitor the BEAD process and BDO subgrantee award selections in the city and surrounding areas.

BEAD is organized by Project Area Units (PAUs), generally these units are based on Census Tracts, as well as BSLs and CAIs. A breakdown of which applicants have

applied and were awarded is shown by PAU, BSL, and CAI in **Figures 34-39**.

Figure 34: City of Pflugerville BEAD Application BSLs + CAIs



Count of BEAD Applicant BSLs

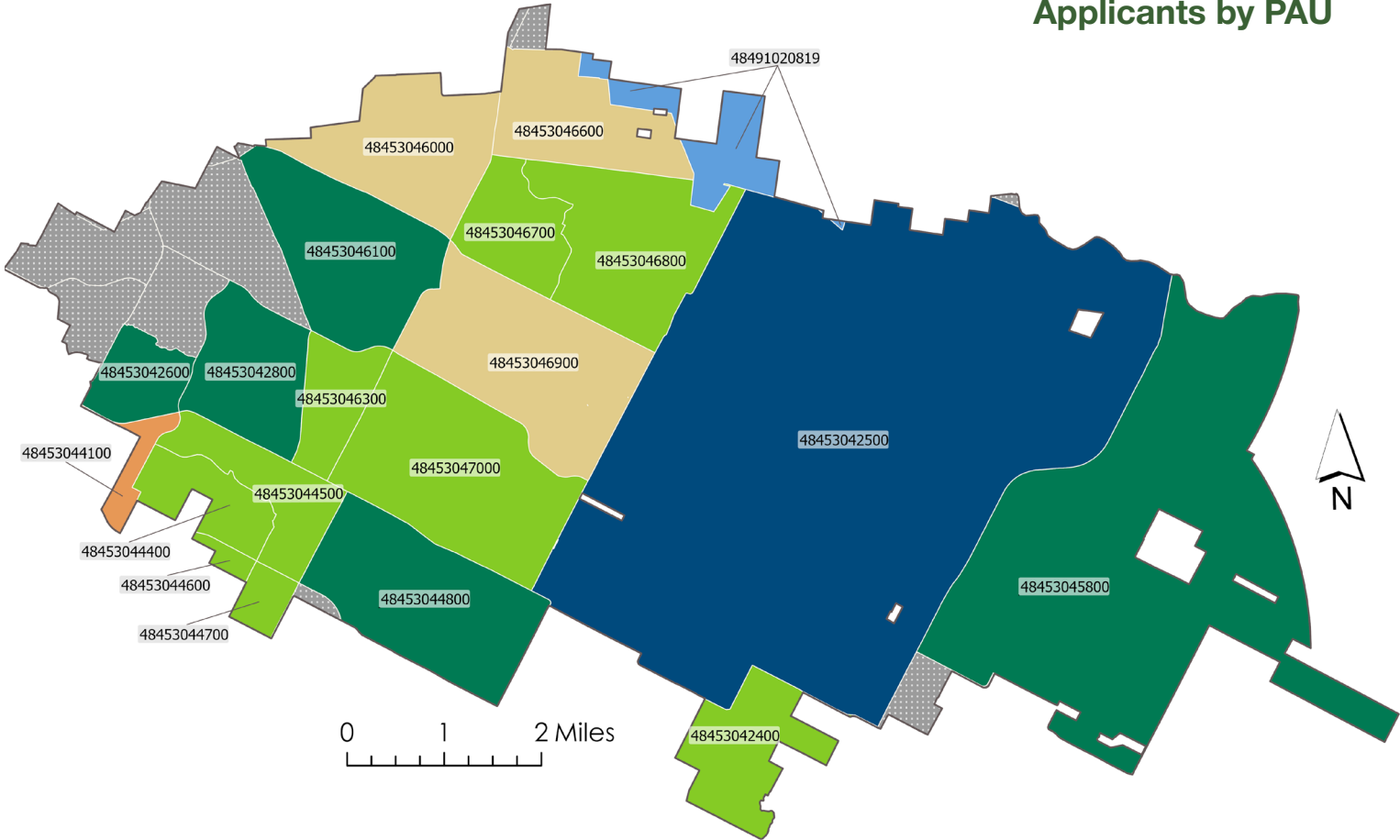
- 1 - 4
- 5 - 15
- 16 - 33

BEAD Applicant CAIs

- Education (9)
- Fire Station / EMS (2)
- Healthcare (2)

In terms of broadband funding eligibility, there are 486 BEAD eligible locations across the city limits and ETJ that received BEAD applications. There are also 13 CAIs eligible to receive BEAD funds. CAIs include education, public safety, and healthcare facilities. Under BEAD these locations are required to be served by 1 gigabit symmetrical service.

Figure 35: Count of BEAD Applicants by PAU



Count of BEAD Applicants

- 2
- 4
- 5
- 6
- 7
- 8
- No BSLs within PAU

BEAD grant funding and the related application process is organized by Project Area Unit (PAU). Applicants organized their applications by PAUs and had the ability to combine multiple PAUs into one project. **Figure 35** shows the number of applicants by PAU across the city limits and ETJ. Generally speaking, BEAD is quite competitive in and around Pflugerville with more than 2 applicants in all PAUs containing eligible BSLs.

Figure 36: Count of BEAD Applicants

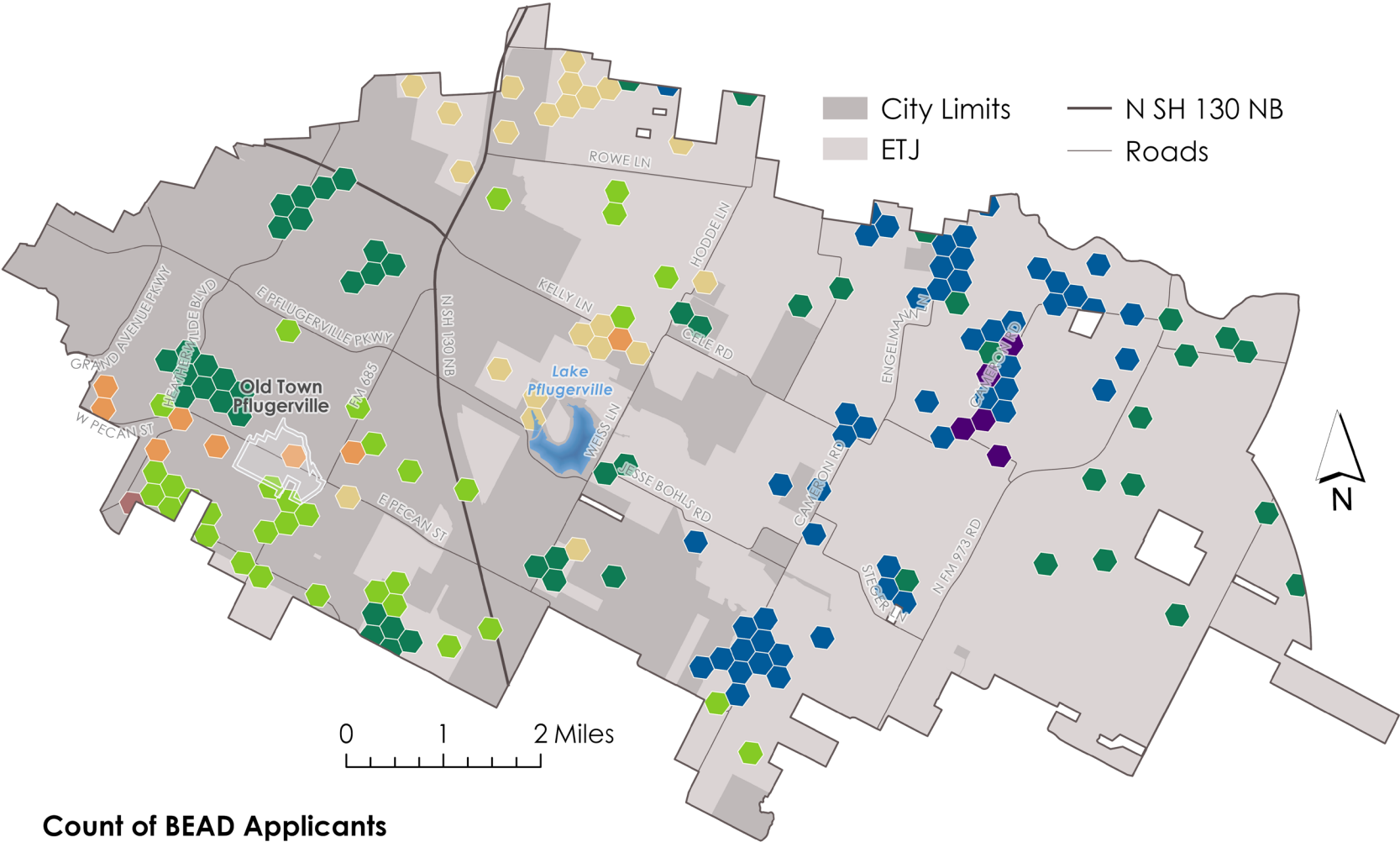


Figure 36 shows the number of BEAD applicants for all technology types at the BSL and CAI level across the city limits and ETJ. Generally, the ETJ is competitive among BEAD applicants.

Figure 37: BEAD Location Awards in Pflugerville

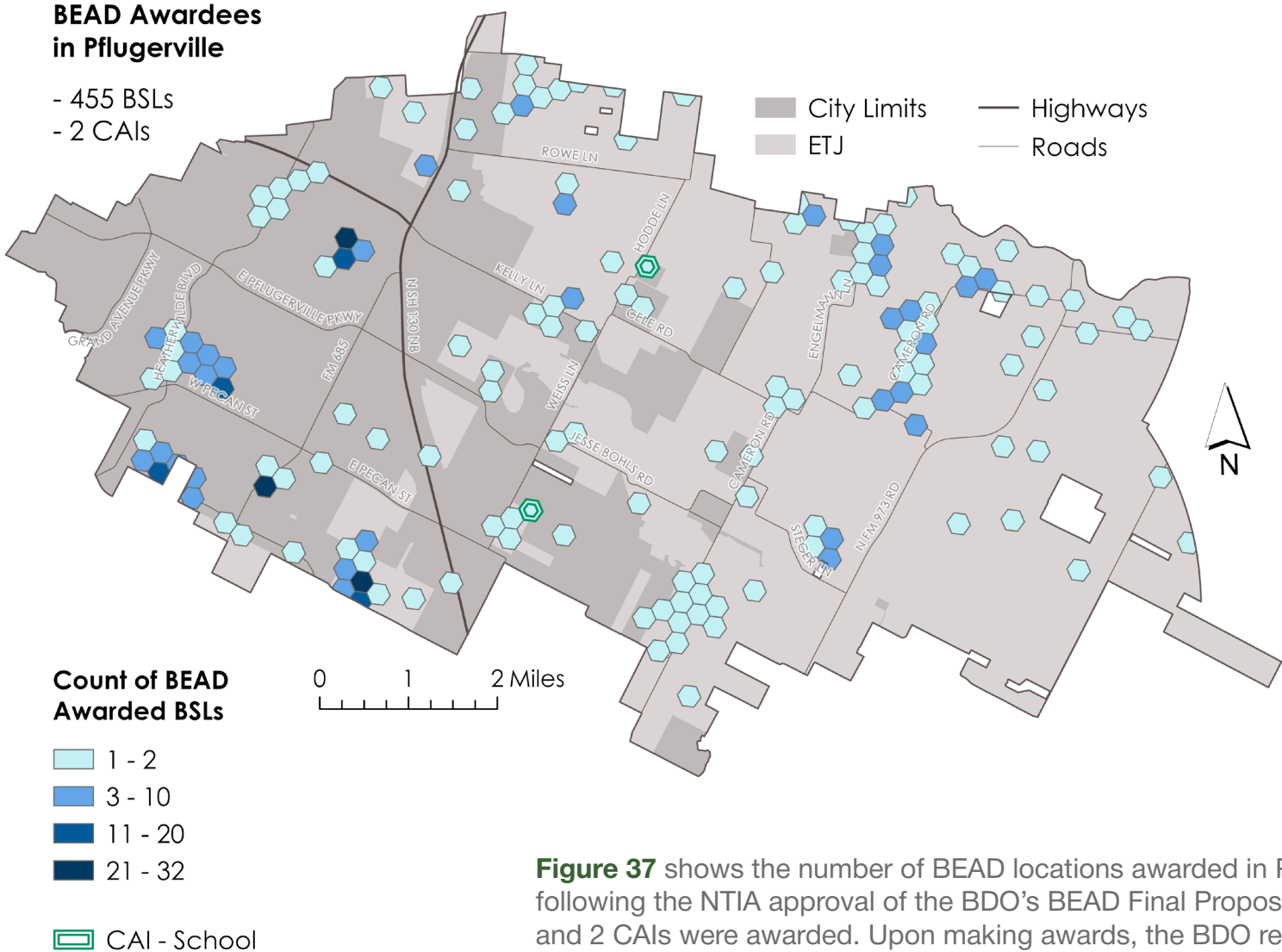
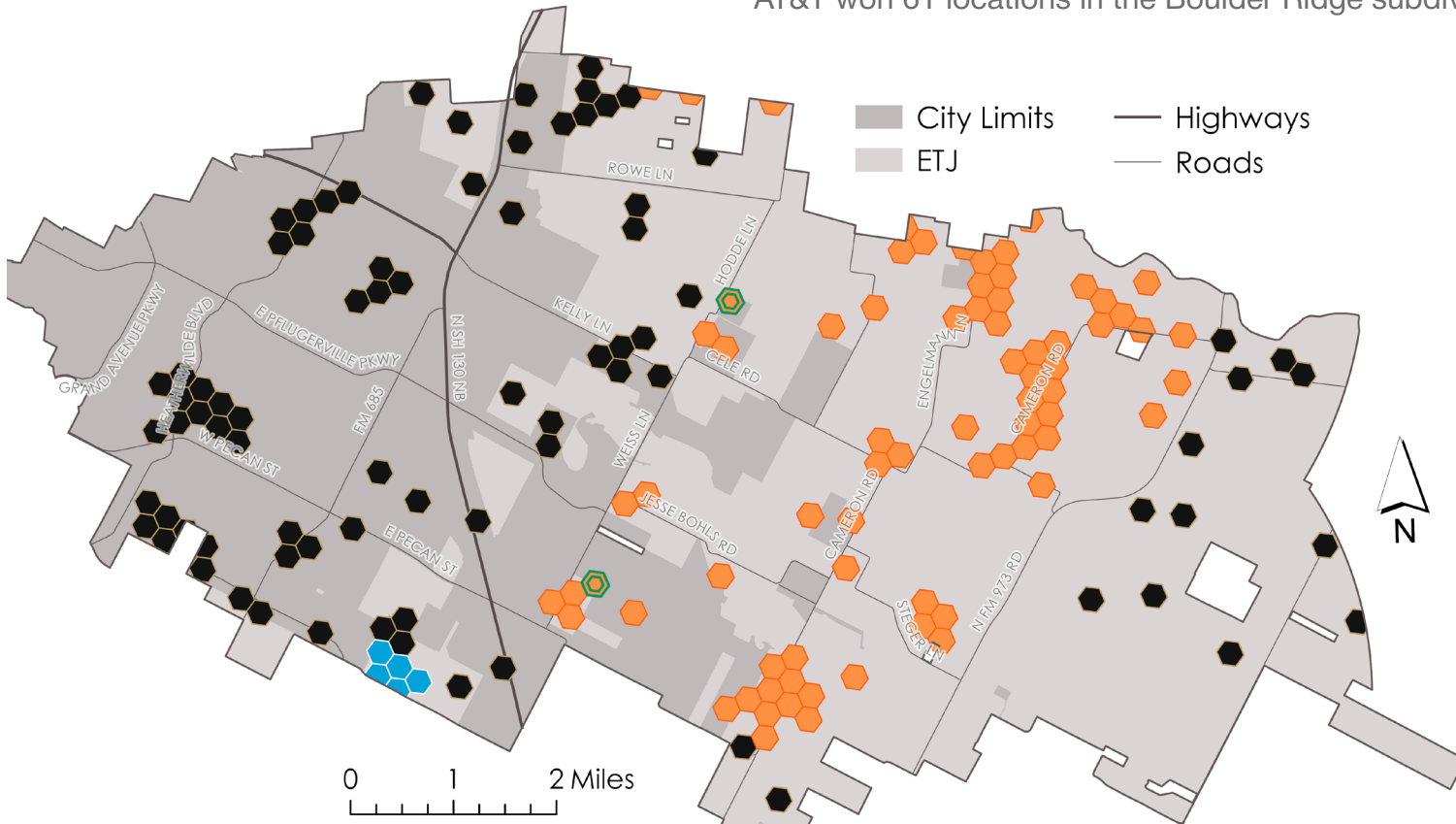


Figure 37 shows the number of BEAD locations awarded in Pflugerville following the NTIA approval of the BDO’s BEAD Final Proposal. 455 BSLs and 2 CAIs were awarded. Upon making awards, the BDO removed locations that satisfied certain reason codes in Version 7 of the FCC BDC data. These locations were removed from the final awards. This removal process reduced the 486 eligible BEAD locations down to 455 awarded locations.

Figure 38: BEAD ISP Awardees

Figure 38 shows the BEAD awardees in the City of Pflugerville. SpaceX won the most BEAD locations (266), primarily individual locations within the city limits and some of the most rural eligible BEAD locations in the ETJ. Nextstream won funding for broadband infrastructure expansion to 130s location in much of the ETJ and AT&T won 61 locations in the Boulder Ridge subdivision.



Majority Awardee by Hex

- Nexstream
- AT&T
- SpaceX (Starlink)
- CAI - School

Awardee	Awarded BSLs & CAIs
Nexstream	130
AT&T	61
SpaceX (Starlink)	266

Figure 39: BEAD Awards by Technology Type

Figure 39 shows the BEAD awards in the City of Pflugerville broken down by technology. The majority technology type awarded was LEO satellite. 266 locations were awarded to SpaceX to provide LEO satellite service. 191 locations were awarded fiber to the premises (FTTP) service. This includes FTTH service provided by AT&T and Nextstream. These awarded locations are primarily in the ETJ. The awards to Nextstream are an opportunity for a new fiber provider to enter the Pflugerville market.



Majority Awarded Technology by Hex

- Satellite
- Fiber to the Premises
- CAI - School

Technology	Awarded BSLs & CAIs
Satellite	266
Fiber to the Premises	191

Section Footnotes

1. 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
2. Cook County. (2023, October). Cook County Digital Equity Plan. Cook County Digital Equity. <https://www.cookCounty-il.gov/service/digital-equity>
3. 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
4. U.S. Department of Housing and Urban Development. (2013). Building Resiliency: The Role of Anchor Institutions in Sustaining Community Economic Development
5. 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>
6. Accounts, T. C. of P. (n.d.). Texas Broadband Development Office. Comptroller.Texas.Gov. <https://comptroller.texas.gov/programs/broadband/funding/bead/>
7. Accounts, T. C. of P. (n.d.). Texas Broadband Development Office. Comptroller.Texas.Gov. <https://comptroller.texas.gov/programs/broadband/funding/bead/>

09

**PUBLIC POLICY
TOOLS**

9.0 Public Policy Tools

9.1 Assessment of Existing + Available Public Policy Tools

To best assess the existing landscape of the available public policy tools that could govern the development of telecommunication infrastructure within the City of Pflugerville, an extensive review of the existing Right-of-Way (ROW) ordinance, City of Pflugerville procedures, permitting, and Engineering Design Manual (EDM) was conducted. This assessment confirmed that currently there are very few existing applicable ordinances that could be utilized to dictate the implementation of large-scale broadband network. Although the majority of the existing ordinances are not applicable to telecommunication infrastructure, or more specifically underground fiber optic cabling, some could be utilized or expanded upon to include fiber optic cabling. Most of the existing applicable ordinances are associated with overall activity within the ROW and relevant pre-construction related activities, however there is little to no existing verbiage directly governing the placement of underground telecommunication infrastructure.

9.2 Ordinance Recommendations

Following a thorough review of the existing city ordinance, several gaps were identified

in the existing verbiage that should be addressed prior to the implementation of any widescale broadband development. These gaps and subsequent proposed ordinance were assessed based on the goal of protecting city ROW and existing infrastructure, as well as the potential to incentivize telecommunication providers to participate in Pflugerville broadband and fiber expansion. In order to expand upon the existing ordinance with a focus on protecting the city ROW and facilities, it is recommended the city adopt the following:

- Ordinance requiring location and protection of existing facilities via potholing.
- Ordinance requiring adherence to Telecommunication specific sections of EDM.
- Ordinance requiring all pits to be covered when not in direct use during construction if necessary.
- Updating/expanding existing ordinance verbiage to specify approved abandonment criteria and requirements to abandon facilities within the public ROW.

The addition of these ordinances will supplement the existing protections the city currently maintains in order to minimize any potential negative impacts extensive construction could bring about.

City Protection Ordinance Recommendations

1. City should develop ordinance requiring adherence to telecom specific sections of EDM. Many of the current ordinances appear to be derived from electric and small cell related ordinances.
2. City should develop ordinance to revoke any permit should there be sufficient violations of any ordinance. Currently, there is some verbiage regarding specific revocation of permits in violation for specific ordinances, but an ordinance specifically authorizing city to deny a permit should there be sufficient violation of relevant ordinances.
3. City should develop ordinance to protect itself from habitual violators such as ROW authorization revocation, or relevant fines/penalties.
4. City should develop ordinance requiring all pits to be covered when not in direct use during construction if necessary (steel plate, etc.).

The proposed provider incentivization ordinance includes:

- Waive/minimize fees for telecom providers looking to contribute to wide scale implementation of fiber network.
- Require adherence to “dig once” policy which requires the collocation of

proposed facilities in a single duct bank to assist in infrastructure development.

- Incentivize providers to utilize existing vacant city or private owned conduits, require new subdivisions, apartment complexes, and developments to place sufficient vacant conduits.

Each of the proposed providers focused ordinance focus on reducing costs and necessary excavation to construct any relevant infrastructure.

Provider Incentivization Ordinance Recommendations

1. City should develop an ordinance to waive/minimize fees for telecom providers looking to contribute to city wide (or wide scale) implementation of fiber network.
2. City should require adherence to “dig once” policy to assist in infrastructure development while minimizing excess excavation. “Dig Once” refers to the coordination of work and the construction practice of adding additional conduits to infrastructure projects for future capacity/use by other utilities and ISPs.
3. If the city determines the optimal route is to construct duct banks as a part of its fiber development plan or in conjunction with CIP projects, city should develop an ordinance to incentivize providers to utilize conduits

(especially in congested areas). Some potential incentivization options include a reduction in permitting fees and constraints, reduced or postponed leasing fees, and potential for ISP to be included on the design/coordination to ensure needs are satisfied.

4. City should require new subdivisions, apartment complexes, and developments to place sufficient vacant conduits to minimize excess excavation and adhere to dig once policy.

9.3 Procedure Recommendations

In conjunction with the addition of city and provider focused ordinances, it is also recommended to consider numerous updates to city procedures related to coordinating and managing telecommunication permitting, construction, and logging. Proposed procedures recommended for implementation to protect the cities interests are as follows:

- Specify a requirement to hold a mid-point construction inspection/meeting with provider and their respective contractor(s).
- Require the utility to provide a GIS file that correlates to the as-builts.
- Develop a separate transfer of ownership notification for city dependent facilities and/or coordination with new owner when companies/networks are purchased by other ISPs.

City Protection Procedure Recommendations

1. City should develop separate transfer of ownership notification for city dependent facilities and/or coordination with new owner when companies/networks are purchased by other ISPs.

In order to accommodate the potential providers looking to develop their respective networks within the city, it is also recommended the city adopt the following provider focused procedures:

- Develop a standard checklist of items to confirm that all relevant ordinances are adhered to, with specific reference to existing ordinance and EDM standards.
- City should coordinate with provider(s) to develop approved/standardized construction methods and processes.

The totality of these proposed procedural updates are intended to streamline and support the expansion of a diverse fiber optic network within the city.

Provider Incentivization Procedure Recommendations

1. City should develop a standard checklist of items for telecommunication construction to confirm that all relevant ordinances are adhered to, with specific reference to existing ordinance and EDM standards.

Potentially a document or PDF that is provided to the contractor for preconstruction, during construction, and post construction responsibilities.

2. City should work very closely with providers to develop approved/standardized construction methods/processes such as pit sizes, bore standards, trench and microtrench standards, pole placement processes, etc. to subsequently develop preapproved restoration methods to specifically expedite both permit approval and construction inspection timelines.

9.4 Engineering Design Manual Recommendations

In order to best assess the potential impact of the existing regulation and design criteria governing the design of telecommunication facilities within the city limits, a full review of the existing Engineering Design Manual was completed. This review included an assessment of existing applicable criteria such as proposed facilities offsets, minimum embedment depths, traffic and erosion control procedures, and several other governing standards. At the conclusion of the EDM review, a list of recommendations related to telecommunication design and construction was prepared. This list of recommendations includes:

- Create concise underground telecom (UG) specific standards for fiber optic cable facilities (approved construction methods, horizontal clearances, vertical clearances, embedment depths).
- Develop separate specific requirements for infrastructure serving city owned facilities to ensure sufficient protection.
- Develop public ROW – urban/rural standards to accommodate needs of city-wide network. Special considerations will be necessary within the ETJ, city could develop public ROW – urban/rural standards to accommodate needs of city-wide network.
- Develop and reference temporary construction practices and erosion control typical details in conjunction with the providers to ensure appropriate control and restoration methods that address telecom specific construction needs in conjunction with the providers to ensure appropriate control and restoration methods that address telecom specific construction needs.

Engineering Design Manual Updates

1. City needs concise UG telecom specific standards for FOC, building off existing criteria such as approved construction methods, relevant horizontal and (existing standards mainly related to water/sewer/sanitary lines, 18” vertical clearance and no placement

above existing facilities), embedment depths, etc., potential to require traffic rated telecom structures, 2’ clearance recommended (18” currently) to ensure adequate protection of existing utilities and for future fiber.

2. City to develop separate specific requirements for infrastructure serving city owned facilities to ensure sufficient protection, clearances from other utilities, and potential requirement for occupancy within city owned conduits.
3. City should develop public ROW – urban/rural standards to accommodate needs of city-wide network. Special considerations will be necessary within the ETJ.
4. City should develop temporary construction practices and erosion control typical details in conjunction with the providers to ensure appropriate control and restoration methods that address telecom specific construction needs. Any policy implementation would exclude areas with specific traffic or environmental concerns.
5. In coordination with utilities, city should revisit overhead standards regarding fiber deployment as most standards refer to electric and wireless equipment. Opportunity to incorporate “One-touch” make ready policy to allow single contractor to move existing communication attachments versus awaiting each company to adjust their

respective facilities. “One-Touch” make ready policy would require concurrence from respective pole owners and providers.

6. City should require all new commercial construction and multi-dwelling units to include sufficient internal conduit to accommodate future ISPs.
7. City should require supplemental encasement of fiber facilities for crossings of arterial/collector roadways and drainage pavement to minimize risk of damage and subsequent excavation within the existing pavement. Provision would protect any proposed infrastructure from future damage due to subsequent construction within its vicinity, as well as minimizing the need to excavate within the roadway due to repairs.
8. City should incentivize telecoms to co-locate or place supplemental conduits on major arterial/connector roadways to minimize congestion/excavation. Potential to allow one permit to apply to all telecoms within the trench/duct bank.

Recommendations and Other Considerations

1. City currently requires potholes of each crossing and an onsite inspector. Creating an ordinance requiring location and protection of existing facilities via potholing would ensure sufficient

adherence. Requiring a pothole plan to be submitted prior to the pre-construction meeting would ensure sufficient location and protection of existing utilities.

2. City allows the abandonment of facilities in certain instances but indicates no information regarding acquiring information about the abandonment of the facilities. City should update/expand existing ordinance verbiage to specify approved abandonment criteria and requirements to abandon facilities within the public ROW.
3. City should develop ordinance to require providers to develop and adhere to relocation timeline in conjunction with any CIP or mobility program projects to mitigate any potential delay.
4. City should specify a requirement to hold a mid-point construction inspection/meeting to mitigate any significant variance from permits in the field, and post construction inspection to confirm proper placement of new facilities, adherence to all relevant ordinances, and to ensure that all equipment has been removed, ROW has been restored, and no construction related damage exists.
5. In areas of minimal available ROW or excessive congestion city to authorize telecommunication providers to place in city owned easements with

special consideration or governing standards. This could apply to all the telecom infrastructure, or infrastructure specifically serving city owned facilities.

6. City to require the submittal of a GIS file at the conclusion of construction detailing the routes and all relevant surface structure locations to develop some form of GIS registry to assist in utility mapping and reference for future improvements/city projects.
7. Recommend city to increase clearance for all roadway aerial crossings to 18’ over arterial and county roads (currently 16’) to align with TxDOT standards.

10

RESILIENCY & CYBERSECURITY

10.0 RESILIENCY + CYBERSECURITY

10.1 Resilience

Resilience is a concept that impacts and frames several different aspects of broadband deployment from network security to hurricanes or wildfires. A broadband deployment should feature a network resilient and sustainable for the long term. The network should be able to resist impacts from threat actors, the environment, and other external forces.

- **Route diversity:** Multiple paths available without common points.
- **Redundancy:** Duplicate assets serving as a back-up or alternative.
- **Protective measures:** Processes and systems used to reduce the likelihood that a system will be affected by a security intrusion, natural disaster, or otherwise.
- **Restorative measures:** Additional processes and system to reduce the time needed to return a network's full functionality.¹

The Cybersecurity and Infrastructure Security Agency (CISA) also recommends² verification of the physical diversity and redundancy for mission critical lines and services, including Requests for Telecommunications Service Priority

(TSP), which can reduce the time it takes to recover from an outage. This section outlines protective key measures that can build more resilience into a broadband network and limit risk in the key areas of cyber threats, physical threats, and natural disasters.

10.2 Cybersecurity

Threats to information technology systems have been increasing at rapid rates in recent years. Cybersecurity is a critical aspect for both regional systems and assets. Additionally, cybersecurity is an important part of any broadband infrastructure project. If seeking grant funding, there are often cyber requirements the counties and/or partners will need to adhere to in order to receive funds. For instance, BEAD requires that any subgrantee has an operational cybersecurity risk management plan or one that can be “readily operationalized.”

Any such cybersecurity risk management plan needs to follow The NIST Cybersecurity Framework (CSF) 2.0. Directly stated in the NTIA BEAD NOFO:

“...the latest version of the National Institute of Standards and Technology

(NIST) Framework for Improving Critical Infrastructure Cybersecurity (currently Version 1.1) and the standards and controls set forth in Executive Order 14028 and specifies the security and privacy controls being implemented;”

Implementing a cybersecurity risk management plan, hiring staff for cybersecurity and information technology, or contracting vendors may require grant funding. The state and local government Cybersecurity Grant Program is an option for counties or other local government entities seeking funds to support cybersecurity needs.

10.3 Physical Security

Recent incidents involving physical threats to utility and telecommunications infrastructure have highlighted the need to prioritize physical security as a protective measure. Physical intrusions could entail trespassing, tampering with network equipment, vandalism, arson, physical intrusion into a network facility to deliver a cyberattack, and most concerning the intentional destruction of network facilities to render a failure in services.

Regardless the motivation or intent, it is critical for any network service provider to take steps to prevent physical threats from resulting in network outages. There are measures to mitigate risk beyond gates, surveillance systems, sensors, and presence of security personnel at specific locations. CISA recommends “redundant systems, back-ups, physical security, and a proper geographic location that enables the alternate routing of network traffic.”

10.4 Climate Resilience + Disaster Preparedness

Natural disasters threaten broadband infrastructure network assets, facilities, and operations. Protective measures can be taken to mitigate the impact of disasters on the physical network and service delivery. The Center on Rural Innovation (CORI) highlights the following key concepts to consider related to broadband deployment natural disaster mitigation:

- Different disaster types require different mitigation strategies during construction of networks.
- Power resiliency and broadband resiliency are linked. Power outages can render otherwise undamaged broadband networks unusable.
- Some disaster mitigation strategies are expensive, and there will always be tension between building expensive but more resilient networks and building cheaper but less resilient ones.

Emergency management and network management are interconnected. Internet and mobile broadband outages can hamper rescue efforts, the coordination of recovery work, and the ability for governments to issue text and phone-based evacuation orders. Proactive protective measures and mitigation strategies can reduce risks to the network and broader community when a natural disaster strikes.

10.4.1 Winter Storm Uri (2021)

Winter Storm Uri, which struck Texas in February 2021, was one of the most severe winter weather events in the state’s history. Prolonged freezing temperatures, snow, and ice overwhelmed the state’s power grid, leading to widespread blackouts that left millions without electricity, heat, or clean water for days. The storm caused over 240 deaths, billions of dollars in damage, and exposed vulnerabilities in Texas’s energy infrastructure, which had not been adequately weatherized for extreme cold. It also highlighted deep inequities, as low-income and marginalized communities faced disproportionate hardships in accessing basic resources and recovering afterward.

Uri underscores how global warming is not limited to hotter summers—it also drives more volatile and extreme weather patterns. Texas’s experience

shows the need to rethink infrastructure resilience, energy reliability, and disaster preparedness in light of a changing climate. Going forward, this means investing in weatherization, diversifying energy sources, planning for both extreme heat and cold, and recognizing that climate resilience is as much about equity and social support as it is about technology and infrastructure.

10.4.2 Central Texas Floods (2025)

The recent floods in Central Texas, exposed vulnerabilities in the region’s broadband infrastructure, highlighting the need for greater resilience. Floodwaters damaged power and fiber lines, knocked out power to critical network equipment, disrupting both wired and wireless services—impacting emergency response and communication. These events underscored the importance of infrastructure hardening, redundant network paths, backup power systems, and rapid-deployment mobile units. Going forward, improving broadband resilience through better planning, climate-aware design, and funding for emergency connectivity—especially in vulnerable areas—will be crucial to maintaining reliable communication during future disasters.

Section Footnotes

1. Danforth, A. (2023, September 1). Understanding Broadband Resilience and natural disaster risk. Center on Rural Innovation. <https://ruralinnovation.us/blog/understanding-broadband-resilience-and-natural-disaster-risk/>
2. RISK TO CRITICAL INFRASTRUCTURE: TELECOMMUNICATIONS CENTRAL OFFICES. (n.d.). Retrieved May 9, 2024, from https://www.cisa.gov/sites/default/files/publications/infographic-risk-telecommunications-central-offices_508.pdf
3. Risk to critical infrastructure: Telecommunications Central ... <https://www.cisa.gov/>. (n.d.). https://www.cisa.gov/sites/default/files/publications/infographic-risk-telecommunications-central-offices_508.pdf
4. [publications/infographic-risk-telecommunications-central-offices_508.pdf](https://www.cisa.gov/sites/default/files/publications/infographic-risk-telecommunications-central-offices_508.pdf)
5. Could Texas see a repeat of last year's winter storm? Texas AM Stories. (2022, February 2). <https://stories.tamu.edu/news/2022/02/02/could-texas-see-a-repeat-of-last-years-winter-storm/>

11

OVERALL RECOMMENDATIONS

11 OVERALL RECOMMENDATIONS

Future Planning

- Continually evaluate the various scenarios put forth in this plan and assess trends over time to adjust plans, partnerships, designs, and projects.
- Consider conducting a smart city plan or study to evaluate how any increased fiber capacity can be leveraged to achieve the goal of becoming a “Connected Smart City,” as laid out in the Pflugerville Strategic Action Plan 2026–2030.

Broadband Connectivity Improvement Options

- Take action to design and build critical fiber capacity to city facilities and eastern Pflugerville as outlined in the Pflugerville Pfiber Plan and greenfield HLD.
- Pursue a joint trench for the Rowe Ln. and Cele Rd. CIP projects in coordination with Travis County to ensure conduit is incorporated into the design.
- Coordinate with TXDOT on the future FM 973 project to ensure duct is incorporated into the design.

Public-Private Partnerships

- Run an RFP process to find a fiber provider to help achieve the City of Pflugerville’s goals by building necessary routes in the Pflugerville Pfiber Plan and enable last mile fiber service to city facilities, residential, and commercial locations.
- Collaborate with and incentivize providers to design and build a residential FTTP project(s) to serve the subdivisions in Pflugerville with zero fiber coverage based on the latest FCC BDC Data (Version 7).
- Consider an anchor tenant agreement to pay for the capital cost of any fiber buildout in order to amortize the cost over time.
- Consider partnership with PfISD to lease fiber.

Digital Opportunity

- Coordinate with a fiber provider on an application for the Texas Middle-Mile grant program to deploy middle mile along key corridors included in the Pflugerville Pfiber Plan.
- Coordinate with BEAD award winners in the city limits and ETJ in order to understand technology deployments,

project designs, and planned usage of ROW.

- Release and maintain the Resident Broadband Provider Availability tool to ensure the most up to date information on provider service and pricing options is available to Pflugerville residents.
- Leverage local Austin Technology firms/employers to assist with funding digital skills or device programming.
- Consider a partnership with an economic development or workforce organization to provide programs for persons with disabilities and veterans.
- Apply for public grants or pursue private/philanthropic funding opportunities as needed to meet digital opportunity goals.

Public Policy Tools

- Finalize a permitting checklist for telecommunication applications to enable smoother permitting processes to enable more fiber infrastructure.
- Utilize an internal punchlist for any development or planned fiber project to evaluate potential requirements and incentives.
- Require collection of broadband network routes via a GIS file (.shp or

- .kmz) alongside permits to ensure that route data can be digitized as a record to assist with future infrastructure analysis and asset management.
- Develop a corridor congestion tool with digitized permit data to evaluate number of providers using right-of-way assets.
- Facilitate a targeted dig once policy that can consolidate various providers to certain ducts/conduit in specific areas of Pflugerville.
- Establish a Shared Internet Infrastructure Opportunities Program (SIIO) that will:
 - Facilitate duct share between providers and city.
 - Incentivize developers and CIP projects to include conduit placement for lease within designated corridors and developments.
 - Provide an interactive planning tool to map current and future opportunities for joint trench, conduit for lease, identified connectivity needs, utility congestion.
- Ordinance Recommendations:
 - Create an ordinance requiring location and protection of existing facilities via potholing.
 - Create an ordinance requiring adherence to telecommunication specific sections of EDM.
- Create an ordinance requiring all pits to be covered when not in direct use during construction if necessary.
- Update existing ordinance verbiage to specify approved abandonment criteria and requirements to abandon facilities within the public ROW.
- Waive/minimize fees for telecom providers looking to contribute to wide scale implementation of fiber network.
- Require adherence to “dig once” policy which requires the colocation of proposed facilities in a single duct bank to assist in infrastructure development.
- Incentivize providers to utilize existing vacant city or private owned conduits, require new subdivisions, apartment complexes, and developments to place sufficient vacant conduits.
- City Engineering Procedure Recommendations:
 - Specify a requirement to hold a mid-point construction inspection/meeting with provider and their respective contractor(s).
 - Require the utility to provide a GIS file that correlates to the as-builts.
- Develop a separate transfer of ownership notification for city dependent facilities and/or coordination with new owner when companies/networks are purchased by other ISPs.
- Develop a standard checklist of items to confirm that all relevant ordinances are adhered to, with specific reference to existing ordinance and EDM standards.
- City should coordinate with provider(s) to develop approved/standardized construction methods and processes.
- Engineering Design Manual Recommendations:
 - Create concise underground telecom specific standards for fiber optic cable facilities (approved construction methods, horizontal clearances, vertical clearances, embedment depths).
 - Develop separate specific requirements for infrastructure serving city owned facilities to ensure sufficient protection.
 - Develop public ROW – urban/rural standards to accommodate needs of city-wide network. Special considerations will be necessary within the ETJ, city could

develop public ROW – urban/
rural standards to accommodate
needs of city-wide network.

- Develop and reference temporary
construction practices and
erosion control typical details in
conjunction with the providers to
ensure appropriate control and
restoration methods that address
telecom specific construction
needs in conjunction with the
providers to ensure appropriate
control and restoration methods
that address telecom specific
construction needs.





12 APPENDIX

ACP	Affordable Connectivity Program	GIS	Geographic Information Systems
ACS	American Community Survey	Gb	Gigabit
AGOL	ArcGIS Online	GPON	Gigabit Passive Optical Networks
ARPA	American Rescue Plan Act	Gbps	Gigabits Per Second
ADSL	Asymmetric Digital Subscriber Line	GDP	Gross Domestic Product
BOM	Bill Of Materials	HDPE	High-Density Polyethylene
BIPOC	Black, Indigenous and People of Color	HLD	High-Level Design
BOOT	Bringing Online Opportunities to Texas	ISD	Independent School District
BDC	Broadband Data Collection	IT	Information And Technology
BDO	Broadband Deployment Office	IJA	Infrastructure Investment And Jobs Act
BEAD	Broadband, Equity, Access And Deployment	ISP	Inside Plant Implementation
BOT	Build Operate Transfer	IDRA	Intercultural Development Research Association
CORI	Center on Rural Innovation	ISP	Internet Service Providers
CBRS	Citizens Broadband Radio Service	KMZ	Keyhole Markup Language Zipped
CDCT	Cloud + Data Center Transformation	LAN	Local Area Network
CAIs	Community Anchor Institutions	LoS	Line Of Sight
CRA	Community Reinvestment Act	LEA	Local Education Agency
COG	Council of Governments	LISC	Local Initiatives Support Corporation
CSF	Cybersecurity Framework	LTE	Long-Term Evolution
DEA	Digital Equity Act (2021)	LMI	Low- And Moderate-Income
DSL	Digital Subscriber Line	LIHTC	Low-income Housing Tax Credit
DDoS	Distributed Denial-Of-Service	Mb	Megabit
OECD	Economic Co-Operation And Development	Mbps	Megabits Per Second
EDC	Economic Development Commissions	MOU	Memorandum Of Understanding
ESC	Education Service Center	MAN	Metropolitan Area Network
EC	Electric Cooperatives	MSAs	Metropolitan Statistical Areas
EBB	Emergency Broadband Benefit Program	MPLS	Multi-Protocol Label Switching
EMS	Emergency Medical Services	NEPA	National Environmental Policy Act
EOC	Emergency Operations Centers	NTIA	National Telecommunications And Information Administration
FCC	Federal Communications Commission	NMTC	New Markets Tax Credits
FPHA	Federal Public Housing Assistance	NG911	Next Generation 911
FTTH	Fiber To The Home	NOFO or NOFA	Notice of Funding Opportunity (or Availability)
FOTP	Fiber To The Premise	OET	Office of Educational Technology
FTTx	Fiber to the x	OSS/BSS	Operations And Business Support Systems
GAA	General Authorized Access		
GLO	General Land Office		

OOM	Order Of Magnitude
OSP	Outside Plant Implementation
PON	Passive Optical Networks
POP	Points of Presence
PALs	Priority Access Licenses
P3	Public-Private Partnerships
PWI	Public Welfare Investments
PPP	Public-Private Partnerships
PSAP	Public-Safety Answerpoint Point
QoS	Quality of Service
RFI	Request For Information
RFP	Request For Proposals
RFQ	Request For Qualifications
ROI	Return On Investment
ROW	Right Of Way
SCADA	Supervisory Control and Data Acquisition
SHPO	State Historic Preservation Offices
TSP	Telecommunications Service Priority
USDA	United States Department of Agriculture