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Broadband Deployment Feasibility Study

September 24, 2024



Agenda

1 *Scope and Deliverables*

2 *Broadband Overview*

3 *Executive Summary*

4 *Network Design Options*

5 *Recommended Next Steps*

6 *Q&A*

Scope and Deliverables



Feasibility Study & Preliminary Design

- Analyze competition, community sentiment, and other key drivers of network success
- Share multiple models for operating each phase of the network, with associated financial profiles
- High-level network design connecting all required addresses/facilities



Master Plan

- Conceptual routing of fiber infrastructure and maps for all phases
- Detailed action plan and immediate next steps for implementing the network



Final Design

- 100% construction-ready, Low-Level Design documents for all facilities and infrastructure in Phase 1A



RFP Management

- Create and publish Construction RFP, and manage Q&A and application process
- Review and support scoring of all applications
- Recommend a finalist to the Town



Grants

- Research and recommend grant applications to assist with construction
- Technical assistance with the preparation of grant applications

Broadband Overview

Broadband 101

- Broadband is the technical term for high-speed internet
- The FCC's current standard for speeds are 100 Mbps download and 20 Mbps upload (expressed as 100/20), though the FCC states that at least 1000/500 is needed for longer term application usage
- Download includes downloading a movie or file, while upload includes uploading data to the cloud or video calls and meetings
- Broadband has numerous benefits and use cases:



Government Services



Telework



Education



Accessibility



Economic Development



Urban Revitalization



Environmental Sustainability



Healthcare



Entertainment



Public Safety

Broadband in the Region



Frisco's Broadband Journey to Date

1. In 2020, Frisco began discussing broadband options and passed a "dig once" ordinance
2. A Request for Proposals (RFP) was issued in 2022 for a comprehensive Broadband Strategic Plan; however, no contract was awarded at this time
3. Subsequent RFP was issued in Fall 2023 for Broadband Feasibility Study and Design with a phased approach to cover both municipal infrastructure and the broader community
4. Project was awarded to Bonfire in Q1 2024
5. Feasibility study completed in August 2024, providing a roadmap for next steps for the Town's broadband journey

Executive Summary

Finding	Finding Overview	Next Steps
Competition Is Limited	<ul style="list-style-type: none"> • Xfinity has a wireline monopoly covering 99.8% of the Town, with max advertised speeds up to 1200 / 35 Mbps • Xfinity internet pricing ranges from \$30 to \$106 per month (after promotional pricing expires) • DSL (Lumen), Fixed Wireless (AT&T, Verizon, T-Mobile) and Satellite providers offer service in Frisco, but speeds and reliability are a concern 	<ol style="list-style-type: none"> 1) Move forward with Phase 1A as a Town funded, owned, and operated fiber facility <ul style="list-style-type: none"> • This allows the Town to realize \$120K / yr cost savings moving from Xfinity • Additionally, the Town can lease capacity to an interested fiber overbuilder 2) Explore developing microtrenching standards to decrease build costs 3) Develop and issue an RFP for a public-private-partnership and invite service providers to respond
Residents Would Switch to Another Provider	<ul style="list-style-type: none"> • 95% of the Town subscribes to Xfinity, with the remainder using CenturyLink, T-Mobile, or their resort / HOA • Resident speed tests show median Xfinity speeds of 207 / 24 Mbps • 43% of respondents said they would definitely switch providers, with another 50% saying they would consider switching • 82% of businesses would switch if another provider was present 	
Several Fiber Business Cases Are Feasible	<ul style="list-style-type: none"> • Frisco has strong demographics, housing density, and resident desire for another provider – these are all key to a successful business case • Several private sector providers are interested in building in the Town • Underground boring costs are high given the expected frequency of rock and cobble 	

Network Design Options

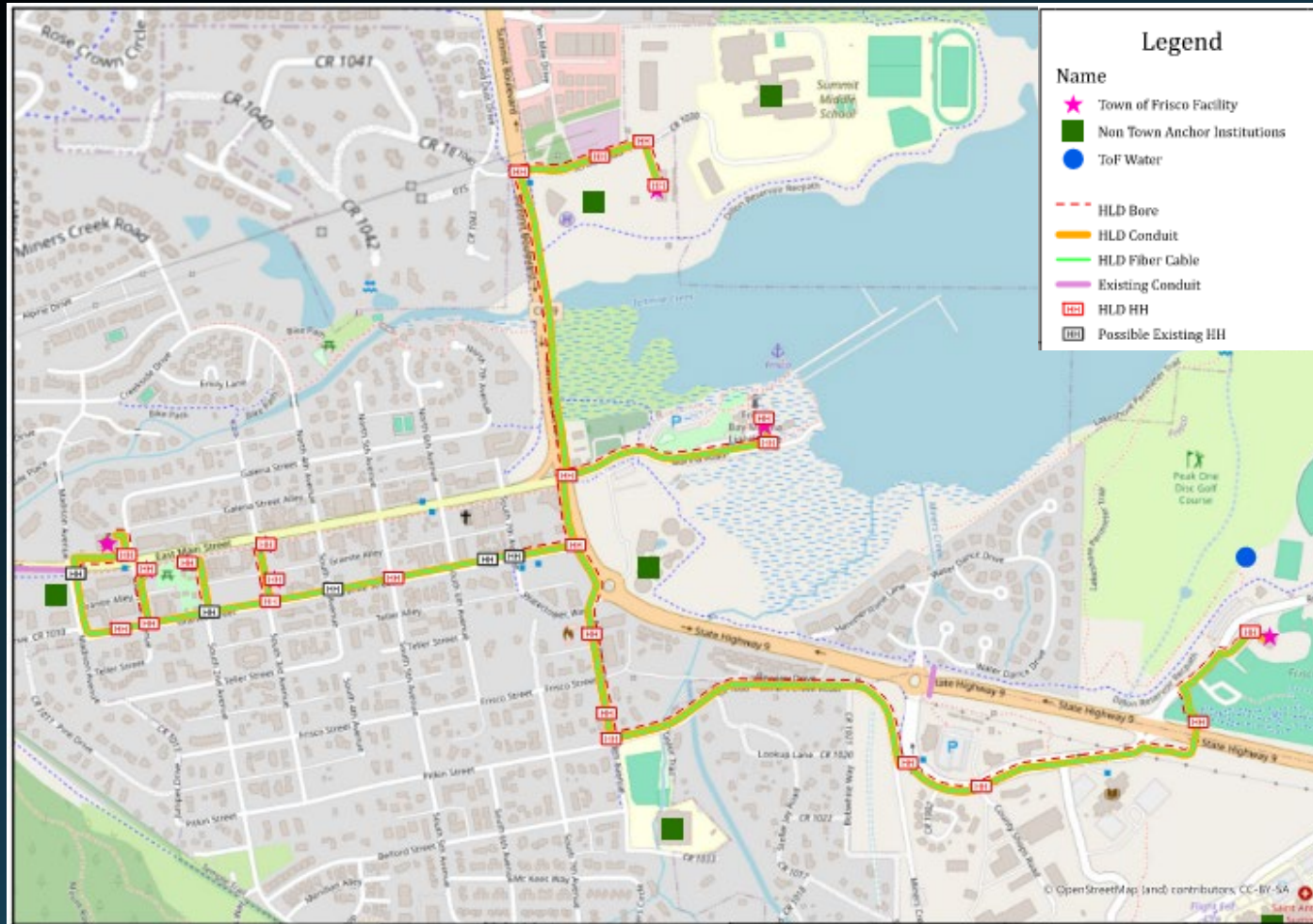
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Network Phasing Options

8

Phases in Study	Phase Description	Benefits / Drawbacks
Phase 1A	Municipally owned and operated fiber backbone covering 8 Town Facilities.	<ul style="list-style-type: none"> • Redundancy and security • Cost savings from moving off of Xfinity • Future proof infrastructure
Phases 1A & B	Extension of Phase 1A; municipally owned and operated fiber backbone covering 21 Town Facilities, Anchor Institutions, and Water Infrastructure.	<ul style="list-style-type: none"> • Redundancy and security • Cost savings from moving off of Xfinity • Future proof infrastructure
Fiber-to-the-Curb	Municipally owned backbone and distribution network to the property line / curb of all premises and facilities. A service provider manages: back / front end of network, retail operations, and pays for and owns the customer drop infrastructure.	<ul style="list-style-type: none"> • 1A/B benefits, plus a town-wide fiber network • Limited operational / commercialization risk • Higher initial investment and financial burden
Municipally Owned, Third-Party Operated	Municipally owned backbone, distribution, and drop network. A network operator manages: back / front end of network, retail operations, and customer drops, but the Town pays for and owns the customer drop infrastructure. Model would be Fiber to the Premise (FTTP) – Town owns all infrastructure, including drops to buildings.	<ul style="list-style-type: none"> • 1A/B benefits, plus a town-wide fiber network • Limited operational risk • Commercial risk • Higher initial investment and financial burden
Municipally Owned and Operated	Municipally owned backbone, distribution, and drop network. The Town builds up a broadband team to fully manage all components of the network and operations. Model would be Fiber to the Premise (FTTP) – Town owns all infrastructure, including drops to the buildings.	<ul style="list-style-type: none"> • Redundancy, security, cost savings • Control of digital infrastructure future • Significant revenue and profit opportunity • Full financial / operational burden on Town
Public-Private-Partnership (P3)	Leverages Town infrastructure, funding, and/or permitting into an agreement with a private entity to build, maintain, and operate a broader network to Town businesses and residents.	<ul style="list-style-type: none"> • Lower initial investment, financial burden, and operational burden • Reduced control of digital infrastructure and network

Phase 1A: Municipal Buildings



Town-Owned Network Connecting Municipal Buildings Only

Premises Connected: 8

Construction Cost: \$1.8M

Annual Operating Cost: \$43k

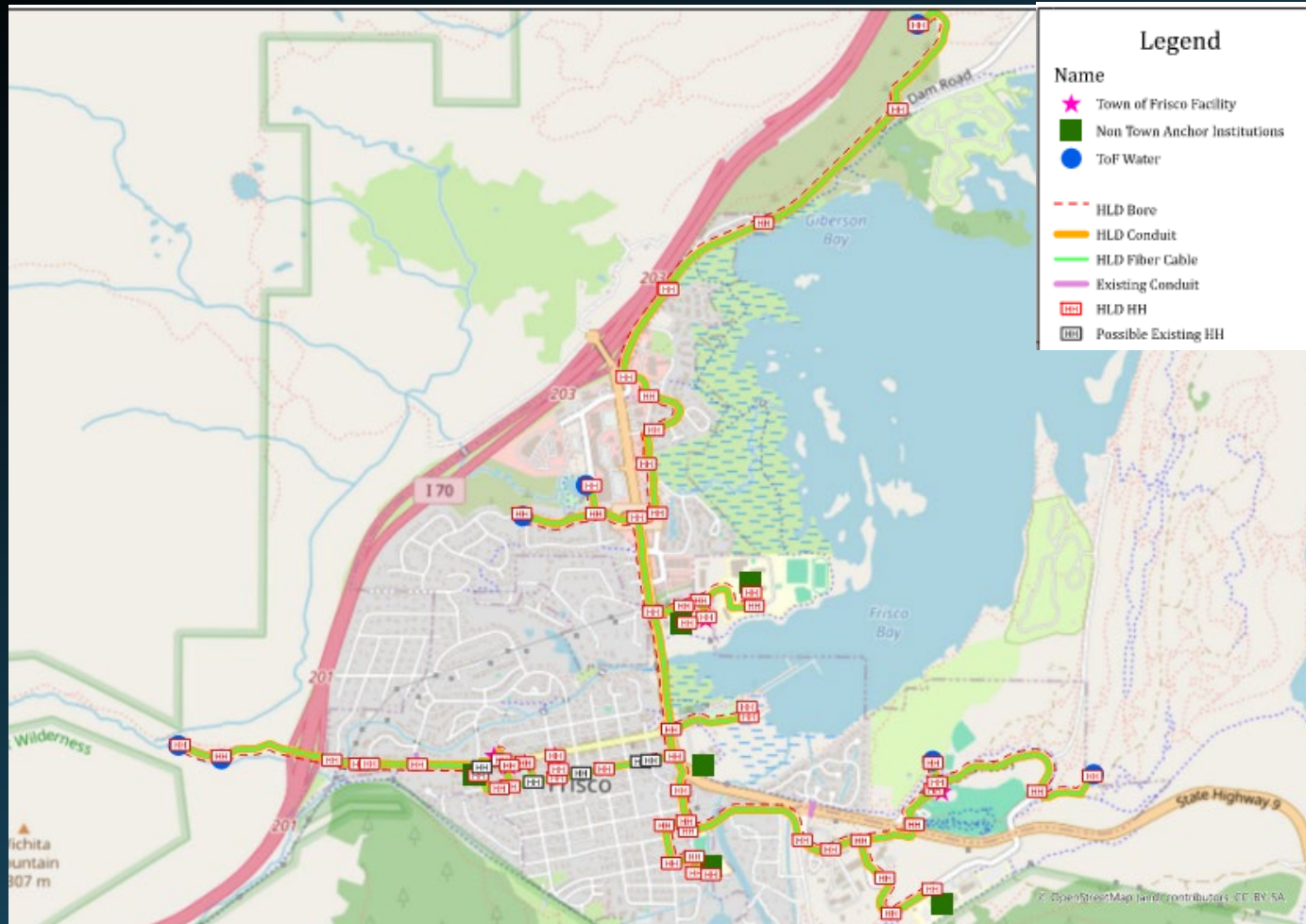
Current Xfinity Service Annual Cost: \$120k/year (full cost to Town)

Financing Mechanism: Self-funded with 2025 CIP Funding

Result of Analysis: Achievable with Current Funds

Phase 1A & B: Municipal Buildings, Critical Infrastructure and Anchor Institutions

10



Town-Owned Network

Premises Connected: 21

Construction Cost: \$6.0M

Annual Operating Cost: \$64k

Current Xfinity Service Annual Cost: \$120k/year (full cost to Town)

Financing Mechanism: Self-funded with CIP funds, anchor institution contributions, plus consideration of a bond or additional funding

Result of Analysis: Requires Additional Funds to Complete

Phases 2-4: FTTP within Town Limits



Includes Downtown Corridor, Summit Blvd, All Homes in Town Limits

Municipal Owned and Operated FTTP Network

Premises Connected: 4,097

Phase 2: Downtown Corridor

Phase 3: Summit BLVD

Phase 4: All homes within Town limits

Financing Mechanism: Municipal Revenue Bond Raise (Enterprise Fund not requiring an election) or business improvement district

Result of Analysis: **Not Feasible**
under Current Conditions

Phases 2-4: FTTP within Town Limits

Results to Stabilization (Y6):	Fiber to the Curb	Open Access Network	Municipally Owned and Operated
Revenue	\$2.4M	\$5.4M	\$7.0M
Operating Expense	\$0.3M	\$3.4M	\$7.6M
Capital Expense	Bore: \$13.6M Microtrench: \$8.8M	Bore: \$16.1M Microtrench: \$11.3M	Bore: \$14.0M Microtrench: \$9.2M
Conclusion	Only feasible via microtrench, bond raise of \$8.6M	Only feasible via microtrench, bond raise of \$11.9M	Only feasible via microtrench, bond raise of \$10.1M

Phases 2-8: FOTP within broader community



Includes Downtown Corridor, Summit Blvd, All Homes in Town Limits, and Surrounding Community

Municipal Owned and Operated FOTP Network

Premises Connected: 5,591

Phases 2-4, plus:

Phase 5: Unincorporated residential

Phase 6: Future Lake Hill MDU

Phase 7: Neighborhood north of I-70

Phase 8: Summit High School, addresses south of Frisco

Financing Mechanism: Municipal Bond Raise

Result of Analysis: **Not Feasible under Current Conditions**

Phases 2-8: FTTP within broader community

Results to Stabilization (Y6):	Fiber to the Curb	Open Access Network	Municipally Owned and Operated
Revenue	\$3.3M	\$7.2M	\$9.3M
Operating Expense	\$0.6M	\$4.2M	\$8.1M
Capital Expense	Bore: \$22.2M Microtrench: \$14.2M	Bore: \$25.6M Microtrench: \$17.7M	Bore: \$22.8M Microtrench: \$14.8M
Conclusion	Only feasible via microtrench, bond raise of \$14.0M	Only feasible via microtrench, bond raise of \$18.2M	Only feasible via microtrench, bond raise of \$15.7M

Recommended Next Steps

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Recommended Next Steps

1. Develop and release RFP to build Phase 1A to connect municipal buildings and provide a backbone route through the main corridor
2. Develop and release RFP to gather interest from ISPs on public-private-partnership opportunities to provide fiber internet to the broader Frisco community
 - Multiple ISPs have expressed interest to the Town
 - 1A network can be contributed or leased to ISPs
 - Additional broadband funds could be offered to ISPs as a contribution to network construction
 - Consider adoption of microtrenching specifications to reduce costs and disruptions

Benefits of Phase 1A

- Phase 1A's cost falls within the proposed 2025 CIP in the Town's budget
- It achieves the Town's desires in connecting critical facilities with future-proof, fiber infrastructure
- It provides redundancy, security, increased speeds, and cost savings, economic development opportunities, and communication over the current Xfinity solutions
- The routes are key to any of the follow-on build designs / business models, providing flexibility and forward momentum for the Town to choose other options

Q&A

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Key References Pages from the full Feasibility Study

- Executive Summary- Page 3
- Recommendations and Next Steps- Page 4
- Community Survey- Page 23
- Design Overview- Page 37
- Operating Models- Page 44
- Financial Analysis- Page 47

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Thank You

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