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**TOWN OF FRISCO**  
COLORADO

## 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

 Urban Revitalization

 Telework

 Environmental Sustainability

 Education

 Healthcare

 Accessibility

 Entertainment

 Economic Development

 Public Safety

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

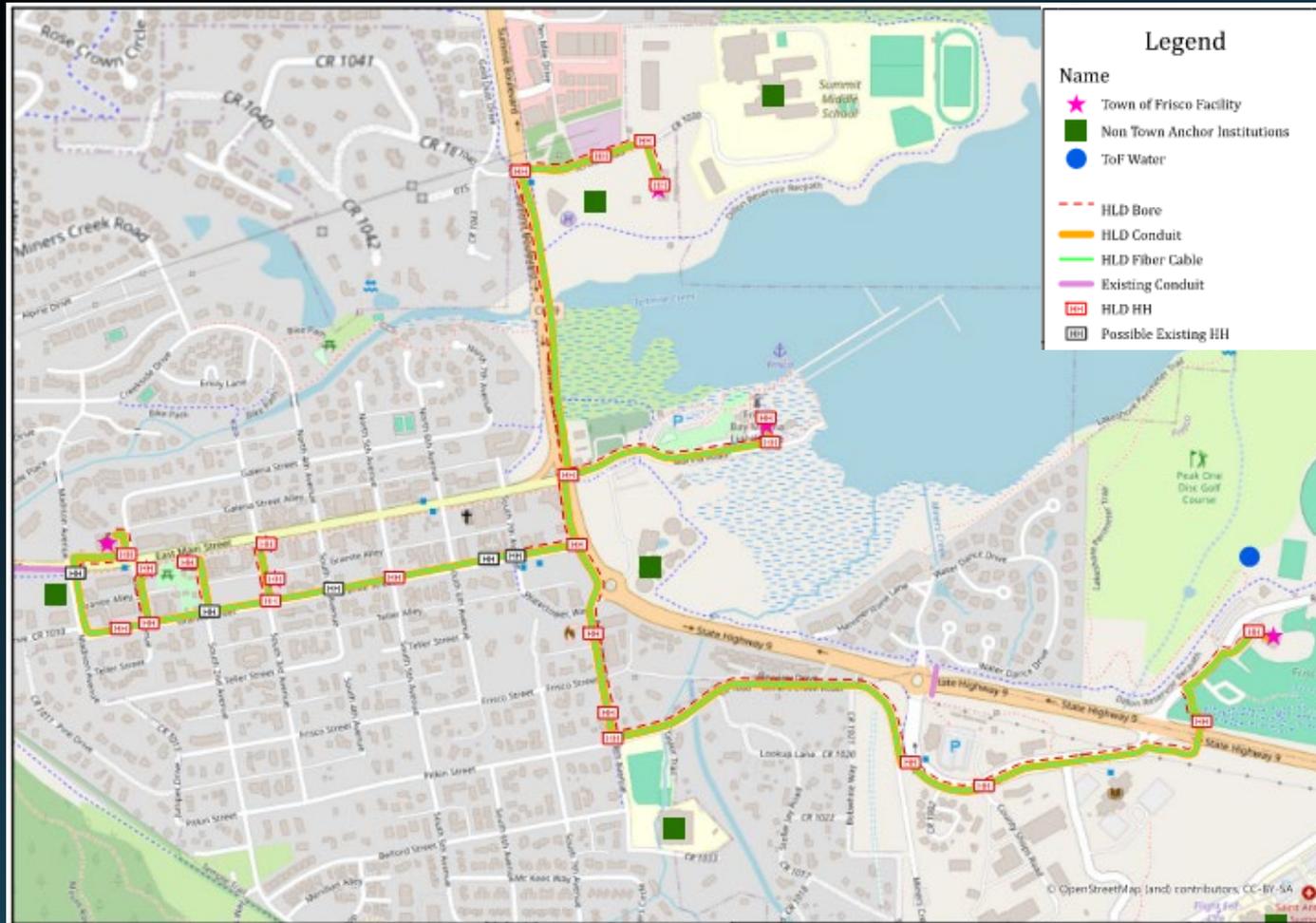
# Network Design Options

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# Network Phasing Options

Phases in Study	Phase Description	Benefits / Drawbacks
<p><b>Phase 1A</b></p>	<p>Municipally owned and operated fiber backbone covering 8 Town Facilities.</p>	<ul style="list-style-type: none"> <li>• Redundancy and security</li> <li>• Cost savings from moving off of Xfinity</li> <li>• Future proof infrastructure</li> </ul>
<p><b>Phases 1A &amp; B</b></p>	<p>Extension of Phase 1A; municipally owned and operated fiber backbone covering 21 Town Facilities, Anchor Institutions, and Water Infrastructure.</p>	<ul style="list-style-type: none"> <li>• Redundancy and security</li> <li>• Cost savings from moving off of Xfinity</li> <li>• Future proof infrastructure</li> </ul>
<p><b>Fiber-to-the-Curb</b></p>	<p>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.</p>	<ul style="list-style-type: none"> <li>• 1A/B benefits, plus a town-wide fiber network</li> <li>• Limited operational / commercialization risk</li> <li>• Higher initial investment and financial burden</li> </ul>
<p><b>Municipally Owned, Third-Party Operated</b></p>	<p>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.</p>	<ul style="list-style-type: none"> <li>• 1A/B benefits, plus a town-wide fiber network</li> <li>• Limited operational risk</li> <li>• Commercial risk</li> <li>• Higher initial investment and financial burden</li> </ul>
<p><b>Municipally Owned and Operated</b></p>	<p>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.</p>	<ul style="list-style-type: none"> <li>• Redundancy, security, cost savings</li> <li>• Control of digital infrastructure future</li> <li>• Significant revenue and profit opportunity</li> <li>• Full financial / operational burden on Town</li> </ul>
<p><b>Public-Private-Partnership (P3)</b></p>	<p>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.</p>	<ul style="list-style-type: none"> <li>• Lower initial investment, financial burden, and operational burden</li> <li>• Reduced control of digital infrastructure and network</li> </ul>

# Phase 1A: Municipal Buildings



## Town-Owned Network Connecting Municipal Buildings Only

**Premises Connected: 8**

**Construction Cost: \$1.8M**

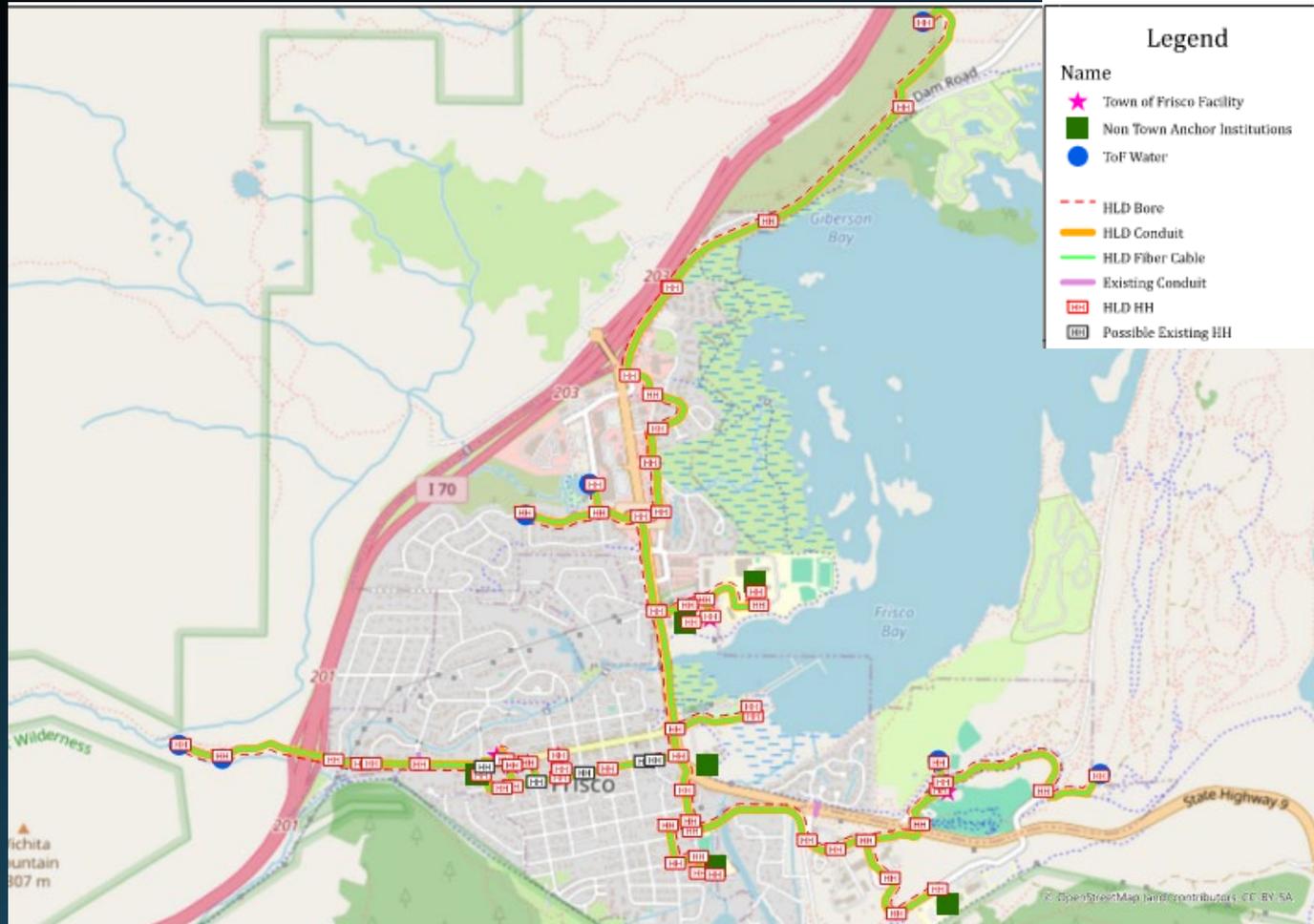
**Annual Operating Cost: \$43k**

**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



## Town-Owned Network

**Premises Connected: 21**

**Construction Cost: \$6.0M**

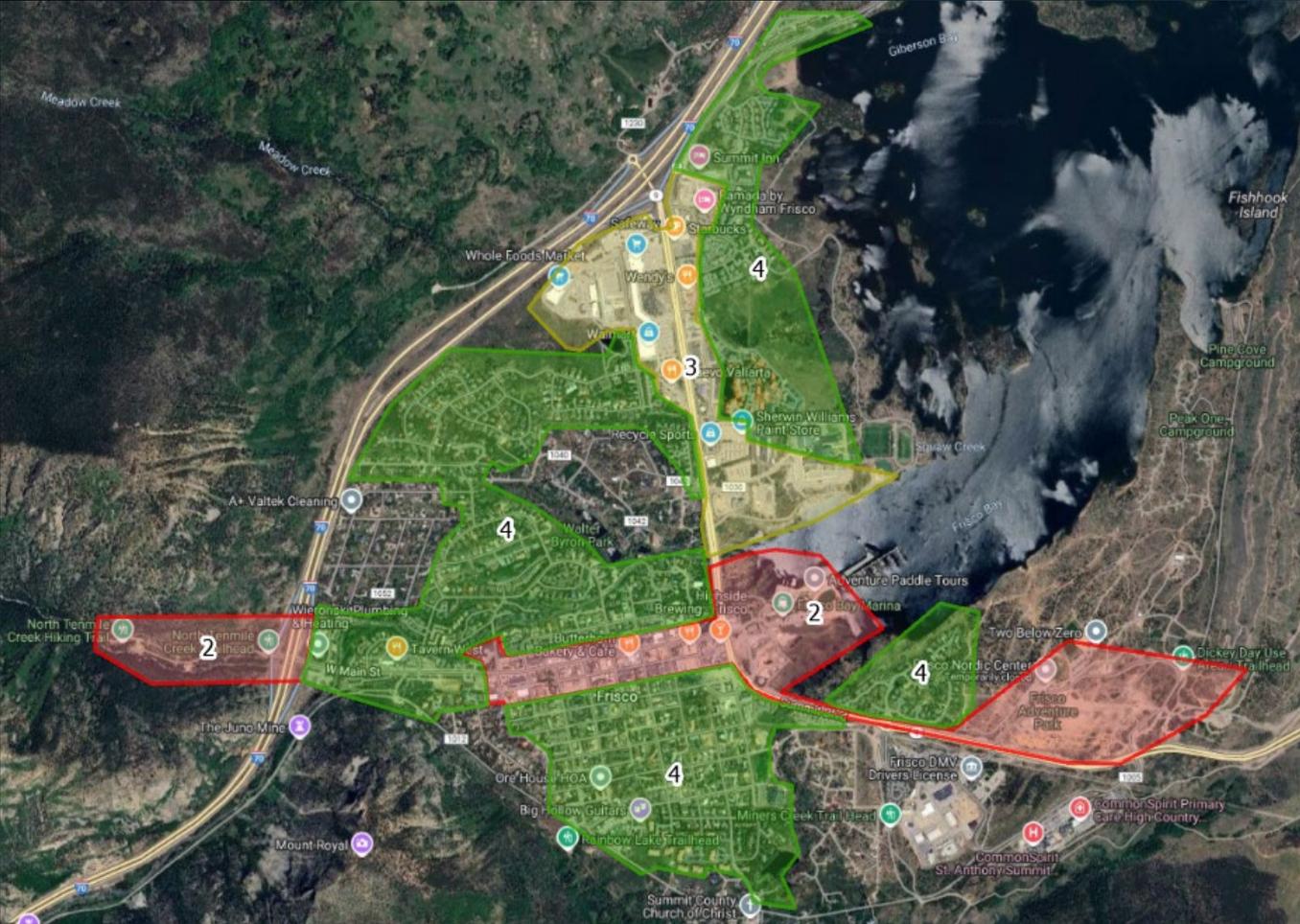
**Annual Operating Cost: \$64k**

**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	<b>Bore:</b> \$13.6M <b>Microtrench:</b> \$8.8M	<b>Bore:</b> \$16.1M <b>Microtrench:</b> \$11.3M	<b>Bore:</b> \$14.0M <b>Microtrench:</b> \$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: FTTP within broader community



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

## Municipal Owned and Operated FTTP 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	<b>Bore:</b> \$22.2M <b>Microtrench:</b> \$14.2M	<b>Bore:</b> \$25.6M <b>Microtrench:</b> \$17.7M	<b>Bore:</b> \$22.8M <b>Microtrench:</b> \$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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