



Johnstown Colorado

Broadband Study

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1. Executive Summary

1.1 Broadband Study Purpose

The Town of Johnstown, Colorado, (Johnstown or Town) has undertaken a Broadband Study to explore and understand the feasibility of developing a community owned fiber network. This study serves as a strategic guide for the Town's pursuit of improved broadband services, aligning with its vision of offering high-speed broadband to all its residents and businesses. This study aims to assess the current broadband infrastructure in Johnstown and explore potential public models for upgrading and expanding broadband services. This assessment is driven by the town's growing demand for faster and more reliable internet connectivity. As the last several years have highlighted, having access to high speed, affordable broadband is essential for residents to fully participate in the modern economy, access education, access employment training activities, and to participate in telehealth services.

1.2 Current Market Condition

Johnstown's current broadband market is characterized by limited service provider options with varying service levels and reliability. Existing providers in the Town primarily use traditional coaxial cable technology with fiber options largely unavailable. Wireless options are also prevalent in Johnstown, but traditionally offer far lower speeds and are less reliable.

While the private telecommunications industry has supported expansion of broadband across the United States with varying success, recently broadband has been deployed by municipal providers across northern Colorado. These providers view broadband as a utility – no different than water or power and should be provided to all within their municipal boundaries. The cities of Estes Park, Loveland, Longmont and Fort Collins all have municipal broadband networks providing >1 Gbps service to residents, businesses, and surrounding areas.

1.3 Network Design and Implementation

For the implementation of a new broadband network, this study focuses on a fiber only network that prioritizes the full buildout of Johnstown in a way that maximizes customer access as well as return on investment. This plan also offers considerations for network resiliency and deployment efficiency. A high-level design of a Passive Optical Network (PON) with proposed site boundaries and splitter locations is included and formed the basis for overall cost estimates and budget development for a full town build.

1.4 Costs and Funding

This study provides detailed estimates for Johnstown to deploy its own Fiber Network or partner with a neighboring municipal provider and outlines a business model based on subscriber revenue and operational expenses for each. These models are summarized as follows:

Johnstown owned and operated network

In this model, funding, ownership, and operations are responsibilities of the Town. It provides the Town with the most control and fastest return on investment, but also the highest cost and highest risk.

- Costs:
 - Total Network Construction Cost: \$36.8 M
 - Operational Cost and debt service coverage: \$22M
- Funding Need
 - Bond Total: \$45M
 - Johnstown Cash Contribution: \$13.8M
 - Bond Interest Rate: 4.4% @ 30 years¹
- Positive Net Operational Income: Year 10

Municipal partnership (pay as you go)

In this model, the Town forms partnership through an IGA with nearby municipal fiber provider. Funding is provided by the Town, with construction, ownership and operational responsibility borne by the municipal partner. It provides the Town with a level of control and assurance that all residents are served. Slower return on investment, but reduces total funding need as well as risk. This model has the most flexibility for funding and scheduling as smaller areas can be built as funding is made available with each new area maintaining a similar payback term.

- Costs
 - Total Network Construction Cost: \$36.8 M
- Funding Need
 - Bond Total: \$0M
 - Johnstown Cash Contribution: \$36.8M
- Return on Investment: Year 26

Municipal Partnership (bond funded)

This model is the same as the municipal partnership model above, but assumes bonds are required for funding. Schedule becomes much more important to bring service to the town. This scenario is higher in cost and longest return on investment.

- Costs
 - Total Network Construction Cost: \$36.8 M
- Funding
 - Bond Total: \$36.8M
 - Johnstown Cash Contribution (to cover revenue shortfalls until cash positive): \$19M
 - Bond Interest Rate: 4.4% @ 30 years

¹ Per comparable regional utility bond rates in 2023, with further adjustment for risk

- Return on Investment: Year 38

Open Access Lease Network

In January 2024, Xfinity announced plans to invest in fiber infrastructure throughout the Johnstown area. As an alternative to the municipal models discussed, this report briefly discusses a hybrid model in which the Town of Johnstown can install core fiber infrastructure in historically underserved areas less attractive to private providers in order to offer incentives to providers to serve harder to serve areas through fiber lease agreements with the Town. This option has the potential of being the least cost option, but could incentivize providers to provide more ubiquitous service in Johnstown.

Given the desired direction Johnstown wishes to take, engagement with potential local partners is a good first step into better understanding the possibilities of any of the options presented in this report. Local municipal broadband providers will be more than willing to discuss not only potential partnership options, but also lessons learned from their own journeys in setting up their own municipal broadband networks. Further discussions with private sector broadband providers could provide insight into the viability of building and leasing public fiber infrastructure to improve service where those private providers aren't currently interested in serving through their own investment.

2. Introduction – Background of Broadband in Johnstown

In 2005, the Colorado General Assembly passed Senate Bill 05-152 (SB 05-152) which excluded local governments from entering the broadband market and prohibited government funding for broadband infrastructure. Between 2005 and today, Johnstown has seen tremendous population growth through land development and has become a fast-growing community in the front range. Over this time, the demand for high-speed internet service has increased substantially but incumbent network performance and connectivity in the Town has not. There is a regional desire for all communities to have equal access to high-speed internet.

In 2012, the Town entered into a non-exclusive cable franchise agreement with Baja Broadband (Now TDS Broadband) to grant the benefit of using the Town's right-of-way to provision broadband services to homes and businesses and provide 3% of gross revenues as a revenue share with the Town. At the time of this report, TDS offers broadband service using traditional coaxial cable technology to the majority of serviceable locations within the town.

In April 2020, Johnstown voters chose to opt out of SB 05-152 due to concerns over slow broadband speeds in the municipality, as revealed by a resident survey. This decision allowed the Town more flexibility to improve its broadband services.

Johnstown, Mead, Milliken, and Berthoud issued a Request for Proposal (RFP) in April 2021 to explore the feasibility of providing reliable, 1 Gbps broadband to all residents at a reasonable cost. The result of this RFP led to the formation of a working group with an outside consultant and town representatives to consider various broadband deployment business models. The goal was to make a final broadband implementation recommendation to the Towns. In October 2021, Magellan Advisors presented the results of their Broadband Feasibility Study to the Towns and recommended that the best option would be to partner with a provider that can fund overall network construction. The working group found three providers that showed strong interest and ultimately recommended Allo Communications as a non-exclusive broadband provider.

In 2022 all four Towns were approved to draft a Memorandum of Understanding (MOU) with Allo. This MOU was intended to guarantee that the provider would serve all residents and businesses within the Towns. The MOU offered Allo the benefit of simpler procedural permitting in public rights-of-way. However, during negotiations Allo could not commit to providing fiber service to all locations and the MOU was never signed by any parties.

Since the Broadband Feasibility Report was completed, Johnstown has been interested in evaluating other broadband options that may be available in the region. This study evaluates other potential high speed internet options, estimates costs, and presents possible business models that fit the Town's vision of ubiquitous high-speed broadband for all its residents and businesses.

3. Outside Plant Network

This section describes the typical Passive Optical Network (PON) architecture constructed between the internet provider and customer location, otherwise known as the “Outside Plant Network” or abbreviated as PON. PONs are characterized by their use of non-powered optical components that distribute broadband at speeds that are much faster than other broadband technologies.

In this architecture, the internet provider’s facility, often called the "Hut," plays a pivotal role. It aggregates data and connects to middle mile fiber, or “backhaul,” which connects the network to the broader internet. The nature of the backhaul connection can vary, and its cost typically involves a monthly lease that is dependent on bandwidth requirements and other professional services.

For optimal functionality, huts should be placed on Town property in a facility with resilient power and HVAC capabilities, as close to the center of the customers as possible in a tradeoff with backhaul access locations and construction costs. While each customer is linked to the hut using a single fiber, the effectiveness of a PON lies in its passive optical splitting. A fiber leaving the hut is split at pre-designed ratios, typically 1:32, meaning that the one fiber leaving the hut can serve 32 customers.

Standard Hut equipment in use today can operate a GPON network (symmetrical 1 Gbps) service on a 1:32 optical pathway over 12 miles long. This means, theoretically, the entire Town of Johnstown could be served by a single Hut. However, underground conduit is frequently damaged by excavation and in practice two or more huts offer the ability to automatically or quickly “heal” the network if the backhaul fiber connecting one hut to the greater internet is severed.

Once the signal is generated by equipment in the hut, it is distributed throughout the network by fiber cables, where each fiber cable contains hundreds of individual fibers. Building the conduit pathway for distribution fiber cables through the Town’s right-of-way is the vast majority of the capital project expense. The high-level design presented here illustrates that fiber cables would be installed along almost every road in the Town to serve all premises. One of the key advantages to PON networks is that the only power necessary is provided at the hut location and at the home.

A typical Passive Optical Network architecture is shown in Figure 1 below:

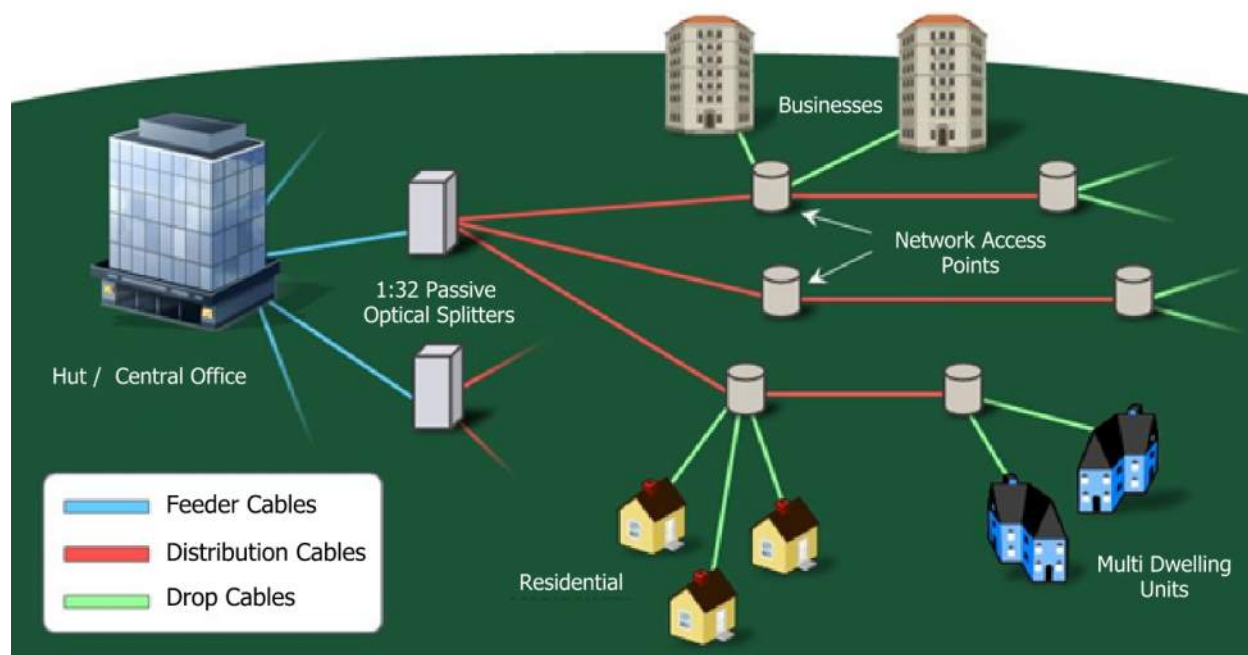


Figure 1. Passive Optical Network Architecture

Typically, splitter Cabinets or Fiber Distribution Hubs (FDH) are designed to serve +/-230 premises. The splitters can be installed in above ground cabinets or below ground in watertight enclosures. To serve all premises in the Town, in the current state of development, an estimated 45 sites are required. Exhibit A shows each FDH area, the number of premises, and proposed cabinet locations, all connected by “Feeder” cables that will run back to the hut.

The hut location should be carefully considered for total optical link loss budget and network resiliency. The optical link budget is a function of signal strength loss over the fiber and through equipment balance with the power of the optical signal source. In general, modern PON equipment can transmit data over 12+ miles of passive network cable before losses become an issue. Network resiliency should be designed into the network by feeding the hut with at least two paths and source diverse cables.

3.1 High Level Design

The design presented in this study is “high-level” and is approximately 30% complete to allow cost estimating, routing and service planning. The capital construction throughout the Town should be phased to minimize capital costs while maximizing operational cash flow. For the sake of this study, Johnstown has been split into five areas shown in Table 1 below:

Table 1. Johnstown Area Names and Number of addresses

Area Name	Number of Addresses
Johnstown Plaza	129
Downtown	3,311
Johnstown West	2,148
Stroh Farms	749
Thompson River Ranch	1,947

These areas are shown graphically in Exhibit B, and further illustrated by area in Exhibits B1-B5, and depict the overall fiber distribution network that would be deployed in Johnstown. Additionally, each of these five areas have been divided into two phases based on density to aid in the phasing of construction to reach each resident and business in the Town. Table 2 below breaks down the number of locations and footage in each Urban and Rural area.

Table 2. Johnstown Network footage in Urban (High Density) and Rural (Low Density) Areas. Note that 99% of addresses are within Urban Areas.

Area Name	Urban Area		Rural Area	
	Construction Length (feet)	Addresses	Construction Length (feet)	Addresses
Downtown	204,500	3,306	9,829	5
Johnstown West	162,375	2,139	40,001	9
Thompson River Ranch	108,593	1,935	18,897	12
Stroh Farms	51,892	745	9,907	4
Johnstown Plaza	33,663	124	13,379	5

The phased construction plan will proceed outward from the hut location starting with the highest density central areas. This plan will minimize time between construction start and connecting the first customers. Based on the known addresses in the tables above, we recommend starting construction in the Downtown area, then Johnstown West, then Thompson River Ranch, then Stroh Farms, and finally the Johnstown Plaza Area.

3.2 Capital Construction Costs

Network construction costs are determined using a road centerline cost model, which has been developed based on historical data from previous capital construction projects in neighboring areas.

Outside plant network costs were developed from historical unit prices for network design and construction. Here, costs were applied to roadway centerline miles throughout Johnstown to generate a high-level, budgetary cost estimate for each prioritized area. The cost estimates assume a fully underground network serving both sides of the street according to broadband standards. After the direct construction cost was developed, the following cost factors for design, project management and contingencies were added to develop a full programmatic cost. These factors were developed using regional pricing from recent fiber construction projects and historical data shown in Table 3 below.

Table 3. Estimating Contingencies used in the capital construction cost estimates.

Item	Quantity
Materials Cost Inflation	8.0%
Estimating Contingency	15.0%
Owner Contingency	8.0%
Engineering and Network Design	6.0%
Project Management	4.5%

The total estimated capital construction cost for each area (combined Urban and Rural) are shown below in Table 4 below.

Table 4. Estimated total network footage, number of locations, cost per location, and total cost per area.

Item	Total Length (ft)	Number of Addresses	Estimated Cost per Address	Total Estimated Cost
Johnstown Plaza	47,042	129	\$20,153	\$2,599,700
Downtown	214,329	3,311	\$3,670	\$12,152,00
Johnstown West	202,376	2,148	\$5,190	\$11,148,900
Stroh Farms	61,799	749	\$4,751	\$3,558,900
Thompson River Ranch	127,490	1,947	\$3,745	\$7,292,500
Total	653,036	8,284		\$36,752,600
Average Cost per Address				\$4,437

More detailed cost estimates for each area can be found in Exhibit C.

4. Marketplace

4.1 Current Landscape

Traditionally, broadband internet services have been provided by private telecommunication companies or internet service providers (ISPs), but as the need for reliable high-speed broadband has increased, the existing ISPs have been slow to upgrade their infrastructure and improve reliability. The northern Colorado region has responded to fill the growing need for universal access to broadband by developing municipal fiber utilities to serve their local communities. The Platte River Power Authority's member cities (Longmont, Loveland, Fort Collins, Estes Park) who each operate their own electric utility, have built fiber networks to serve all homes and businesses within their municipal boundaries. Longmont's Nextlight (started in 2013) has reported that nearly all premises in Longmont have access to municipal fiber and approximately 60% are choosing to subscribe. Loveland Pulse celebrated the completion of the network in November of 2023 and has a 34.5% residential take rate. Similarly, Fort Collins Connexion is at 31% take rate having completed their capital build in 2023. Estes Park Trailblazer started construction in 2019 and has completed 780 miles of new fiber build in the municipal boundary and is expanding along the highways leading into town. They are on schedule to complete construction in 2024.

Outside of these municipal fiber service areas, access to fiber and high-speed broadband decreases rapidly. Allo Communications is currently offering fiber to the most serviceable locations within its service area and is working to complete a partial fiber network in Greeley. CenturyLink, TDS, and Comcast have been deploying fiber in new developments across the front range. Hilltop Broadband offers fiber connections to ~200 homes in Berthoud and to ~1,000 homes and businesses in Platteville.

Many new fiber networks constructed over the next several years will be funded by grants. In January 2024, the Colorado Broadband Office (CBO) announced winners of \$113 million in Capital Project Funds to build fiber to unserved homes and businesses. Later in 2024, the CBO will work through the Broadband Equity Access and Deployment (BEAD) grant program to bring high speed and resilient broadband to 99% of homes and businesses in Colorado. According to the Federal Communications Commission (FCC), broadband is defined as internet service speeds meeting or exceeding 100 Mbps download and 20 Mbps upload. To benefit from current grant program funding, existing service levels must be below these thresholds. In Johnstown, ~99% of homes exceed these thresholds. Unfortunately, the Town will be unable to benefit from current grant programs.

4.2 Mapping of Service and Current Providers

In aggregate, homes and businesses in the Town are served by six terrestrial ISPs but there are only two options for wireline service. Wireline service (built on power poles or in underground conduit) is much more resilient than terrestrial wireless connections. Most homes in the Town only have one option for wireline service, TDS cable. However there are areas in newer

subdivisions with CenturyLink and TDS fiber available. The terrestrial providers offering subscription services to the Town are shown in Table 5 below.

Table 5. Summary of Broadband Service Providers in Johnstown

	Fixed Broadband Provider	Technology Type	Maximum Advertised Download Speed (Mbps)	Maximum Advertised Upload Speed (Mbps)	Subscription Cost
Wireline	Century Link	Fiber	940	940	\$75 / month (no install fee)
	TDS	Fiber	1000	1000	\$90 – 120 / month
	TDS	Cable	1000	20	\$90 – 116 / month
	Xfinity ²	Fiber	TBD	TBD	TBD
	Century Link	DSL	10	1	\$74 / month + \$300 install
Wireless	Century Link	Wireless	0.2 to 140	0.1 to 40	\$70 / month + \$150 install
	Rise Broadband	Wireless	10 to 100	1 to 20	\$75 / month
	Vistabeam Internet	Wireless	100	20	\$88 per Month + \$200 Install
	Ascent Broadband	Wireless	100 to 150	5 to 38	\$90 – \$129+ / month
	Neteo Inc.	Wireless	50	5 to 50	\$110+ / month + install
	T-Mobile	Wireless	0.2 to 25	0.1 to 3	\$55
Satellite	HughesNet	Satellite	20 to 50	1 to 3	\$75 / month
	Viasat	Satellite	100	Unspecified	\$215 / month
	Starlink	Satellite	56 to 169	9 to 17	\$120 / month + \$650 Install

While there is fiber deployed currently in the Town of Johnstown, it’s hardly ubiquitous. Exhibit D1 and D2 show the technology type that delivers the fastest broadband service at each location. Note that newer development areas are being built with fiber, but most of the Town is served by coaxial cable technology operated by TDS. Some areas outside urban areas lack access to any wireline technology and are only served by wireless providers.

² In January 2024, Xfinity announced plans to bring fiber to residents of Johnstown over the next two years.

In exhibits E1-E4, the service areas of TDS, CenturyLink, Rise Broadband, and Vistabeam are shown in detail. Each location that is served by the provider is symbolized by the fastest advertised speeds available.

5. Service Models

5.1 Public Private Partnership (P3)

Public Private Partnerships (P3) are a model that is relatively new to the telecommunications industry. Here, private investment is paired with an ISP and municipality to bring middle and last-mile service to a community. Often, private investment is provided through a third-party equity partner that requires a return on their investment and ownership in the built infrastructure. In certain cases, the equity partner may transfer assets to the municipality over a period of time (15-20 years) after the return on their investment is satisfied. The form of P3s vary widely and can involve ISPs, contractors, investment firms, private equity investors, towns, cities, counties and other partners. The attraction to this delivery model is that the municipality may not participate in any portion of the cost, or at least, at a participation level that allocates the appropriate amount of risk to the municipality. However, risk allocation also usually translates to loss of control and guarantees on installation, schedule, quality and customer service. Often, P3 entities will require subsidies from the municipality in the form of free permits, inspection preferences or other forms of subsidy.

In partnership with Mead, Milliken, and Berthoud, the Town of Johnstown worked through a potential P3 agreement with Allo Communications. Ultimately, negotiations with Allo failed to ensure that all residents and businesses would receive service equally. In this case, the goals of the municipalities exceeded what a private provider was willing, or capable, to provide. While this delivery model can substantially reduce risk to the municipality, it reduces control on construction schedule, network quality, and customer service.

5.2 Municipal Ownership Model

Historically, network infrastructure that provides internet service to homes is owned and operated by private sector companies. More recently, municipalities have been designing and building networks (primarily Fiber to the Premise, or FTTP) that are owned and operated by the city or town. In some instances, portions of the municipal network may still be owned and operated by private sector firms such as feeder, core or backhaul network elements.

As the municipal broadband service market continues to expand, various northern Colorado communities have joined together to implement municipal broadband. Currently, Longmont, Estes Park, Loveland and Fort Collins all offer FTTP in their communities. Estes Park, Loveland and Fort Collins share backhaul and network operations. This partnership is similar to that which developed years ago in the electric utility service sector. Each entity has slightly different price points and service offerings, but all have either issued debt or built out network services as funding became available to deliver their respective networks. In Northern Colorado, municipal networks currently serving their communities are providing very competitive services. Current service rates can be seen in Table 6.

Table 6. Summary of regional municipal service rates

Provider	Service Package	Service Price	Other fees?
Fort Collins Connexion	1 Gig symmetrical	\$70/month	No
Longmont NextLight	1 Gig symmetrical	\$69.95/month	No
Loveland Pulse	1 Gig symmetrical	\$74.95/month	No
Estes Park Trailblazer	1 Gig symmetrical	\$69.95/month	+activation fee, \$89.95

5.3 Regional Municipal Partnership

Given the close proximity of municipal owned fiber networks to the Town, there may be partnership options with these Cities. There is a unique ability to leverage town capital to provide high speed fiber broadband to its residents and businesses without the complexity of starting a new utility, or having to operate the network. The Town of Timnath is a good example. Without a power utility to leverage, nor the size to effectively start a new utility, it has been able to leverage its financial resources to fund the expansion of Loveland Pulse into its community through an intergovernmental agreement (IGA). Through this agreement, Loveland Pulse can benefit from expanding its customer base and further improving its efficiency of service, while Timnath can earn a revenue share to recuperate its investment over time. As opposed to the Public-Private Partnership model, each municipal partner shares in the belief that broadband access should be available to everyone in the community.

5.4 Open Access or Hybrid Network Model

With new indications of additional investment in Johnstown by private providers in recent months, another option to consider is a hybrid network operation model. In this model, the Town can identify traditionally underserved areas and work with a private provider to improve service by providing open access fiber infrastructure for lease by providers. In instances where the private sector isn't willing to provide service to areas, the town can build infrastructure to these underserved areas and lease the open access public infrastructure back to private providers to incentivize service.

6. Business Model Comparison

This report highlights two potential business models and attempts to view them with equal assumptions including, average take rate, average subscription cost, and projected population growth. Under the municipal partnership model, a higher average subscription rate and take rate was used to better line up with the requirements of a Johnstown owned utility model.

Take Rate

Take rate, or the percentage of potential customers who are offered the service that actually subscribe, is a critical metric to maintain sustainability in any of the business models. Higher take rates mean more customers per mile of infrastructure and can significantly affect the cost of service for the provider and the subscription rate for the customer. The business models presented here use an aggressive take rate of 50% across both models.

Subscription Cost

In both business models, the average subscription cost for each customer is assumed to be \$95 per month. This subscription rate is comparable with other wireline customers in Johnstown, as shown by Table 4 above. This rate, however, is above the typical subscription cost offered by other wireline providers. In each business model, the subscription costs is assumed to increase by 3.5% annually after year 5 to match expected inflation.

Population Growth

As the Town of Johnstown continues to grow, the fiber infrastructure needs to grow with it. According to the Census Bureau the population of Johnstown increased by 7.6% between April 1, 2020, and July 1, 2022. This value is reasonably consistent with the population recorded in the 2010 and 2020 Decennial census (9,887 and 17,303 respectively). Additionally, the average number of residents per household in Colorado is 2.48 in the years 2018 – 2022. The number of residential subscribers is therefore calculated to increase by 7.6% per year, divided by 2.48 residents per household.

The number of businesses in Johnstown is calculated as a percentage of total addresses (3.3%) and scales with population growth using the most recent FCC data from June 30, 2023.

6.1 Johnstown Owned Broadband

Organizational structure

In this model, Johnstown would own and operate the broadband network. Where possible, regional collaboration with other municipalities such as shared long haul and internet transport, along with the exchange of information regarding standards, protocols and technical resources should be shared to reduce costs. Johnstown would be responsible for all construction, operations, and maintenance of the network.

Governance

In a typical municipal, noncompetitive utility market such as the water, or wastewater, there must be a public and transparent process to ensure that rates, and fees are vetted and approved through a traditional governmental process. This ensures sufficient oversight of the utility and rates. However, in a competitive market, such as broadband, customers can easily choose to move to another provider. Customers will simply subscribe to a competitor's services if the broadband service provider isn't meeting expectations of service or affordability.

This difference in the marketplace requires that the broadband service provider be nimble to remain competitive on pricing, promotions, service offerings, and staffing levels. Rate setting, negotiations, and marketing must have the flexibility to react quickly to external market changes.

Staffing Plan

The business model assumes a minimum of 14 staff members starting in year 1 to support the deployment and operation of the network. This includes network support staff, technicians, customer service personnel, marketing, and sales staff required to successfully manage the new network. The staffing makeup is outlined below in Table 7. Fully burdened staff cost estimates can be found in Exhibit F.

Table 7. Broadband Utility Positions and brief description of responsibilities

Role	Number of Staff	Job Description
Broadband Director	1	Leadership for the broadband utility, creates operating departmental procedures, oversees all operations, and reports directly to City Council
Engineering Manager	1	Responsible for network operations, analysis, backhaul specifications, network quality of service, new network design / deployment and emergency repairs. Leads tech services
Outside Plant Manager	1	Manages the maintenance and development of all outside plant infrastructure. Controls and implements construction contracts in developments
Tech Services	1	Assists Engineering Manager with technical network analysis, maintenance, outage detection. Supports customer service in escalated issues from subscribers
Field Services	2	Maintains outside plant facilities by splicing and installing optical equipment, implements designs produced by the outside plant manager, participates in network upgrades and new network installations. Supports installation technicians and Utility Locators. Maintains stock of equipment and repairs fiber during emergency outages.
Installation Tech	2	Installation technicians constructs underground service drops from the network vault on the customer parcel to the customer premise. The techs splice fibers, setup customer equipment, and work directly with the customer to troubleshoot and ensure a satisfactory experience.
Marketing Manager	1	The Marketing Manager develops strategies to increase take rate and customer satisfaction. Assists Director with communication and community engagement
Sales Manager	1	The Sales manager implements procedures for onboarding and supporting customers and oversees customer service department along with marketing manager.
Customer Service	2	Supports customers over the phone with billing, new or changing service, and is the first step in troubleshooting issues. The customer service technicians are a critical contact between the Town and the utility and work closely with the Marketing Manager to ensure positive communication is upheld.
GIS Technician	1	The GIS technician is responsible for accurate record keeping of digital information including as-built records, customer information, and other relevant field information for the Utility Locator and Engineering Manager.
Locator	1	The Utility Locator responds to 811 locate requests in accordance with the statues and marks network facilities accurately to protect the town infrastructure using information from the GIS Technician. The Locator is the first responder to damage notifications and assists the field technicians and Outside Plant Manager by characterizing impact of hits.
Total:	14	

6.1.1 Risk Factors

Take Rate vs Subscription Cost

In this report, take rate has been modeled at 50% with an average subscription cost of \$95 per month. This is comparable with current rates common to Johnstown by other providers, depending on availability. It is unknown whether this price point, coupled with improved speeds and service will sufficiently drive residents and businesses to switch in order to maintain the modeled take rate. A survey of the community and other sensitivity analysis would be required to validate these assumptions. In nearby communities, both Loveland and Fort Collins modelled their minimum required take rate at 32% and 28% respectively.

Competition

Unlike traditional public utilities, municipal fiber operates in a competitive environment. Competing service providers are constantly adjusting their service prices and increasing their service options to maintain a competitive edge. A new Johnstown sponsored broadband service will increase this competition and potentially force other service providers to improve their service. This also poses a risk that will apply similar pressure to subscription costs and take rate that could adversely affect the business model depicted in this report.

Financial Model

The cash flow business plan in Exhibit G models annual revenue, capital costs, and operational expenses as the network is built out, customers are connected, and revenue is generated. It models the flow of cash through the life of the network modelling both construction costs, operations expenses, revenue, and long-term maintenance. Revenue was based on an average customer subscription rate of \$95/month, with a take rate of 50%. The capital project construction is assumed to be completed by end of year three, where all addresses in Town would have access to the new network. The remaining capital is built out over year 4 as customers sign up and the final “curb to premise” infrastructure is installed. The average subscription cost increases at an assumed rate of inflation of 3.5% in year 5. The number of subscribers is assumed to increase slowly during construction, stabilizing at 50% of available customers by year 9.

Besides capital construction costs, operational costs including staff salaries, internet backhaul services, marketing and other costs have been projected based on the size of the Johnstown network and the requirements to operate and maintain the network in the long term.

Utilizing this model, a break-even analysis helps understand the flexibility of the provided business plan and provides the data necessary to determine the funding totals needed. This breakeven analysis considers the minimum financial metrics for a fully operational and

successful broadband utility. This can be considered the lower boundary case of the business plan.

- Take Rate: 50% of Residential and 30% of Businesses
- Total Network Construction Cost: \$36.8 M
- Bond Total: \$45M
- Johnstown Cash Contribution: \$13.75M
- Bond Interest Rate: 4.4% over 30 years³
- Positive Net Operational Income: Year 10

This break-even analysis assumes some cash contribution from Johnstown to limit the amount of debt issued in order to cover the long-term costs of the network.

Net Operating Income

Positive cash flow will begin in year 10 once a sufficient number of customers are added to the network and revenue exceeds operating expenses and debt service as seen in the Net Operating Income graph in Figure 2 below.

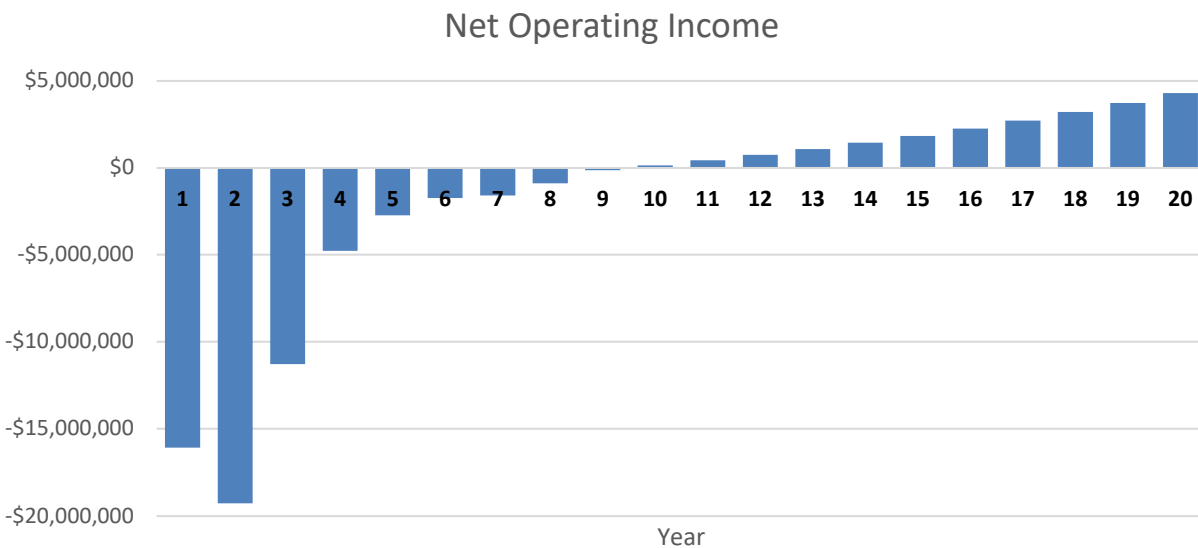


Figure 2. Johnstown owned and operated network net operating income.

Net Cash

Net Cash measures total cash minus total liabilities. With this model, the new broadband utility will have more cash on hand than total liabilities at the end of year 20, though the 30 year bond will end in year 30 (see Figure 3 below). Initial funding is required for the setup of the broadband utility, with the municipal bond secured to start construction of the network. The \$45M bond covers the complete buildout of the network and covers the operational expenses

³ Per comparable regional utility bond rates in 2023, with further adjustment for risk

until sufficient revenue is generated by the completed utility to fully cover debt service, which occurs at year 10. The bond is amortized over 30 years, with expected interest of \$36M over the life of the bond. The detailed cash flow model can be seen in Exhibit G.

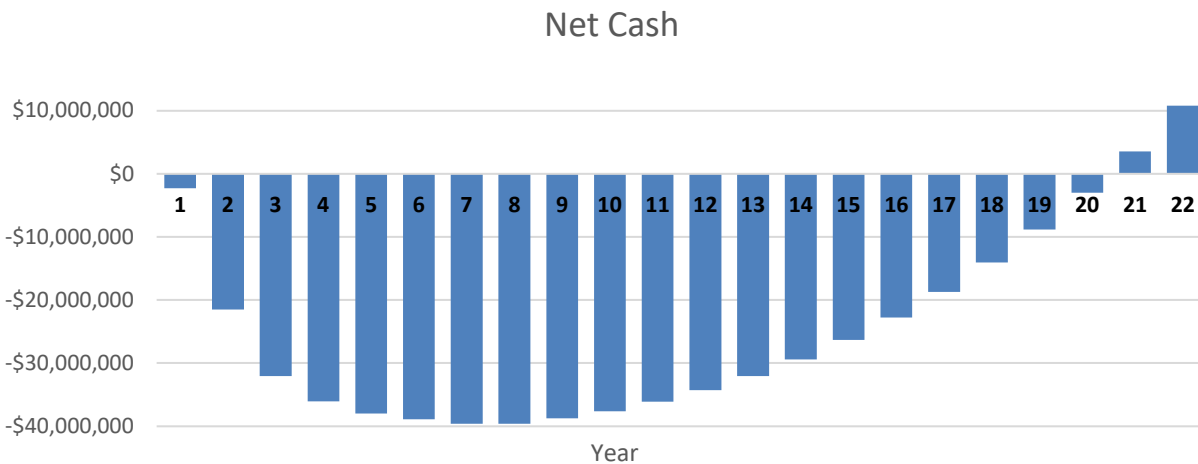


Figure 3. Johnstown owned and operated network net cash over time.

6.2 Municipal Provider Partnership

Organizational Structure

In this business model, broadband service to Johnstown would be provided by an adjacent municipal provider. The most unique aspect of the municipal providers offerings in the northern Colorado market is their offer to share revenue. This unique option allows cost recovery and return on investment (ROI) to be built into the model to offset the capital investment in regional municipal network expansion. This approach could benefit Johnstown in a similar manner offering long-term income and cost recovery of any initial capital investments the Town may make. The network would be built, owned, and operated by the municipal service provider. The relationship between the municipal ISP and Johnstown would be governed by intergovernmental agreement between the two parties. At a high level, the agreement is structured for Johnstown to provide the necessary capital for the partnering municipal ISP to extend and build its fiber network throughout Johnstown. In return, the municipal ISP would provide a share of the revenue back to the Town. An example of the approved IGA between Loveland and the Town of Timnath can be found in Exhibit I.

Ownership

As with any delivery model where the ISP or service provider builds the network, they have distinct expectations to own the network infrastructure. However, in the municipal service market, the providers are acting as non-profit entities allowing for lower costs and options on

revenue sharing to benefit all customers and entities involved in the partnership. For Johnstown, nearby municipal providers would expect to own the network but would likely consider conduit leasing, dark fiber rental or other forms of revenue generation and sharing with the Town.

Staffing

Staffing is the responsibility of the municipal partner and is largely absorbed within existing operations of their larger network operations team.

6.2.1 Risk Factors

Take Rate vs subscription cost

In this report, take rate has been modeled at 50% with an average subscription cost of \$95 per month for residential service. With a local municipal partner, the ISP partner will retain control over their subscription costs to remain flexible in the competitive market. Based on regional municipal service costs, the price modeled in this report is higher than typically seen in the northern Colorado region (as shown in Table 5 and Table 6 in previous sections). It is unknown whether this price point coupled with improved speeds and service will sufficiently drive residents and businesses to switch from existing providers in order to maintain the modeled take rate.

Competition

Introducing a regional municipal broadband provider will increase competition and potentially force other service providers to improve their service much like the Johnstown owned network model. This also poses a risk to the new provider and will apply similar pressure to subscription costs and take rate that may adversely affect the business model depicted in this report. However, with a larger customer base that includes the municipal provider's existing network in addition to the Johnstown locations, operational costs will remain lower per customer than and under the Johnstown owned model. This competition would affect the revenue generated for the municipal provider.

Financial Model

Primary funding to build the last-mile, FTTP network throughout Johnstown would come from investment from Johnstown. Currently, local municipal ISPs have little capital to invest in expansion of their networks. Their bond funds are restricted for use within their municipal boundaries.

In the municipal partner model, the same average subscription cost, take rate %, are used as in the Johnstown ownership model. However, operation and maintenance costs are now the responsibility of the municipal provider. This model captures the initial capital investment by

Johnstown and forecasts the ISP revenue generated from its subscribers (see column A in Exhibit H). Operational costs borne by the municipal provider are modeled as an average cost per premise based on current regional averages. This model also assumes a 15% reserve set aside for lifecycle replacement and a 25% revenue share back to Johnstown to provide a return on Johnstown’s investment.

Funding Options

Under this model, there are two primary funding models for review. The first assumes available cash would be used to fund the capital build out. The second assumes a municipal bond would be required to fund the capital construction costs.

Cash Reserves (pay as you go)

Under this funding model, funding is allocated as it becomes available to fund specific areas (or all of Johnstown). If sufficient funds are available for the town in its entirety, the project follows the schedule presented in the business plan in Exhibit H and Johnstown’s capital investment is returned at year 26 as seen in Figure 4 below.

- Take Rate: 50% of Residential and 30% of Businesses
- Total Network Construction Cost: \$36.8 M
- Bond Total: \$0M
- Johnstown Cash Contribution: \$36.8M
- Return on Investment: Year 26

Capital Investment Payback through Revenue Share

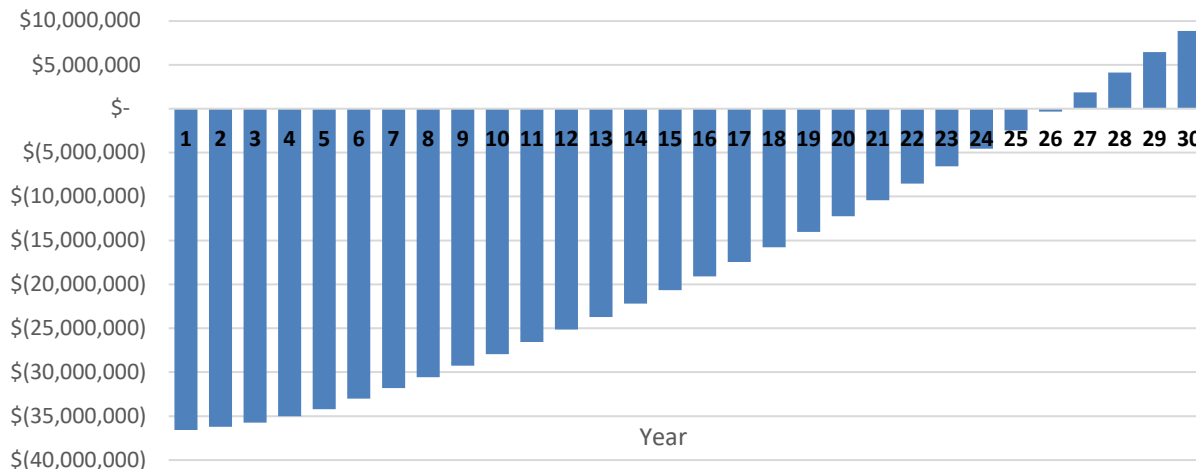


Figure 4. Payback of Johnstown capital investment through revenue share with municipal provider without debt service.

As funding becomes available, this model can allow flexibility to build out infrastructure over a variable time frame to control costs within varying budget constraints.

Municipal Bond

This version of the revenue share business model assumes municipal bonds are issued to fund the capital build. The additional debt service increases the recovery of Johnstown’s investment from year 26 to year 38 (see Figure 5 below) and requires additional cash contribution to cover the revenue short falls until revenue exceeds debt service.

- Take Rate: 50% of Residential and 30% of Businesses
- Total Network Construction Cost: \$36.8 M
- Bond Total: \$36.8M
- Johnstown Cash Contribution (to cover revenue shortfalls until cash positive): \$19M
- Bond Interest Rate: 4.4% over 30 years
- Return on Investment: Year 38

Income from the revenue share does not exceed debt service until year 28. Both versions of the revenue share model can be seen in further detail in Exhibit H.

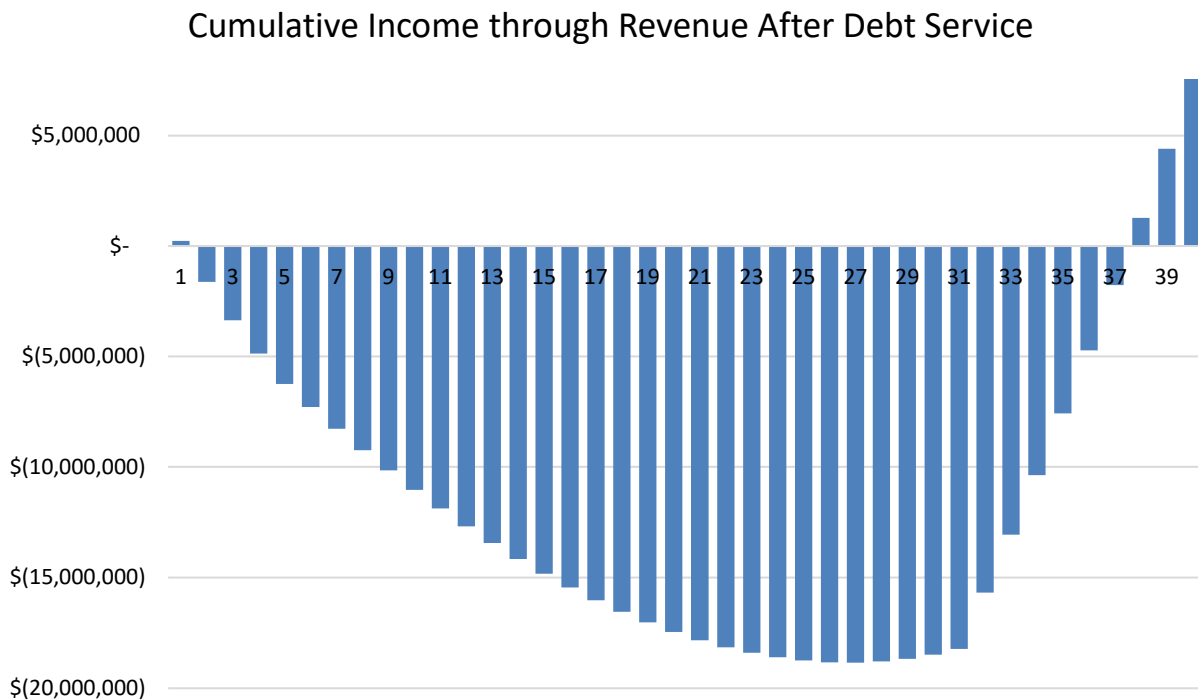


Figure 5. Cumulative Johnstown income through shared revenue from partner municipality, after debt service.

6.3 Open Access or Hybrid Network Model

With the new addition of Xfinity to the Johnstown broadband service market, and the interest by Xfinity to build out fiber infrastructure, a third option to consider is potential partnership

with Xfinity or other private provider that could provide additional investment or incentive for Xfinity to extend service to those residents and businesses that are historically underserved due to lower returns on investment. Further investigation of this model is outside the scope of this report.

7. Next Steps

The Northern Colorado region is fortunate to have as many diverse broadband options available that cover the private and public sectors and provide choices in how communities can choose to engage the issue of broadband access. The two main factors around publicly funded community broadband for Johnstown to consider revolve around the level of control over service coverage and funding availability.

As Johnstown considers the level of deployment of publicly funded broadband infrastructure, further investigation of the selected model(s) should be completed to ensure full understating of risks, public interest, market sensitivities, and financial model. This might include resident surveys to better understand interest, sensitivity to price, and needed levels of service that is lacking. Gauging that interest will also inform town officials and staff in the public's interest around the Town's pursuit of public broadband solutions.

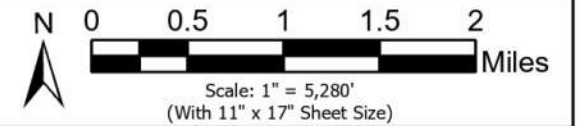
Engaging in potential local partners is a good first step into better understanding the possibilities of any of the options presented in this report. Local municipal broadband providers will be more than willing to discuss not only potential partnership options, but also lessons learned from their own journeys in setting up their own municipal broadband networks. Further discussions with private sector broadband providers could provide insight into the viability of building and leasing public fiber infrastructure to improve service where those private providers aren't currently interested in serving through their own investment.

Exhibit A

Johnstown Broadband Planning Network Design and FDH Areas (Various Colors)



Johnstown
Colorado



- Johnstown Municipal Boundary
- Proposed Splitter Cabinet Location
- Proposed Route Type**
 - Distribution
 - Feeder

ID#	FDH Name	Premise Count
1	Downtown FDH #1	247
2	Downtown FDH #2	180
3	Downtown FDH #3	263
4	Downtown FDH #4	226
5	Downtown FDH #5	147
6	Downtown FDH #6	184
7	Downtown FDH #7	246
8	Downtown FDH #8	226
9	Downtown FDH #9	230
10	Downtown FDH #10	221
11	Downtown FDH #11	192
12	Downtown FDH #12	128
13	Downtown FDH #13	166
14	Downtown FDH #14	116
15	Downtown FDH #15	132
16	Downtown FDH #16	240
17	Downtown FDH #17	167
18	Johnstown Plaza FDH #1	129
19	Johnstown West FDH #1	177
20	Johnstown West FDH #2	152
21	Johnstown West FDH #3	127
22	Johnstown West FDH #4	261
23	Johnstown West FDH #5	135
24	Johnstown West FDH #6	232
25	Johnstown West FDH #7	171
26	Johnstown West FDH #8	213
27	Johnstown West FDH #9	235
28	Johnstown West FDH #10	115
29	Johnstown West FDH #11	146
30	Johnstown West FDH #12	200
31	Stroh Farms FDH #1	227
32	Stroh Farms FDH #2	221
33	Stroh Farms FDH #3	134
34	Stroh Farms FDH #4	167
35	Thompson River Ranch FDH #1	208
36	Thompson River Ranch FDH #2	89
37	Thompson River Ranch FDH #3	169
38	Thompson River Ranch FDH #4	259
39	Thompson River Ranch FDH #5	143
40	Thompson River Ranch FDH #6	215
41	Thompson River Ranch FDH #7	179
42	Thompson River Ranch FDH #8	168
43	Thompson River Ranch FDH #9	148
44	Thompson River Ranch FDH #10	156
45	Thompson River Ranch FDH #11	213

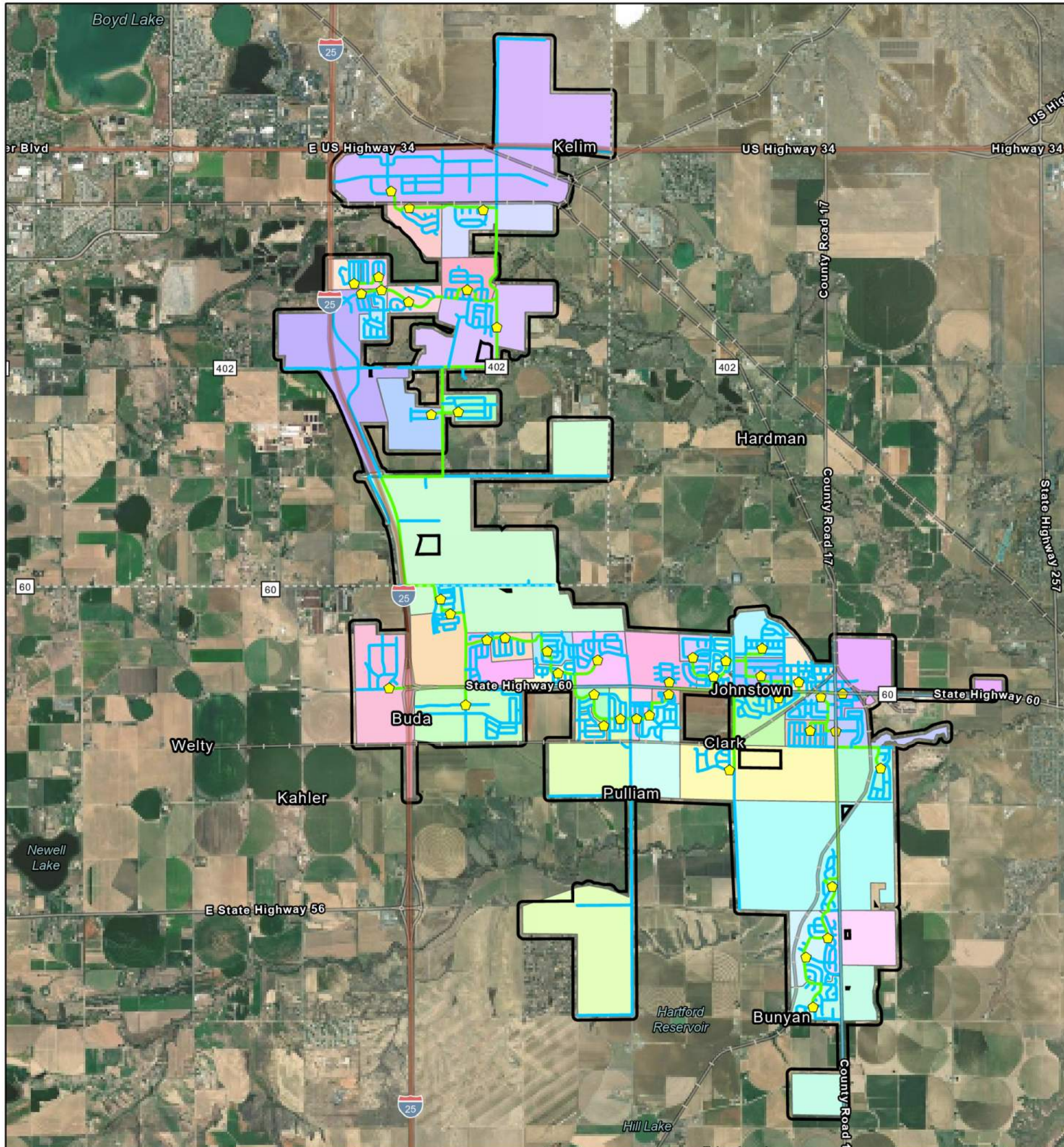
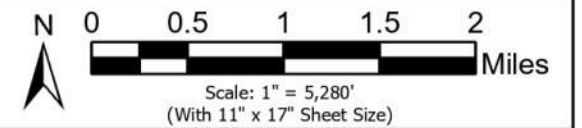


Exhibit B

Johnstown Broadband Planning Network Design and Area Phases



Johnstown
Colorado

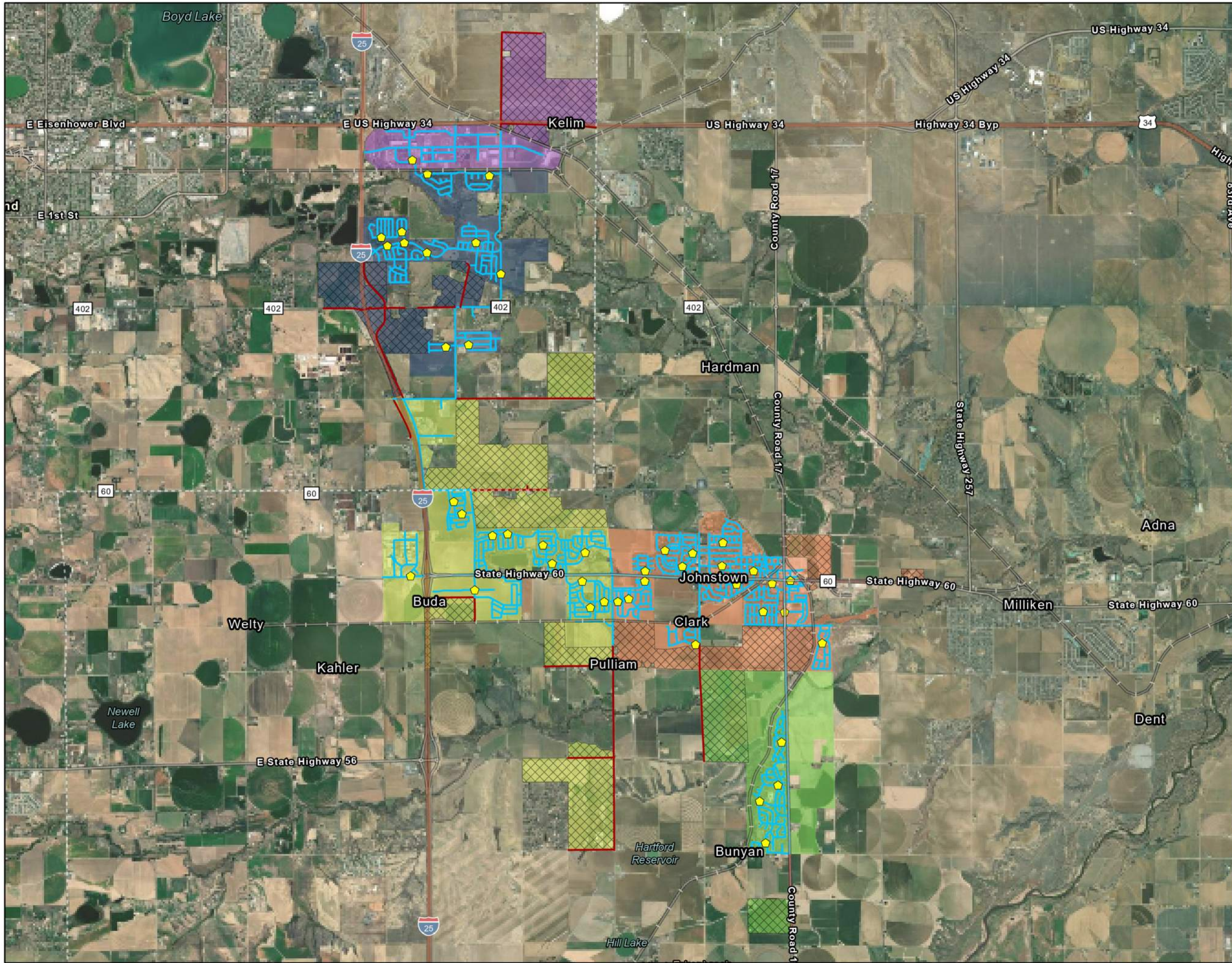


Area Name

- Johnstown Plaza
- Thompson River Ranch
- Johnstown West
- Downtown
- Stroh Farms
- Rural Areas

Fiber Construction Phase

- Urban
- Rural
- Proposed Splitter Cabinet Location



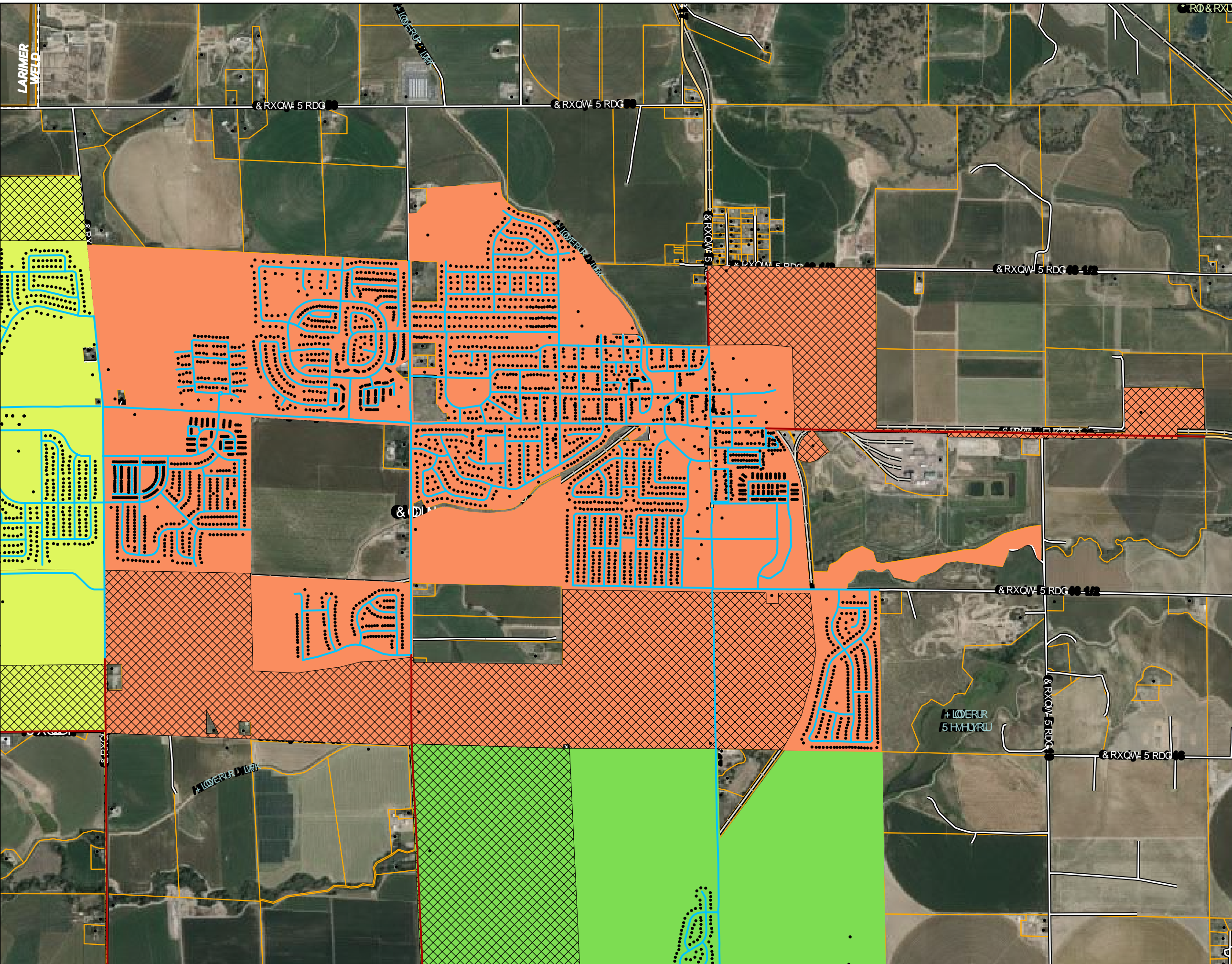


Exhibit B1

-RKQVWRZQ %L
 3ODQQLQU
 'RZQWRZQ \$UHD



Johnstown
 Colorado



- &RXQW\ %RXQGDU\
- 3DUFHO
- \$GGUHV
- \$UHD 1DPH
- 'RZQWRZQ :HVW
- 6WURK)DUPV
- 5XUDO \$UHDV
-)LEHU &RQVWUXFWLR
- 8UEDQ
- 5XUDO

'DWH ([SRUWHG 2FWREHU

Exhibit B2

- RKQVWRZQ %L
3ODQQLQU

Johnstown Plaza Area Detail J H D



Johnstown
Colorado



- &RXQW\ %RXQGDU\
3DUFHO
- \$GGUHVV
- \$UHD 1DPH
- Johnstown Plaza
- 7KRPSVRQ 5LYHU 5DQF
- 5XUDO \$UHDV
-)LEHU &RQVWUXFWLRQ
- 8UEDQ
- 5XUDO

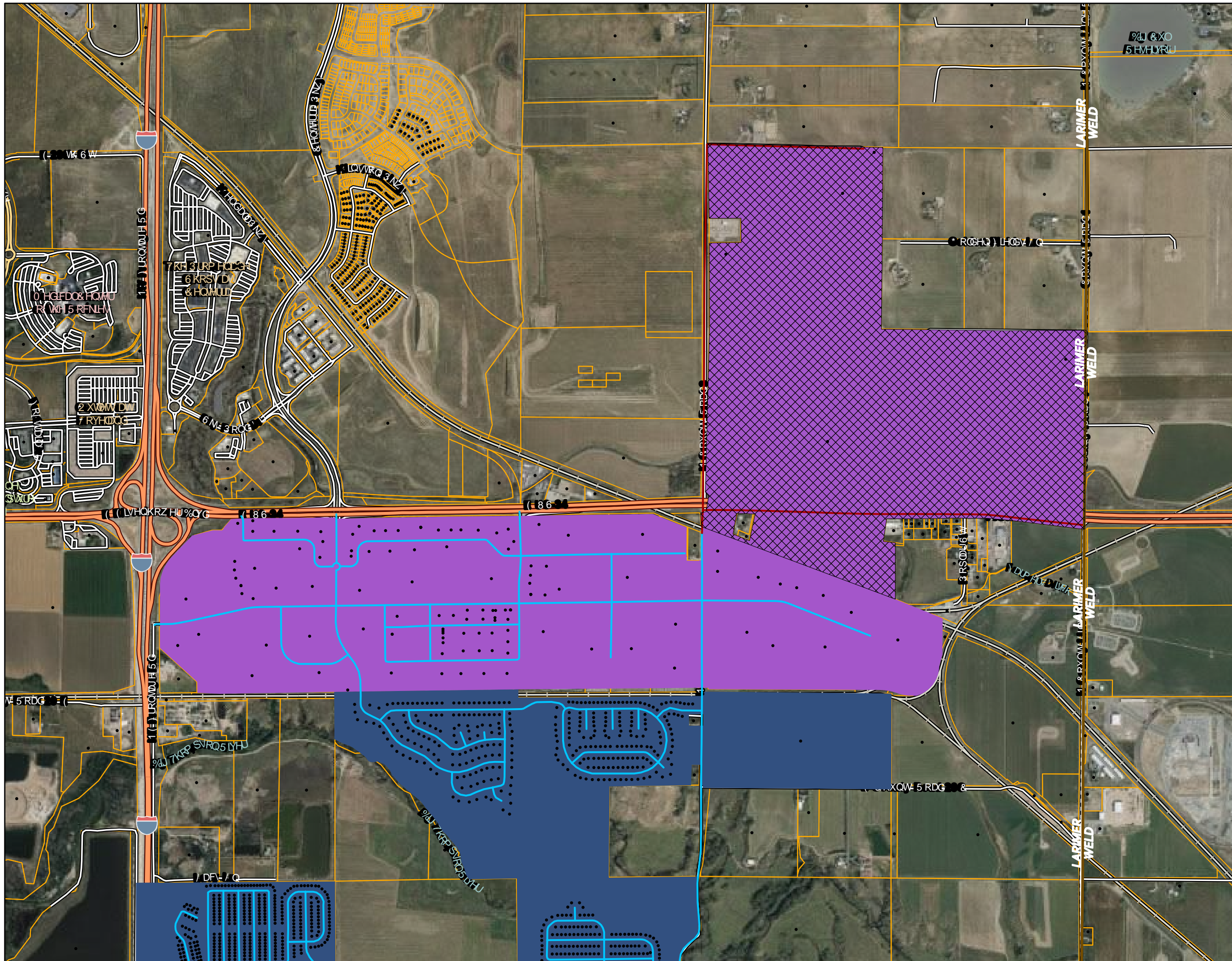


Exhibit B3

-RKQVWRZQ %L
3ODQQLQU
-RKQVWRZQ :HVW \$



Johnstown
Colorado



- &RXQW\ %RXQGDU\
- 3DUFHO
- \$GGUHV
- \$UHD 1DPH
- 'RZQWRZQ
- RKQVWRZQ :HVW
- 6WURK)DUPV
- 7KRPSVRQ 5LYHU 5DQF
- 5XUDO \$UHDV
-)LEHU &RQVWUXFWLRQ
- 8UEDQ
- 5XUDO

'DWH ([SRUWHG 2FWREHU

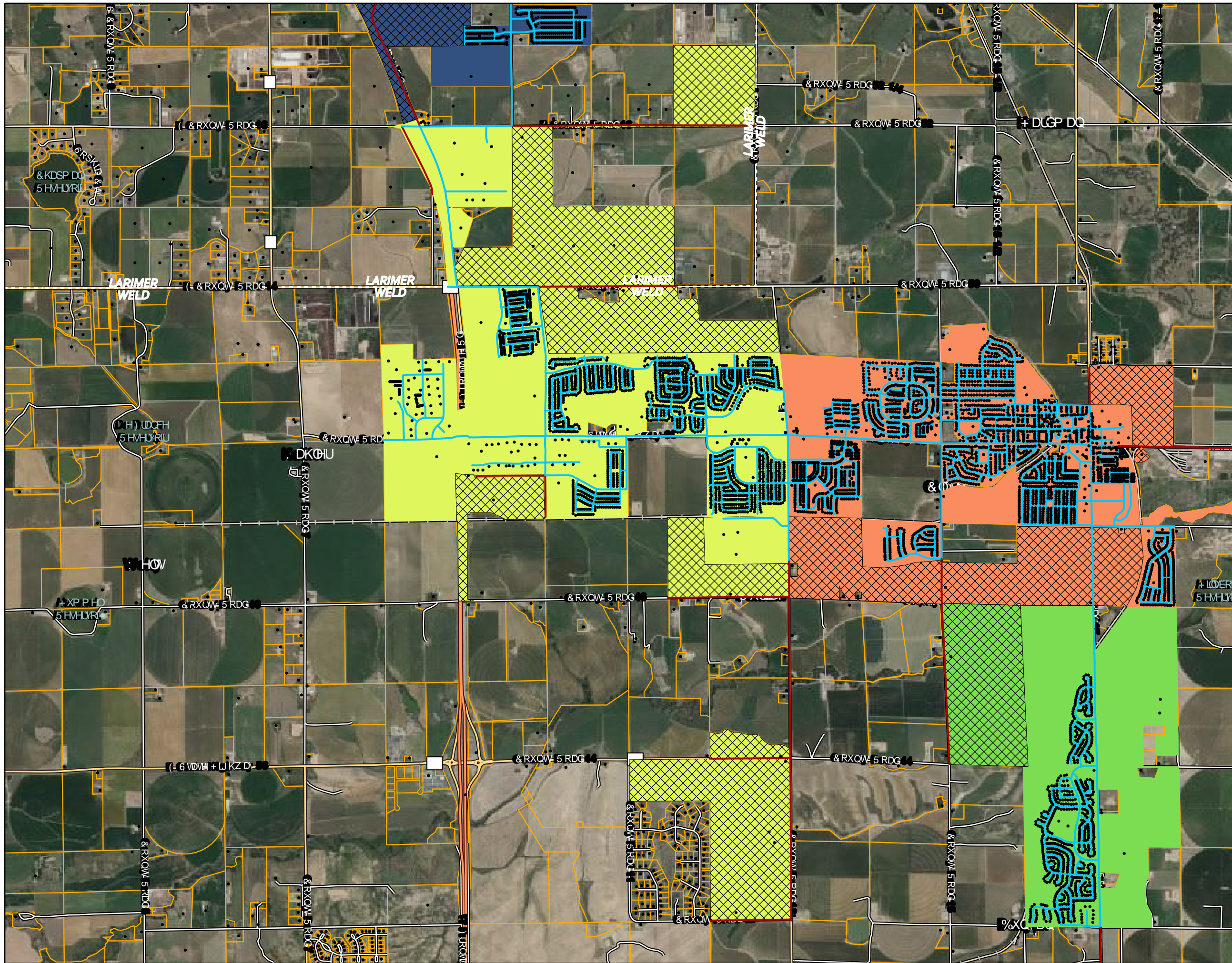


Exhibit B4

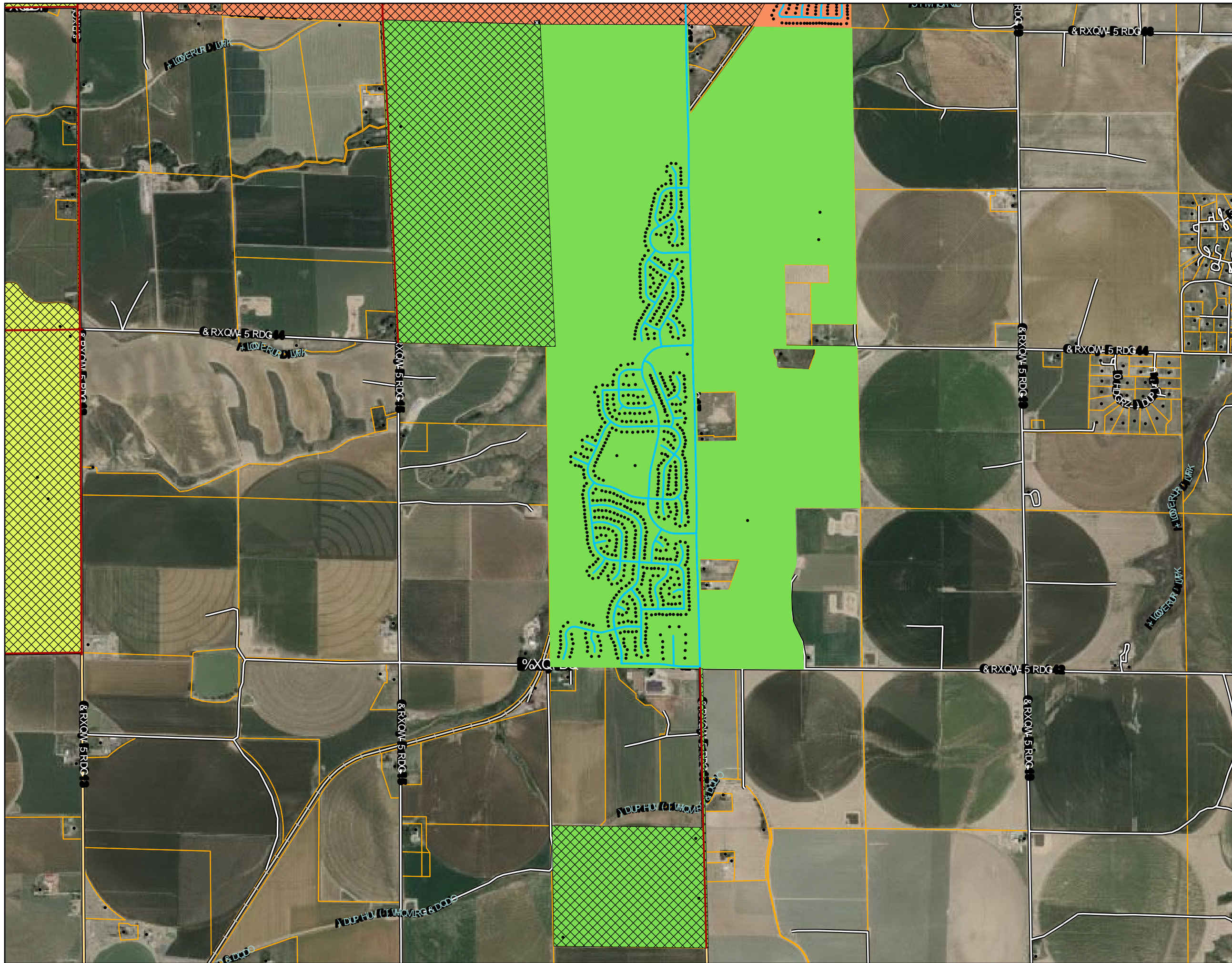
-RKQVWRZQ %L
3ODQQLQU
6WURK)DUPV \$UH



Johnstown
Colorado



- &RXQW\ %RXQGDU\
- 3DUFHO
- \$GGUHV
- \$UHD 1DPH
- 'RZQWRZQ
- RKQVWRZQ :HVW
- 6WURK)DUPV
- 5XUDO \$UHDV
-)LEHU &RQVWUXFWLR
- 8UEDQ
- 5XUDO



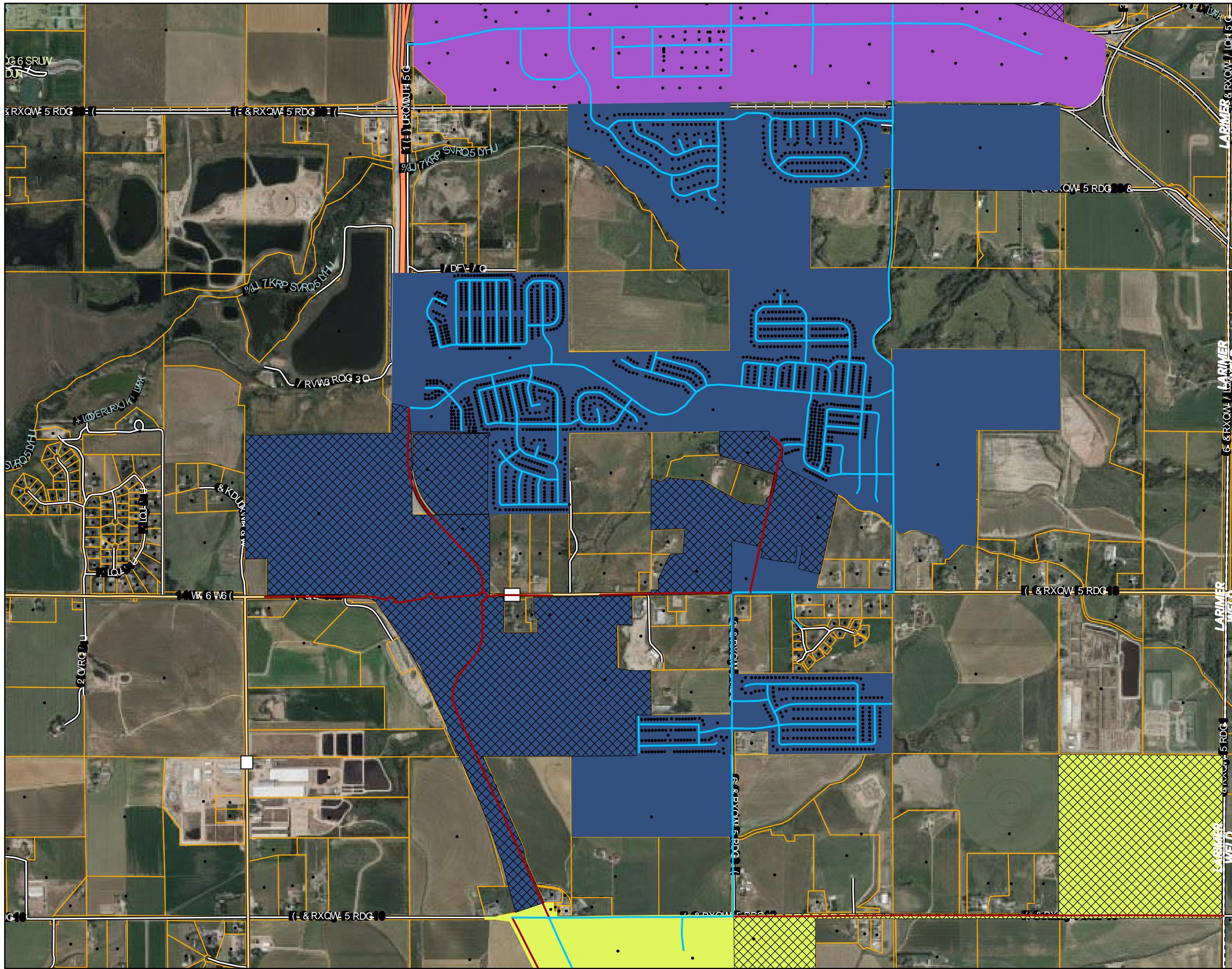


Exhibit B5

-RKQVWRZQ %L
 3ODQQLQJ
 7KRPSVRQ 5LYHU
 \$UHD 'HWDLO



Johnstown
 Colorado



- &RXQW\ %RXQGDU\
- 3DUFHO
- \$GGUHV
- \$UHD 1DPH
- Johnstown Plaza
- RKQVWRZQ :HVW
- 7KRPSVRQ 5LYHU 5DQF
- 5XUDO \$UHDV
-)LEHU &RQVWUXFWLR
- 8UEDQ
- 5XUDO

Johnstown Broadband Study
Exhibit C
Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Total Cost Summary

ITEM	TOTAL FOOTAGE	NUMBER OF ADDRESSES	COST PER ADDRESS	ESTIMATED COST	NOTES
Johnstown Plaza	47,042	129	\$20,153	\$2,599,711	
Downtown	214,329	3,311	\$3,670	\$12,152,638	
Johnstown West	202,376	2,148	\$5,190	\$11,148,924	
Stroh Farms	61,799	749	\$4,751	\$3,558,869	
Thompson River Ranch	127,490	1,947	\$3,745	\$7,292,471	
TOTAL	653,036	8,284		\$36,752,613	
Average Cost per Address				\$4,437	

Urban Areas

ITEM	TOTAL FOOTAGE	NUMBER OF ADDRESSES	COST PER ADDRESS	COST	NOTES
Johnstown Plaza	33663	124	\$15,495	\$1,921,334	
Downtown	204500	3,306	\$3,525	\$11,653,807	
Johnstown West	162375	2,139	\$4,265	\$9,122,728	
Stroh Farms	51892	745	\$4,103	\$3,056,436	
Thompson River Ranch	108593	1,935	\$3,273	\$6,332,610	
TOTAL	561,023	8,249		\$32,086,914	
Average Cost per Address				\$3,890	

Rural Areas

ITEM	TOTAL FOOTAGE	NUMBER OF ADDRESSES	COST PER ADDRESS	COST	NOTES
Johnstown Plaza	13379	5	\$135,676	\$678,378	
Downtown	9,829	5	\$99,766	\$498,832	
Johnstown West	40,001	9	\$225,133	\$2,026,196	
Stroh Farms	9,907	4	\$125,608	\$502,433	
Thompson River Ranch	18,897	12	\$79,988	\$959,861	
TOTAL	92,013	35		\$4,665,699	
Average Cost per Address				\$133,306	

Johnstown Broadband Study

Exhibit C

Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
 PLAN DATE: 10/26/2023
 PREPARED BY: PC
 ESTIMATE TYPE: CLASS 5

Johnstown Total	
Total Address Count	8,284
Total Footage (Road Centerline)	653,036
ITEM	EXTENDED COST
TOTAL	\$36,752,613
Cost per Address	\$4,437
Cost per linear foot	\$56.28

Johnstown Total					
		Total Address Count	8,284		
		Total Footage (Road Centerline)	653,036		
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$1,178,599	
Mobilization	LS	10%		\$2,172,311	
Outside Plant Construction - Labor	\$ / ft	653036	\$22.56	\$14,732,492	
Material Procurement	\$ / ft	653036	\$8.34	\$5,443,711	
Service Drop Construction					
	\$ / Address	2,485	\$857.00	\$2,129,816	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	653036	\$1.45	\$946,902	
Hut Procurement and Fitout	LS	5	120,000	\$600,000	
Subtotal	\$ / ft	653036	\$41.66	\$27,203,832	
Materials Cost Inflation					
	LS	8.0%		\$435,497	
Estimating Contingency					
	LS	15.0%		\$4,080,575	
Owner Contingency					
	LS	8.0%		\$2,176,307	
Engineering and Network Design					
	LS	6.0%		\$1,632,230	
Project Management					
	LS	4.5%		\$1,224,172	
TOTAL				\$36,752,613	
Cost per Address				\$4,437	
Cost per linear foot				\$56.28	

Johnstown Broadband Study Exhibit C Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Johnstown Total	
Total Address Count	8,284
Total Footage (Road Centerline)	653,036
ITEM	EXTENDED COST
TOTAL	\$36,752,613
Cost per Address	\$4,437
Cost per linear foot	\$56.28

Johnstown - Urban Phase					
Total Address Count		8,249			
Total Footage (Road Centerline)		561,023			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$1,012,534	
Mobilization	LS	10%		\$1,874,685	
Outside Plant Construction - Labor	\$ / ft	561023	\$22.56	\$12,656,679	
Material Procurement	\$ / ft	561023	\$8.34	\$4,676,691	
Service Drop Construction					
	\$ / Address	2,475	\$857.00	\$2,120,818	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	561023	\$1.45	\$813,483	
Hut Procurement and Fitout	LS	5	120,000	\$600,000	
Subtotal					
	\$ / ft	561023	\$42.34	\$23,754,890	
Materials Cost Inflation					
	LS	8.0%		\$374,135	
Estimating Contingency					
	LS	15.0%		\$3,563,234	
Owner Contingency					
	LS	8.0%		\$1,900,391	
Engineering and Network Design					
	LS	6.0%		\$1,425,293	
Project Management					
	LS	4.5%		\$1,068,970	
TOTAL					
				\$32,086,914	
Cost per Address				\$3,890	
Cost per linear foot				\$57.19	

Johnstown - Rural Phase					
Total Address Count		35			
Total Footage (Road Centerline)		92,013			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$166,065	
Mobilization	LS	10%		\$297,625	
Outside Plant Construction - Labor	\$ / ft	92013	\$22.56	\$2,075,813	
Material Procurement	\$ / ft	92013	\$8.34	\$767,021	
Service Drop Construction					
	\$ / Address	11	\$857.00	\$8,999	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	92013	\$1.45	\$133,419	
Subtotal					
	\$ / ft	92013	\$37.48	\$3,448,942	
Materials Cost Inflation					
	LS	8.0%		\$61,362	
Estimating Contingency					
	LS	15.0%		\$517,341	
Owner Contingency					
	LS	8.0%		\$275,915	
Engineering and Network Design					
	LS	6.0%		\$206,937	
Project Management					
	LS	4.5%		\$155,202	
TOTAL					
				\$4,665,699	
Cost per Address				\$133,306	
Cost per linear foot				\$50.71	

Johnstown Broadband Study Exhibit C Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Johnstown Plaza Area Total	
Total Address Count	129
Total Footage (Road Centerline)	47,042
ITEM	EXTENDED COST
TOTAL	\$2,599,711
Cost per Address	\$20,153
Cost per linear foot	\$55.26

Johnstown Plaza Area - Urban Phase					
Total Address Count					124
Total Footage (Road Centerline)					33,663
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$60,755	
Mobilization	LS	10%		\$120,886	
Outside Plant Construction - Labor	\$ / ft	33663	\$22.56	\$759,437	
Material Procurement	\$ / ft	33663	\$8.34	\$280,615	
Service Drop Construction					
	\$ / Address	37	\$857.00	\$31,880	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	33663	\$1.45	\$48,811	
Hut Procurement and Fitout	LS	1	120,000	\$120,000	
Subtotal					
	\$ / ft	33663	\$42.25	\$1,422,385	
Materials Cost Inflation					
	LS	8.0%		\$22,449	
Estimating Contingency					
	LS	15.0%		\$213,358	
Owner Contingency					
	LS	8.0%		\$113,791	
Engineering and Network Design					
	LS	6.0%		\$85,343	
Project Management					
	LS	4.5%		\$64,007	
TOTAL					
				\$1,921,334	
Cost per Address				\$15,495	
Cost per linear foot				\$57.08	

Johnstown Plaza Area - Rural Phase					
Total Address Count					5
Total Footage (Road Centerline)					13,379
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$24,146	
Mobilization	LS	10%		\$43,276	
Outside Plant Construction - Labor	\$ / ft	13379	\$22.56	\$301,830	
Material Procurement	\$ / ft	13379	\$8.34	\$111,527	
Service Drop Construction					
	\$ / Address	2	\$857.00	\$1,286	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	13379	\$1.45	\$19,400	
Subtotal					
	\$ / ft	13379	\$37.48	\$501,465	
Materials Cost Inflation					
	LS	8.0%		\$8,922	
Estimating Contingency					
	LS	15.0%		\$75,220	
Owner Contingency					
	LS	8.0%		\$40,117	
Engineering and Network Design					
	LS	6.0%		\$30,088	
Project Management					
	LS	4.5%		\$22,566	
TOTAL					
				\$678,378	
Cost per Address				\$135,676	
Cost per linear foot				\$50.70	

Johnstown Broadband Study

Exhibit C

Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Downtown Area Total	
Total Address Count	3,311
Total Footage (Road Centerline)	214,329
ITEM	EXTENDED COST
TOTAL	\$12,152,638
Cost per Address	\$3,670
Cost per linear foot	\$56.70

Downtown Area - Urban Phase					
Total Address Count		3,306			
Total Footage (Road Centerline)		204,500			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$369,082	
Mobilization	LS	10%		\$673,476	
Outside Plant Construction - Labor	\$ / ft	204500	\$22.56	\$4,613,520	
Material Procurement	\$ / ft	204500	\$8.34	\$1,704,713	
Service Drop Construction					
	\$ / Address	992	\$857.00	\$849,973	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	204500	\$1.45	\$296,525	
Hut Procurement and Fitout	LS	1	120,000	\$120,000	
Subtotal					
	\$ / ft	204500	\$42.19	\$8,627,288	
Materials Cost Inflation					
	LS	8.0%		\$136,377	
Estimating Contingency					
	LS	15.0%		\$1,294,093	
Owner Contingency					
	LS	8.0%		\$690,183	
Engineering and Network Design					
	LS	6.0%		\$517,637	
Project Management					
	LS	4.5%		\$388,228	
TOTAL					
				\$11,653,807	
Cost per Address				\$3,525	
Cost per linear foot				\$56.99	

Downtown Area - Rural Phase					
Total Address Count		5			
Total Footage (Road Centerline)		9,829			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$17,739	
Mobilization	LS	10%		\$31,793	
Outside Plant Construction - Labor	\$ / ft	9829	\$22.56	\$221,742	
Material Procurement	\$ / ft	9829	\$8.34	\$81,935	
Service Drop Construction					
	\$ / Address	2	\$857.00	\$1,286	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	9829	\$1.45	\$14,252	
Subtotal					
	\$ / ft	9829	\$37.52	\$368,747	
Materials Cost Inflation					
	LS	8.0%		\$6,555	
Estimating Contingency					
	LS	15.0%		\$55,312	
Owner Contingency					
	LS	8.0%		\$29,500	
Engineering and Network Design					
	LS	6.0%		\$22,125	
Project Management					
	LS	4.5%		\$16,594	
TOTAL					
				\$498,832	
Cost per Address				\$99,766	
Cost per linear foot				\$50.75	

Johnstown Broadband Study Exhibit C Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Johnstown West Area Total	
Total Address Count	2,148
Total Footage (Road Centerline)	202,376
ITEM	EXTENDED COST
TOTAL	\$11,148,924
Cost per Address	\$5,190
Cost per linear foot	\$55.09

Johnstown West Area - Urban Phase					
Total Address Count	2,139				
Total Footage (Road Centerline)	162,375				
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$293,054	
Mobilization	LS	10%		\$537,218	
Outside Plant Construction - Labor	\$ / ft	162375	\$22.56	\$3,663,180	
Material Procurement	\$ / ft	162375	\$8.34	\$1,353,559	
Service Drop Construction	\$ / Address	642	\$857.00	\$549,937	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	162375	\$1.45	\$235,444	
Hut Procurement and Fitout	LS	1	120,000	\$120,000	
Subtotal	\$ / ft	162375	\$41.59	\$6,752,392	
Materials Cost Inflation	LS	8.0%		\$108,285	
Estimating Contingency	LS	15.0%		\$1,012,859	
Owner Contingency	LS	8.0%		\$540,191	
Engineering and Network Design	LS	6.0%		\$405,144	
Project Management	LS	4.5%		\$303,858	
TOTAL				\$9,122,728	
Cost per Address				\$4,265	
Cost per linear foot				\$56.18	

Johnstown West Area - Rural Phase					
Total Address Count	9				
Total Footage (Road Centerline)	40,001				
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$72,194	
Mobilization	LS	10%		\$129,387	
Outside Plant Construction - Labor	\$ / ft	40001	\$22.56	\$902,423	
Material Procurement	\$ / ft	40001	\$8.34	\$333,449	
Service Drop Construction	\$ / Address	3	\$857.00	\$2,314	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	40001	\$1.45	\$58,001	
Subtotal	\$ / ft	40001	\$37.44	\$1,497,768	
Materials Cost Inflation	LS	8.0%		\$26,676	
Estimating Contingency	LS	15.0%		\$224,665	
Owner Contingency	LS	8.0%		\$119,821	
Engineering and Network Design	LS	6.0%		\$89,866	
Project Management	LS	4.5%		\$67,400	
TOTAL				\$2,026,196	
Cost per Address				\$225,133	
Cost per linear foot				\$50.65	

Johnstown Broadband Study Exhibit C Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Stroh Farms Area Total	
Total Address Count	749
Total Footage (Road Centerline)	61,799
ITEM	EXTENDED COST
TOTAL	\$3,558,869
Cost per Address	\$4,751
Cost per Linear foot	\$57.59

Stroh Farms Area - Urban Phase					
Total Address Count		745			
Total Footage (Road Centerline)		51,892			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$93,655	
Mobilization	LS	10%		\$179,850	
Outside Plant Construction - Labor	\$ / ft	51892	\$22.56	\$1,170,684	
Material Procurement	\$ / ft	51892	\$8.34	\$432,572	
Service Drop Construction					
	\$ / Address	224	\$857.00	\$191,540	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	51892	\$1.45	\$75,243	
Hut Procurement and Fitout	LS	1	120,000	\$120,000	
Subtotal	\$ / ft	51892	\$43.62	\$2,263,543	
Materials Cost Inflation	LS	8.0%		\$34,606	
Estimating Contingency	LS	15.0%		\$339,531	
Owner Contingency	LS	8.0%		\$181,083	
Engineering and Network Design	LS	6.0%		\$135,813	
Project Management	LS	4.5%		\$101,859	
TOTAL				\$3,056,436	
Cost per Address				\$4,103	
Cost per Linear foot				\$58.90	

Stroh Farms Area - Rural Phase					
Total Address Count		4			
Total Footage (Road Centerline)		9,907			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$17,880	
Mobilization	LS	10%		\$32,045	
Outside Plant Construction - Labor	\$ / ft	9907	\$22.56	\$223,502	
Material Procurement	\$ / ft	9907	\$8.34	\$82,585	
Service Drop Construction					
	\$ / Address	1	\$857.00	\$1,028	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	9907	\$1.45	\$14,365	
Subtotal	\$ / ft	9907	\$37.49	\$371,406	
Materials Cost Inflation	LS	8.0%		\$6,607	
Estimating Contingency	LS	15.0%		\$55,711	
Owner Contingency	LS	8.0%		\$29,712	
Engineering and Network Design	LS	6.0%		\$22,284	
Project Management	LS	4.5%		\$16,713	
TOTAL				\$502,433	
Cost per Address				\$125,608	
Cost per Linear foot				\$50.71	

Johnstown Broadband Study Exhibit C Capital Construction Cost Estimate



City of Johnstown
High Level Area Cost Study
PLAN DATE: 10/26/2023
PREPARED BY: PC
ESTIMATE TYPE: CLASS 5

Thompson River Ranch Area Total	
Total Address Count	1,947
Total Footage (Road Centerline)	127,490
ITEM	EXTENDED COST
TOTAL	\$7,292,471
Cost per Address	\$3,745
Cost per Linear foot	\$57.20

Thompson River Ranch Area - Urban Phase					
Total Address Count		1,935			
Total Footage (Road Centerline)		108,593			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$195,989	
Mobilization	LS	10%		\$363,255	
Outside Plant Construction - Labor	\$ / ft	108593	\$22.56	\$2,449,858	
Material Procurement	\$ / ft	108593	\$8.34	\$905,232	
Service Drop Construction	\$ / Address	581	\$857.00	\$497,489	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	108593	\$1.45	\$157,460	
Hut Procurement and Fitout	LS	1	120,000	\$120,000	
Subtotal	\$ / ft	108593	\$43.18	\$4,689,282	
Materials Cost Inflation	LS	8.0%		\$72,419	
Estimating Contingency	LS	15.0%		\$703,392	
Owner Contingency	LS	8.0%		\$375,143	
Engineering and Network Design	LS	6.0%		\$281,357	
Project Management	LS	4.5%		\$211,018	
TOTAL				\$6,332,610	
Cost per Address				\$3,273	
Cost per Linear foot				\$58.32	

Thompson River Ranch Area - Rural Phase					
Total Address Count		12			
Total Footage (Road Centerline)		18,897			
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Outside Plant Construction					
General Conditions	LS	8%		\$34,105	
Mobilization	LS	10%		\$61,124	
Outside Plant Construction - Labor	\$ / ft	18897	\$22.56	\$426,316	
Material Procurement	\$ / ft	18897	\$8.34	\$157,525	
Service Drop Construction	\$ / Address	4	\$857.00	\$3,085	30% Take Rate
Core Networking					
Network Equipment	\$ / ft	18897	\$1.45	\$27,401	
Subtotal	\$ / ft	18897	\$37.55	\$709,557	
Materials Cost Inflation	LS	8.0%		\$12,602	
Estimating Contingency	LS	15.0%		\$106,434	
Owner Contingency	LS	8.0%		\$56,765	
Engineering and Network Design	LS	6.0%		\$42,573	
Project Management	LS	4.5%		\$31,930	
TOTAL				\$959,861	
Cost per Address				\$79,988	
Cost per Linear foot				\$50.79	

Exhibit D1

Johnstown Broadband Planning

Technology that delivers the fastest broadband service to each location



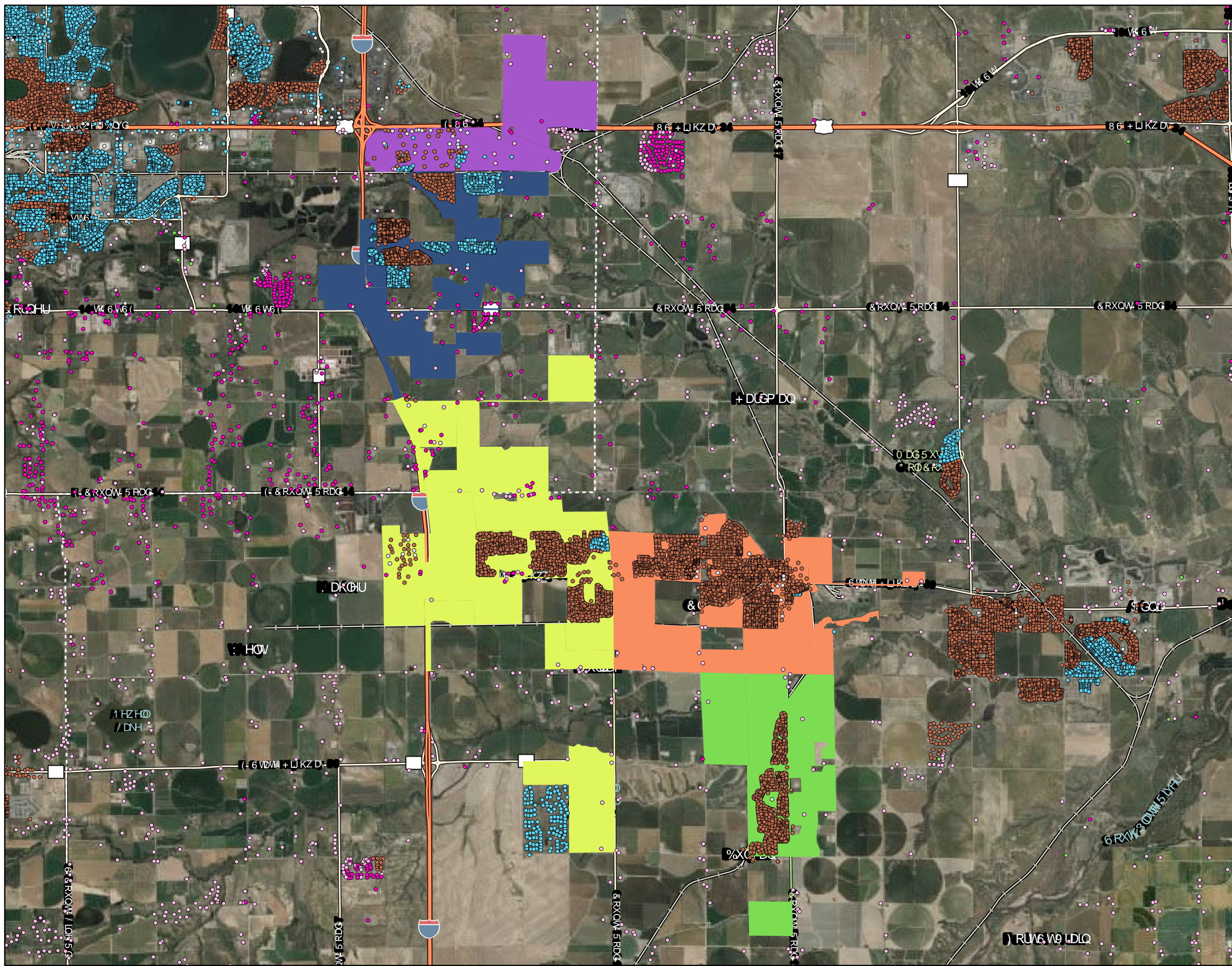
Johnstown Colorado



Fastest Available Service Technology

- Fiber to the Premise
- Coaxial Cable
- Copper Wire (DSL)
- Wireless - Unlicensed Terrestrial Fixed
- Wireless - Licensed Terrestrial Fixed
- Wireless - Licensed By Rule Terrestrial Fixed

- \$UHD 1DPH**
- Johnstown Plaza
 - 'RZQWRZQ
 - RKQVWRZQ :HVW
 - 6WURK)DUPV
 - 7KRPSVRQ 5LYHU 5DQF



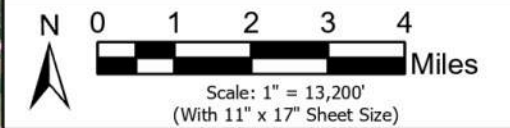
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Exhibit D2

Johnstown Broadband Planning
Technology that delivers the fastest broadband service to each location



Johnstown
Colorado



Johnstown Municipal Boundary

Fastest Available Service Technology

- Fiber to the Premise
- Coaxial Cable
- Copper Wire (DSL)
- Wireless - Unlicensed Terrestrial Fixed
- Wireless - Licensed Terrestrial Fixed
- Wireless - Licensed By Rule Terrestrial Fixed
- No Reported Terrestrial Service

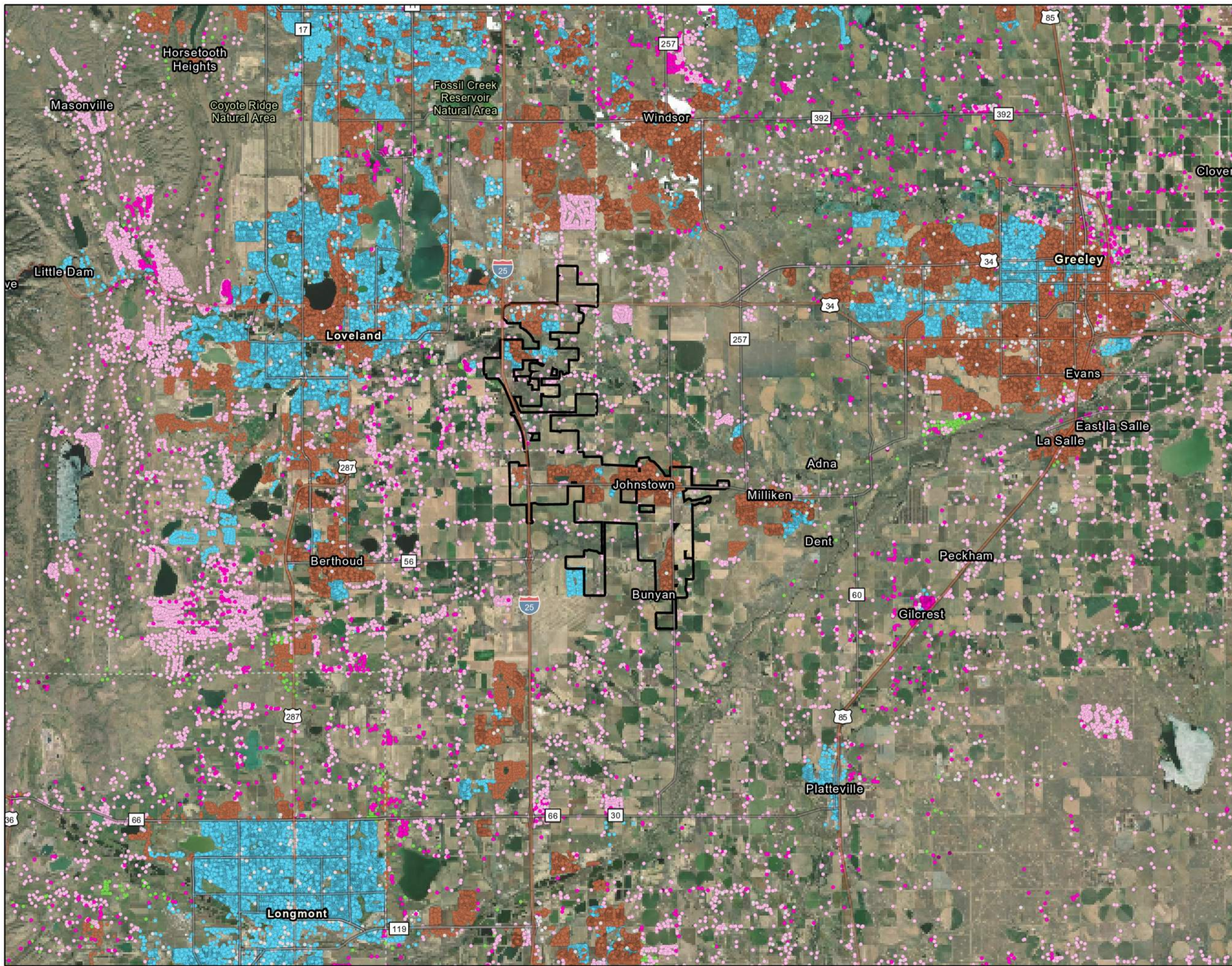


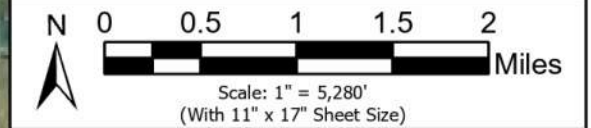
Exhibit E1

Fastest Available Broadband Service

CenturyLink



Johnstown
Colorado



Johnstown Municipal Boundary

Fastest Available Service Level

- Speeds < 25/3 Mbps
- 25/3 ≤ Speeds < 100/20 Mbps
- Speeds ≥ 100/20 Mbps

Data Source: December 12, 2023 BDC

Date Exported: January 2024

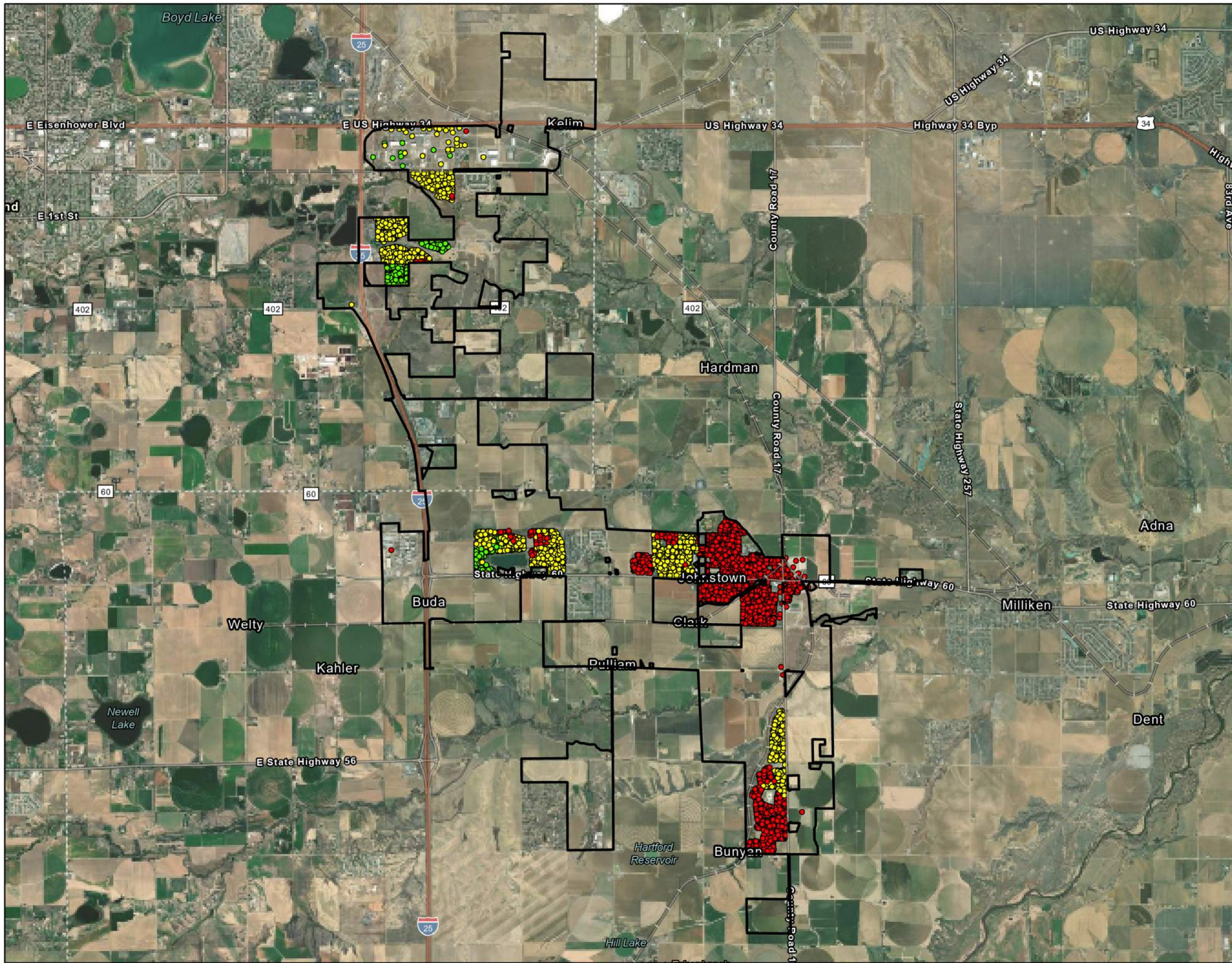


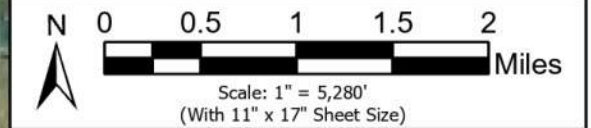
Exhibit E2

Fastest Available Broadband Service

Rise Broadband



Johnstown
Colorado



Johnstown Municipal Boundary

Fastest Available Service Level

- Speeds < 25/3 Mbps
- 25/3 ≤ Speeds < 100/20 Mbps
- Speeds ≥ 100/20 Mbps

Data Source: December 12, 2023 BDC

Date Exported: January 2024

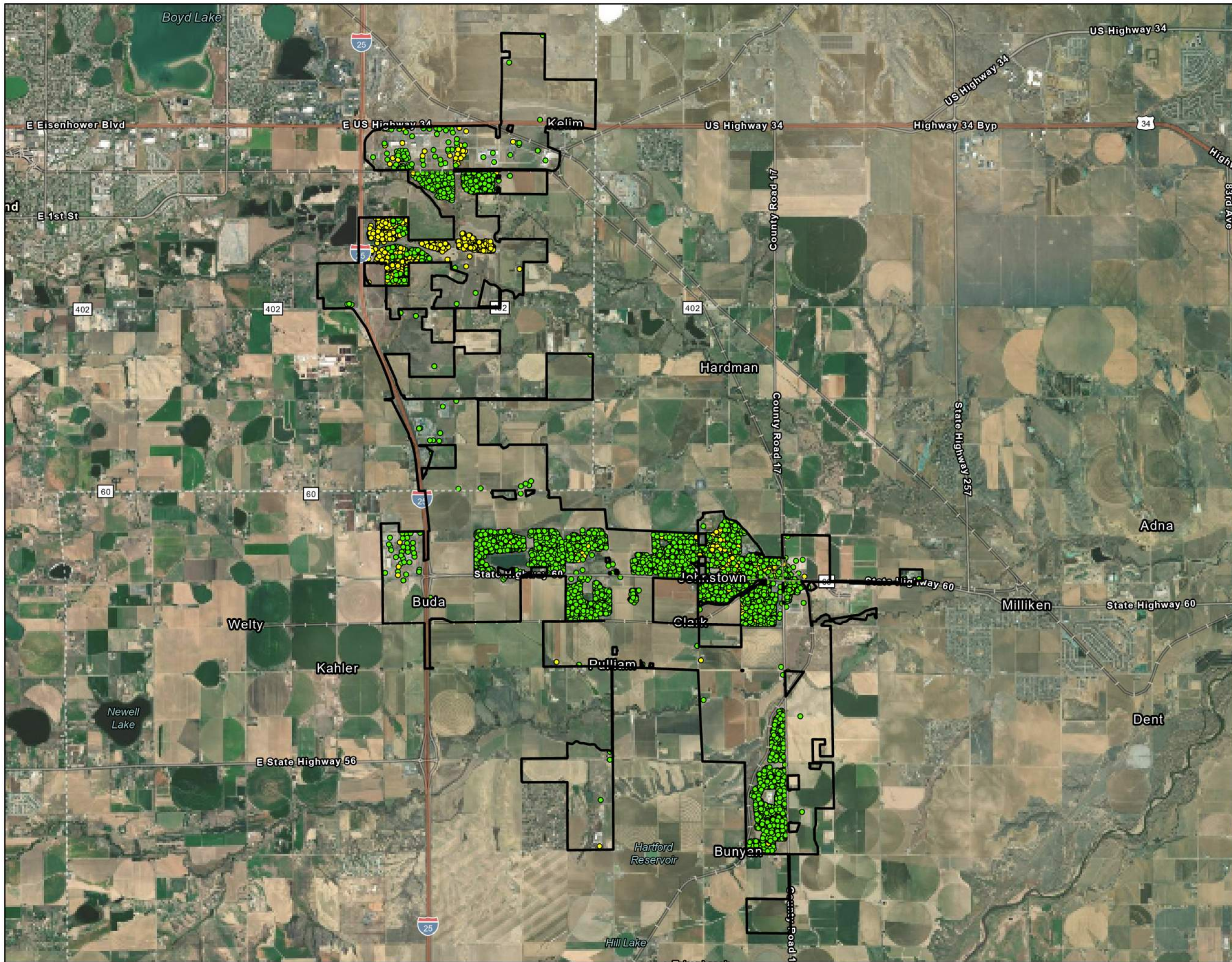


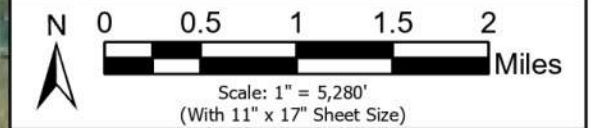
Exhibit E3

Fastest Available Broadband Service

TDS Telecom



Johnstown
Colorado



Johnstown Municipal Boundary

Fastest Available Service Level

- Speeds < 25/3 Mbps
- 25/3 ≤ Speeds < 100/20 Mbps
- Speeds ≥ 100/20 Mbps

Data Source: December 12, 2023 BDC

Date Exported: January 2024

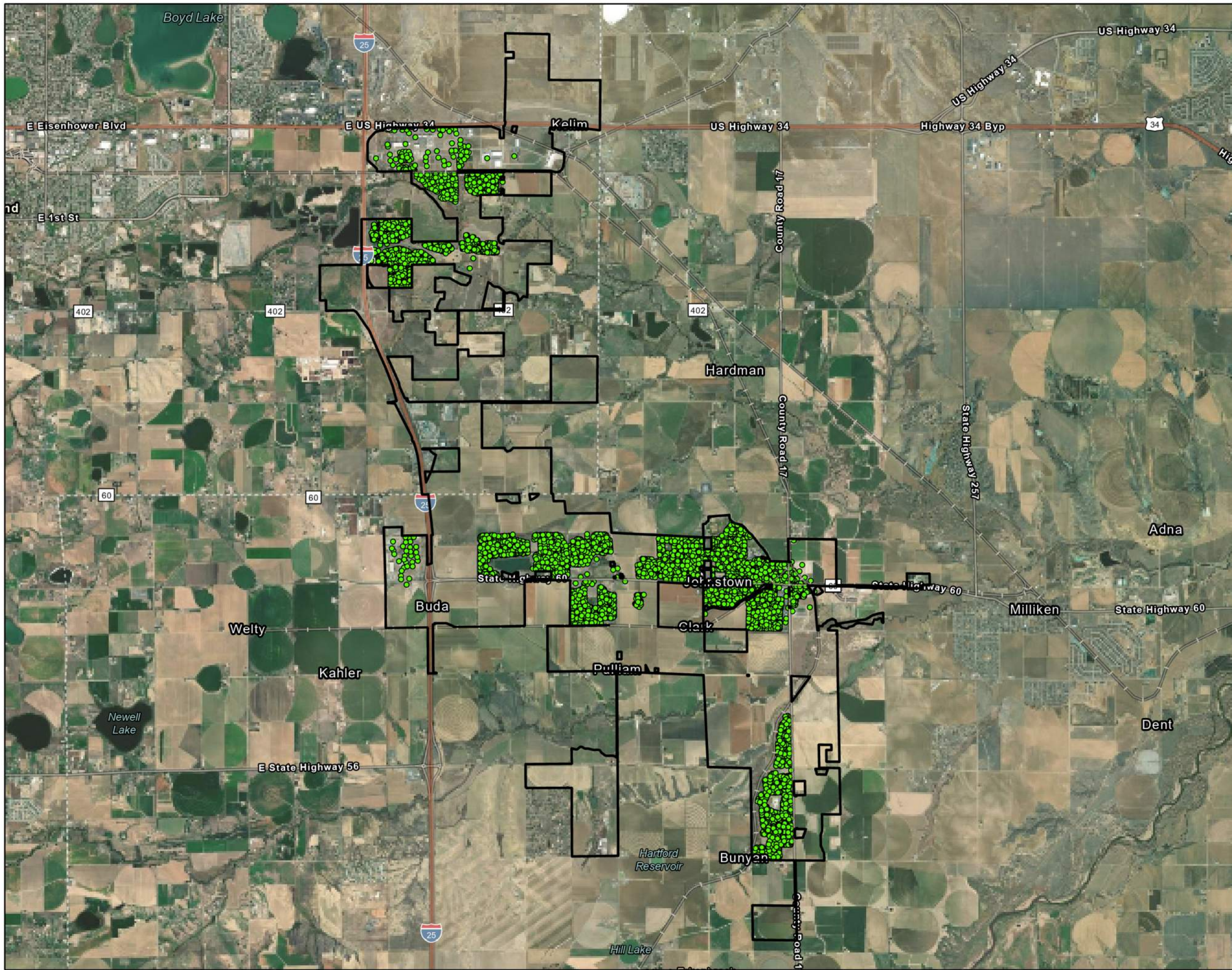


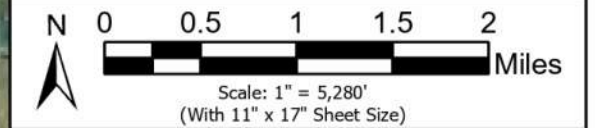
Exhibit E4

Fastest Available Broadband Service

Vistabeam Internet



Johnstown
Colorado



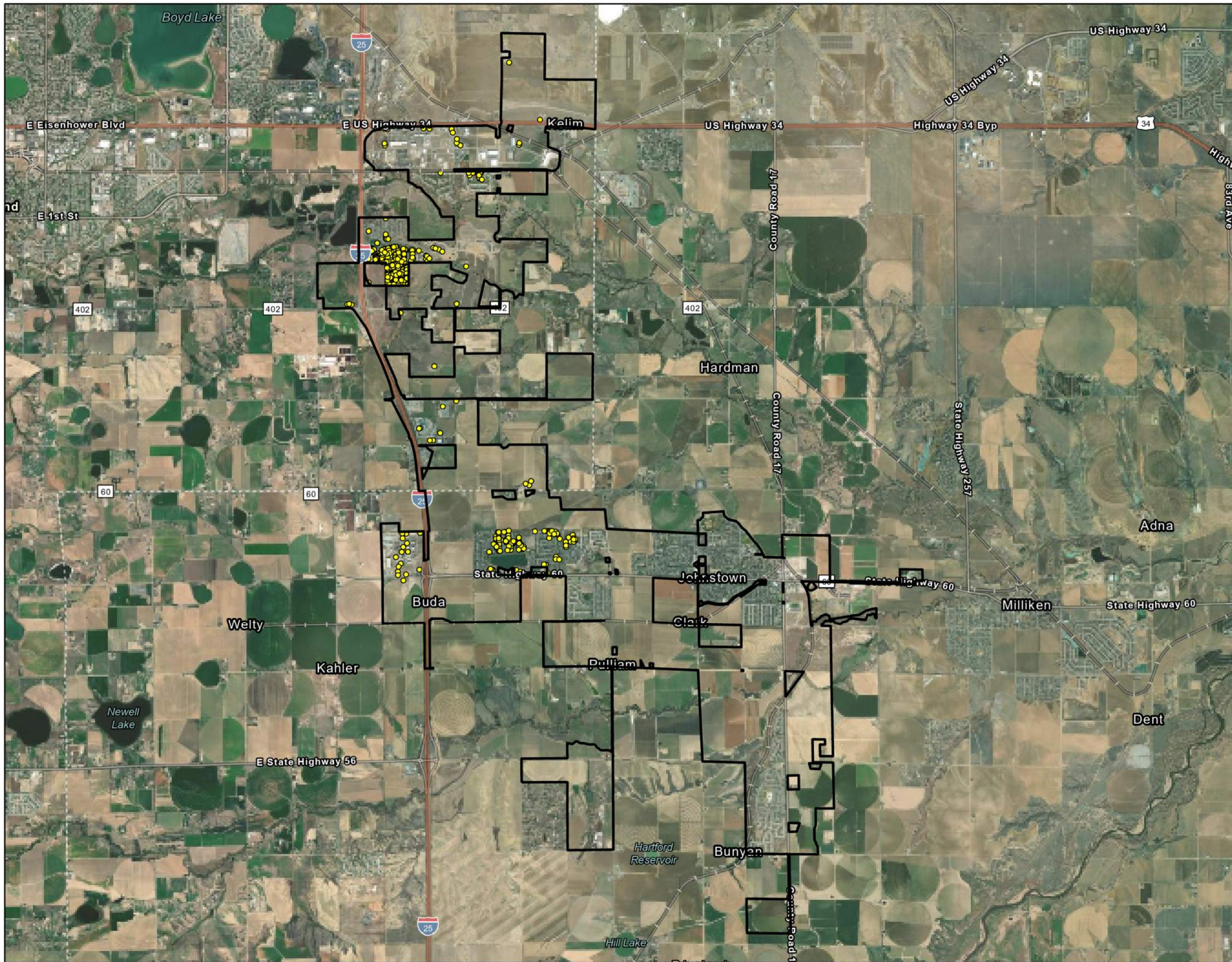
□ Johnstown Municipal Boundary

Fastest Available Service Level

- Speeds < 25/3 Mbps
- $25/3 \leq$ Speeds < 100/20 Mbps
- Speeds \geq 100/20 Mbps

Data Source: December 12, 2023 BDC

Date Exported: January 2024



Johnstown Broadband Study

Exhibit F

Staff Cost Estimate



City of Johnstown
 High Level Area Cost Study
 PLAN DATE: 10/26/2023
 PREPARED BY: PC
 ESTIMATE TYPE: CLASS 5

Staffing					
Total Address Count		8,400			
Total Footage (Road Centerline)					
ITEM	UNIT	QUANTITY	UNIT COST	EXTENDED COST	NOTES
Personnel					
Broadband Director	EA	1	\$ 180,000	\$180,000	
Engineering Manager	EA	1	\$ 155,000	\$155,000	
Outside Plant Manager	EA	1	\$ 130,000	\$130,000	
Tech Services	EA	1	\$ 100,000	\$100,000	
Field Services	EA	2	\$ 90,000	\$180,000	
Installation Tech	EA	2	\$ 85,000	\$170,000	
Marketing Manager	EA	1	\$ 140,000	\$140,000	
Sales Manager	EA	1	\$ 95,000	\$95,000	
Customer Service	EA	2	\$ 95,000	\$190,000	
GIS	EA	1	\$ 100,000	\$100,000	
Utility Locator	EA	1	\$ 85,000	\$85,000	
TOTAL				\$1,525,000	

Johnstown Broadband Study
Exhibit G
Johnstown Broadband Utility Business Plan

Current Total Premises	8284													
Take Rate	50%	5	10											
Average Subscription Rate	\$ 95.00	\$ 95.00	\$ 95.00	\$ 95.00	\$ 95.00	\$ 98.33	\$ 101.77	\$ 105.33	\$ 109.01	\$ 112.83	\$ 116.78			
Homes Passed		2071	4142	6213	8284	8538	8800	9069	9347	9634	9929			
Take Rate		5%	10%	20%	30%	30%	40%	40%	45%	50%	50%			
Estimated Customers		104	414	1243	2485	2561	3520	3628	4206	4817	4964			
Inflation Rate	3.5%													
Beginning Cash Balance	\$ -	\$ 58,750,000	\$ 42,671,590	\$ 23,398,615	\$ 12,106,860	\$ 7,337,060	\$ 4,602,926	\$ 2,859,793	\$ 1,269,472	\$ 364,771	\$ 229,142			
Estimated Revenue														
Services - Subscriptions		\$ 118,047	\$ 472,188	\$ 1,416,564	\$ 2,833,128	\$ 3,022,148	\$ 4,298,372	\$ 4,585,149	\$ 5,502,443	\$ 6,521,726	\$ 6,956,841			
Source - Bonds Issued	\$ 45,000,000													
Source - Bond Interest														
Source - Internal Transfer	\$ 13,750,000													
Subtotal - Estimated Revenue	\$ 58,750,000	\$ 118,047	\$ 472,188	\$ 1,416,564	\$ 2,833,128	\$ 3,022,148	\$ 4,298,372	\$ 4,585,149	\$ 5,502,443	\$ 6,521,726	\$ 6,956,841			
Capital Project Expenses	Budget	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10			
Capital Project Costs	\$ 36,800,000	\$ 12,400,000	\$ 15,000,000	\$ 7,400,000	\$ 2,000,000									
New Development, Network Expansion (4% growth of town)				\$ 350,000	\$ 362,250	\$ 374,929	\$ 392,466	\$ 404,494	\$ 416,889	\$ 429,665	\$ 442,832			
Utility Startup costs														
Backoffice Systems (Billing systems, Customer management, network and fiber management systems)	\$ 500,000	\$ 500,000												
Building Lease		\$ 43,750	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281			
Internet Backbone/IP addresses	\$ 100,000	\$ 100,000												
Vehicles and Equipment	\$ 205,000	\$ 205,000												
Subtotal - Capital Project Expenses		\$ 13,248,750	\$ 15,045,281	\$ 7,795,281	\$ 2,407,531	\$ 420,210	\$ 437,748	\$ 449,775	\$ 462,171	\$ 474,946	\$ 488,113			
Operational Expenses		\$ 2,947,707	\$ 4,699,882	\$ 4,913,037	\$ 5,195,397	\$ 5,336,071	\$ 5,603,758	\$ 5,725,696	\$ 5,944,973	\$ 6,182,408	\$ 6,335,177			
Staffing (14 fully burdened, increasing at 3.5%)		\$ 1,525,000	\$ 1,578,375	\$ 1,633,618	\$ 1,690,795	\$ 1,749,973	\$ 1,811,222	\$ 1,874,614	\$ 1,940,226	\$ 2,008,134	\$ 2,078,418			
Rent and utilities		\$ 45,000	\$ 46,575	\$ 48,205	\$ 49,892	\$ 51,639	\$ 53,446	\$ 55,316	\$ 57,253	\$ 59,256	\$ 61,330			
Vehicle Maintenance			\$ 10,000	\$ 10,350	\$ 10,712	\$ 11,087	\$ 11,475	\$ 11,877	\$ 12,293	\$ 12,723	\$ 13,168			
Vehicle and Equipment Replacement						\$ 40,000	\$ 41,400	\$ 42,849	\$ 44,349	\$ 45,901	\$ 47,507			
Backhaul Internet services and network operations		\$ 40,000	\$ 90,000	\$ 93,150	\$ 96,410	\$ 99,785	\$ 103,277	\$ 106,892	\$ 110,633	\$ 114,505	\$ 118,513			
Backoffice Systems (Billing systems, network and fiber management systems)		\$ 20,000	\$ 40,000	\$ 41,400	\$ 42,849	\$ 44,349	\$ 45,901	\$ 47,507	\$ 49,170	\$ 50,891	\$ 52,672			
Marketing Expenses			\$ 15,000	\$ 15,525	\$ 16,068	\$ 16,631	\$ 17,213	\$ 17,815	\$ 18,439	\$ 19,084	\$ 19,752			
Professional services			\$ 120,000	\$ 124,200	\$ 128,547	\$ 133,046	\$ 137,703	\$ 142,522	\$ 147,511	\$ 152,674	\$ 158,017			
Customer Service Expenses			\$ 25,000	\$ 30,000	\$ 31,050	\$ 32,137	\$ 33,262	\$ 34,426	\$ 35,631	\$ 36,878	\$ 38,168			
Debt Service (30 years @ 4.4%)		\$ 1,300,000	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104			
Operating Reserves @ 15%		\$ 17,707	\$ 70,828	\$ 212,485	\$ 424,969	\$ 453,322	\$ 644,756	\$ 687,772	\$ 825,366	\$ 978,259	\$ 1,043,526			
Subtotal - Operational Expenses		\$ 2,947,707	\$ 4,699,882	\$ 4,913,037	\$ 5,195,397	\$ 5,336,071	\$ 5,603,758	\$ 5,725,696	\$ 5,944,973	\$ 6,182,408	\$ 6,335,177			
TOTAL EXPENSES		\$ 16,196,457	\$ 19,745,163	\$ 12,708,318	\$ 7,602,928	\$ 5,756,281	\$ 6,041,505	\$ 6,175,470	\$ 6,407,144	\$ 6,657,355	\$ 6,823,291			
Net Operating Revenue (Loss)		\$ (16,078,410)	\$ (19,272,975)	\$ (11,291,754)	\$ (4,769,800)	\$ (2,734,134)	\$ (1,743,134)	\$ (1,590,321)	\$ (904,701)	\$ (135,629)	\$ 133,550			
Ending Working Cash Balance	\$ 58,750,000	\$ 42,671,590	\$ 23,398,615	\$ 12,106,860	\$ 7,337,060	\$ 4,602,926	\$ 2,859,793	\$ 1,269,472	\$ 364,771	\$ 229,142	\$ 362,692			
Loan Balance		\$ 45,000,000	\$ 44,939,658	\$ 44,198,057	\$ 43,423,159	\$ 42,613,470	\$ 41,767,427	\$ 40,883,398	\$ 39,959,678	\$ 38,994,485	\$ 37,985,956			
Net Cash		\$ (2,328,410.05)	\$ (21,541,043.09)	\$ (32,091,196.18)	\$ (36,086,098.96)	\$ (38,010,543.35)	\$ (38,907,634.04)	\$ (39,613,926.49)	\$ (39,594,907.69)	\$ (38,765,343.05)	\$ (37,623,264.03)			

Johnstown Broadband Study
Exhibit G
Johnstown Broadband Utility Business Plan

Current Total Premises																						
Take Rate																						
Average Subscription Rate	\$	120.87	\$	125.10	\$	129.48	\$	134.01	\$	138.70	\$	143.55	\$	148.58	\$	153.78	\$	159.16	\$	164.73	\$	170.49
Homes Passed		10233		10547		10870		11203		11546		11900		12265		12641		13028		13427		13839
Take Rate		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%
Estimated Customers		5117		5273		5435		5601		5773		5950		6132		6320		6514		6714		6919
Inflation Rate																						
Beginning Cash Balance	\$	362,692	\$	786,630	\$	1,523,693	\$	2,598,248	\$	4,036,410	\$	5,866,158	\$	8,117,466	\$	10,822,442	\$	14,015,471	\$	17,733,373	\$	22,015,572
Estimated Revenue																						
Services - Subscriptions	\$	7,420,985	\$	7,916,097	\$	8,444,241	\$	9,007,622	\$	9,608,590	\$	10,249,653	\$	10,933,487	\$	11,662,944	\$	12,441,070	\$	13,271,110	\$	14,156,528
Source - Bonds Issued																						
Source - Bond Interest																						
Source - Internal Transfer																						
Subtotal - Estimated Revenue	\$	7,420,985	\$	7,916,097	\$	8,444,241	\$	9,007,622	\$	9,608,590	\$	10,249,653	\$	10,933,487	\$	11,662,944	\$	12,441,070	\$	13,271,110	\$	14,156,528
Capital Project Expenses																						
	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21											
Capital Project Costs																						
New Development, Network Expansion (4% growth of town)	\$	456,403	\$	470,389	\$	484,804	\$	499,661	\$	514,974	\$	530,755	\$	547,020	\$	563,784	\$	581,061	\$	598,868	\$	617,220
Utility Startup costs																						
Backoffice Systems (Billing systems, Customer management, network and fiber management systems)																						
Building Lease	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281	\$	45,281
Internet Backbone/IP addresses																						
Vehicles and Equipment																						
Subtotal - Capital Project Expenses	\$	501,684	\$	515,671	\$	530,086	\$	544,943	\$	560,255	\$	576,036	\$	592,301	\$	609,065	\$	626,342	\$	644,149	\$	662,501
Operational Expenses																						
Staffing (14 fully burdened, increasing at 3.5%)	\$	6,495,363	\$	6,663,364	\$	6,839,600	\$	7,024,517	\$	7,218,587	\$	7,422,308	\$	7,636,210	\$	7,860,851	\$	8,096,826	\$	8,344,761	\$	8,605,324
Rent and utilities	\$	2,151,163	\$	2,226,454	\$	2,304,380	\$	2,385,033	\$	2,468,509	\$	2,554,907	\$	2,644,329	\$	2,736,880	\$	2,832,671	\$	2,931,815	\$	3,034,428
Vehicle Maintenance	\$	63,477	\$	65,699	\$	67,998	\$	70,378	\$	72,841	\$	75,391	\$	78,029	\$	80,760	\$	83,587	\$	86,513	\$	89,540
Vehicle and Equipment Replacement	\$	13,629	\$	14,106	\$	14,600	\$	15,111	\$	15,640	\$	16,187	\$	16,753	\$	17,340	\$	17,947	\$	18,575	\$	19,225
	\$	49,170	\$	50,891	\$	52,672	\$	54,516	\$	56,424	\$	58,399	\$	60,443	\$	62,558	\$	64,748	\$	67,014	\$	69,359
Backhaul Internet services and network operations	\$	122,661	\$	126,954	\$	131,397	\$	135,996	\$	140,756	\$	145,683	\$	150,781	\$	156,059	\$	161,521	\$	167,174	\$	173,025
Backoffice Systems (Billing systems, network and fiber management systems)	\$	54,516	\$	56,424	\$	58,399	\$	60,443	\$	62,558	\$	64,748	\$	67,014	\$	69,359	\$	71,787	\$	74,300	\$	76,900
Marketing Expenses	\$	20,443	\$	21,159	\$	21,900	\$	22,666	\$	23,459	\$	24,280	\$	25,130	\$	26,010	\$	26,920	\$	27,862	\$	28,838
Professional services	\$	163,548	\$	169,272	\$	175,196	\$	181,328	\$	187,675	\$	194,243	\$	201,042	\$	208,078	\$	215,361	\$	222,899	\$	230,700
Customer Service Expenses	\$	39,504	\$	40,887	\$	42,318	\$	43,799	\$	45,332	\$	46,919	\$	48,561	\$	50,260	\$	52,020	\$	53,840	\$	55,725
Debt Service (30 years @ 4.4%)	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104	\$	2,704,104
Operating Reserves @ 15%	\$	1,113,148	\$	1,187,415	\$	1,266,636	\$	1,351,143	\$	1,441,288	\$	1,537,448	\$	1,640,023	\$	1,749,442	\$	1,866,160	\$	1,990,666	\$	2,123,479
Subtotal - Operational Expenses	\$	6,495,363	\$	6,663,364	\$	6,839,600	\$	7,024,517	\$	7,218,587	\$	7,422,308	\$	7,636,210	\$	7,860,851	\$	8,096,826	\$	8,344,761	\$	8,605,324
TOTAL EXPENSES	\$	6,997,047	\$	7,179,034	\$	7,369,686	\$	7,569,460	\$	7,778,842	\$	7,998,344	\$	8,228,511	\$	8,469,916	\$	8,723,168	\$	8,988,910	\$	9,267,825
Net Operating Revenue (Loss)	\$	423,938	\$	737,062	\$	1,074,555	\$	1,438,162	\$	1,829,748	\$	2,251,309	\$	2,704,976	\$	3,193,028	\$	3,717,902	\$	4,282,200	\$	4,888,703
Ending Working Cash Balance	\$	786,630	\$	1,523,693	\$	2,598,248	\$	4,036,410	\$	5,866,158	\$	8,117,466	\$	10,822,442	\$	14,015,471	\$	17,733,373	\$	22,015,572	\$	26,904,276
Loan Balance	\$	36,932,146	\$	35,831,021	\$	34,680,458	\$	33,478,237	\$	32,222,038	\$	30,909,438	\$	29,537,904	\$	28,104,791	\$	26,607,334	\$	25,042,643	\$	23,407,701
Net Cash	\$	(36,145,515.63)	\$	(34,307,328.72)	\$	(32,082,210.50)	\$	(29,441,827.40)	\$	(26,355,880.36)	\$	(22,791,971.52)	\$	(18,715,462.08)	\$	(14,089,320.66)	\$	(8,873,961.35)	\$	(3,027,071.08)	\$	3,496,574.72

Johnstown Broadband Study
Exhibit G
Johnstown Broadband Utility Business Plan

Current Total Premises

Take Rate													
Average Subscription Rate	\$ 176.46	\$ 182.64	\$ 189.03	\$ 195.65	\$ 202.49	\$ 209.58	\$ 216.92	\$ 224.51	\$ 232.37	\$ 240.50	\$ 248.92		
Homes Passed	14263	14700	15150	15615	16093	16586	17095	17619	18158	18715	19288		
Take Rate	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Estimated Customers	7131	7350	7575	7807	8047	8293	8547	8809	9079	9357	9644		

Inflation Rate

Beginning Cash Balance	\$ 26,904,276	\$ 32,444,661	\$ 38,685,083	\$ 45,677,291	\$ 53,476,660	\$ 62,142,437	\$ 71,738,009	\$ 82,331,187	\$ 93,994,499	\$ 106,805,521	\$ 120,847,218		
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Estimated Revenue

Services - Subscriptions	\$ 15,101,020	\$ 16,108,526	\$ 17,183,250	\$ 18,329,678	\$ 19,552,593	\$ 20,857,097	\$ 22,248,636	\$ 23,733,015	\$ 25,316,428	\$ 27,005,483	\$ 28,807,228		
Source - Bonds Issued													
Source - Bond Interest													
Source - Internal Transfer													
Subtotal - Estimated Revenue	\$ 15,101,020	\$ 16,108,526	\$ 17,183,250	\$ 18,329,678	\$ 19,552,593	\$ 20,857,097	\$ 22,248,636	\$ 23,733,015	\$ 25,316,428	\$ 27,005,483	\$ 28,807,228		

Capital Project Expenses

	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30	Year 31	Year 32
Capital Project Costs											
New Development, Network Expansion (4% growth of town)	\$ 636,135	\$ 655,629	\$ 675,721	\$ 696,429	\$ 717,771	\$ 739,767	\$ 762,437	\$ 785,802	\$ 809,883	\$ 834,702	\$ 860,282
Utility Startup costs											
Backoffice Systems (Billing systems, Customer management, network and fiber management systems)											
Building Lease	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281
Internet Backbone/IP addresses											
Vehicles and Equipment											
Subtotal - Capital Project Expenses	\$ 681,416	\$ 700,910	\$ 721,002	\$ 741,710	\$ 763,052	\$ 785,048	\$ 807,719	\$ 831,084	\$ 855,165	\$ 879,984	\$ 905,563

Operational Expenses

Staffing (14 fully burdened, increasing at 3.5%)	\$ 3,140,633	\$ 3,250,555	\$ 3,364,325	\$ 3,482,076	\$ 3,603,949	\$ 3,730,087	\$ 3,860,640	\$ 3,995,762	\$ 4,135,614	\$ 4,280,360	\$ 4,430,173
Rent and utilities	\$ 92,674	\$ 95,918	\$ 99,275	\$ 102,750	\$ 106,346	\$ 110,068	\$ 113,921	\$ 117,908	\$ 122,035	\$ 126,306	\$ 130,726
Vehicle Maintenance	\$ 19,898	\$ 20,594	\$ 21,315	\$ 22,061	\$ 22,833	\$ 23,632	\$ 24,460	\$ 25,316	\$ 26,202	\$ 27,119	\$ 28,068
Vehicle and Equipment Replacement	\$ 71,787	\$ 74,300	\$ 76,900	\$ 79,592	\$ 82,377	\$ 85,260	\$ 88,245	\$ 91,333	\$ 94,530	\$ 97,838	\$ 101,263
Backhaul Internet services and network operations	\$ 179,081	\$ 185,349	\$ 191,836	\$ 198,550	\$ 205,500	\$ 212,692	\$ 220,136	\$ 227,841	\$ 235,815	\$ 244,069	\$ 252,611
Backoffice Systems (Billing systems, network and fiber management systems)	\$ 79,592	\$ 82,377	\$ 85,260	\$ 88,245	\$ 91,333	\$ 94,530	\$ 97,838	\$ 101,263	\$ 104,807	\$ 108,475	\$ 112,272
Marketing Expenses	\$ 29,847	\$ 30,891	\$ 31,973	\$ 33,092	\$ 34,250	\$ 35,449	\$ 36,689	\$ 37,974	\$ 39,303	\$ 40,678	\$ 42,102
Professional services	\$ 238,775	\$ 247,132	\$ 255,781	\$ 264,734	\$ 273,999	\$ 283,589	\$ 293,515	\$ 303,788	\$ 314,421	\$ 325,425	\$ 336,815
Customer Service Expenses	\$ 57,675	\$ 59,694	\$ 61,783	\$ 63,945	\$ 66,183	\$ 68,500	\$ 70,897	\$ 73,379	\$ 75,947	\$ 78,605	\$ 81,356
Debt Service (30 years @ 4.4%)	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 2,704,104	\$ 1,350,000
Operating Reserves @ 15%	\$ 2,265,153	\$ 2,416,279	\$ 2,577,488	\$ 2,749,452	\$ 2,932,889	\$ 3,128,565	\$ 3,337,295	\$ 3,559,952	\$ 3,797,464	\$ 4,050,822	\$ 4,321,084
Subtotal - Operational Expenses	\$ 8,879,218	\$ 9,167,193	\$ 9,470,040	\$ 9,788,600	\$ 10,123,764	\$ 10,476,476	\$ 10,847,740	\$ 11,238,619	\$ 11,650,241	\$ 12,083,802	\$ 11,186,471
TOTAL EXPENSES	\$ 9,560,634	\$ 9,868,103	\$ 10,191,042	\$ 10,530,310	\$ 10,886,816	\$ 11,261,525	\$ 11,655,459	\$ 12,069,703	\$ 12,505,405	\$ 12,963,786	\$ 12,092,034
Net Operating Revenue (Loss)	\$ 5,540,385	\$ 6,240,422	\$ 6,992,208	\$ 7,799,368	\$ 8,665,777	\$ 9,595,573	\$ 10,593,177	\$ 11,663,312	\$ 12,811,022	\$ 14,041,697	\$ 16,715,193

Ending Working Cash Balance	\$ 32,444,661	\$ 38,685,083	\$ 45,677,291	\$ 53,476,660	\$ 62,142,437	\$ 71,738,009	\$ 82,331,187	\$ 93,994,499	\$ 106,805,521	\$ 120,847,218	\$ 137,562,411
Loan Balance	\$ 21,699,352	\$ 19,914,302	\$ 18,049,106	\$ 16,100,165	\$ 14,063,721	\$ 11,935,844	\$ 9,712,429	\$ 7,389,186	\$ 4,961,634	\$ 2,425,089	\$ -
Net Cash	\$ 10,745,308.74	\$ 18,770,781.61	\$ 27,628,185.73	\$ 37,376,494.17	\$ 48,078,715.44	\$ 59,802,165.47	\$ 72,618,757.62	\$ 86,605,312.25	\$ 101,843,886.89	\$ 118,422,128.54	\$ 137,562,411.10

Johnstown Broadband Study
Exhibit G
Johnstown Broadband Utility Business Plan

Current Total Premises						
Take Rate						
Average Subscription Rate	\$ 257.63	\$ 266.65	\$ 275.98	\$ 285.64	\$ 295.63	\$ 305.98
Homes Passed	19880	20489	21117	21764	22431	23118
Take Rate	50%	50%	50%	50%	50%	50%
Estimated Customers	9940	10244	10558	10882	11215	11559
Inflation Rate						
Beginning Cash Balance	\$ 137,562,411	\$ 157,041,863	\$ 178,037,002	\$ 200,656,271	\$ 225,015,594	\$ 251,238,896
Estimated Revenue						
Services - Subscriptions	\$ 30,729,181	\$ 32,779,362	\$ 34,966,327	\$ 37,299,202	\$ 39,787,720	\$ 42,442,267
Source - Bonds Issued						
Source - Bond Interest						
Source - Internal Transfer						
Subtotal - Estimated Revenue	\$ 30,729,181	\$ 32,779,362	\$ 34,966,327	\$ 37,299,202	\$ 39,787,720	\$ 42,442,267
Capital Project Expenses						
	Year 33	Year 34	Year 35	Year 36	Year 37	Year 38
Capital Project Costs						
New Development, Network Expansion (4% growth of town)	\$ 886,645	\$ 913,817	\$ 941,821	\$ 970,683	\$ 1,000,430	\$ 1,031,088
Utility Startup costs						
Backoffice Systems (Billing systems, Customer management, network and fiber management systems)						
Building Lease	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281	\$ 45,281
Internet Backbone/IP addresses						
Vehicles and Equipment						
Subtotal - Capital Project Expenses	\$ 931,927	\$ 959,098	\$ 987,102	\$ 1,015,964	\$ 1,045,711	\$ 1,076,369
Operational Expenses						
Staffing (14 fully burdened, increasing at 3.5%)	\$ 4,585,229	\$ 4,745,712	\$ 4,911,812	\$ 5,083,725	\$ 5,261,656	\$ 5,445,814
Rent and utilities	\$ 135,302	\$ 140,037	\$ 144,939	\$ 150,012	\$ 155,262	\$ 160,696
Vehicle Maintenance	\$ 29,050	\$ 30,067	\$ 31,119	\$ 32,209	\$ 33,336	\$ 34,503
Vehicle and Equipment Replacement	\$ 104,807	\$ 108,475	\$ 112,272	\$ 116,201	\$ 120,268	\$ 124,478
Backhaul Internet services and network operations	\$ 261,453	\$ 270,604	\$ 280,075	\$ 289,877	\$ 300,023	\$ 310,524
Backoffice Systems (Billing systems, network and fiber management systems)	\$ 116,201	\$ 120,268	\$ 124,478	\$ 128,834	\$ 133,344	\$ 138,011
Marketing Expenses	\$ 43,575	\$ 45,101	\$ 46,679	\$ 48,313	\$ 50,004	\$ 51,754
Professional services	\$ 348,604	\$ 360,805	\$ 373,433	\$ 386,503	\$ 400,031	\$ 414,032
Customer Service Expenses	\$ 84,204	\$ 87,151	\$ 90,201	\$ 93,358	\$ 96,626	\$ 100,008
Debt Service (30 years @ 4.4%)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Reserves @ 15%	\$ 4,609,377	\$ 4,916,904	\$ 5,244,949	\$ 5,594,880	\$ 5,968,158	\$ 6,366,340
Subtotal - Operational Expenses	\$ 10,317,802	\$ 10,825,124	\$ 11,359,957	\$ 11,923,913	\$ 12,518,707	\$ 13,146,159
TOTAL EXPENSES	\$ 11,249,729	\$ 11,784,223	\$ 12,347,059	\$ 12,939,878	\$ 13,564,418	\$ 14,222,528
Net Operating Revenue (Loss)	\$ 19,479,452	\$ 20,995,140	\$ 22,619,268	\$ 24,359,324	\$ 26,223,302	\$ 28,219,739
Ending Working Cash Balance	\$ 157,041,863	\$ 178,037,002	\$ 200,656,271	\$ 225,015,594	\$ 251,238,896	\$ 279,458,635
Loan Balance						
Net Cash	\$ 157,041,862.74	\$ 178,037,002.41	\$ 200,656,270.59	\$ 225,015,594.49	\$ 251,238,896.21	\$ 279,458,635.19



Johnstown Broadband Study Exhibit H Revenue Share Model

TOWN OF JOHNSTOWN BROADBAND
BIZ PLAN MODEL

BUSINESS CASE:
INCOME BUSINESS MODEL

INPUTS

Capital Expense (CapEx):	\$ 36,800,000	Total Premises Passed:	8284	Ramp Up Schedule for Take Rate	
Subsidy (if any):	\$ -	Premises Served at Year 6:	4142		
Annual Inflation for OpEx:	2.00%	Take Rate Year 6 and beyond:	50%	Year	
Annual Service Rate Increase:	3.00%	Monthly Subscription (internet only):	\$ 95.00	1	10%
Income Rate (% of Gross):	25.00%	Estimated OpEx per premise:	\$ 500.00	2	15%
		Reserve Set Aside as a % of Gross Revenue:	15%	3	20%
				4	30%
				5	35%
				6	50%

Model Assumptions:

Model assumes Estimated Op Ex costs per premise similar to that inside local municipal boundaries.
 Model assumes Johnstown is paid a direct income at % of gross income.
 Model assumes Yearly Op Ex increases at rate of inflation at year 6.

Legend:

	= when service rate escalator starts (year 7 after 50% take rate stabilization)
	= when Op Ex starts inflation escalator
	= when Johnstown CapEx is returned

Triggers:

Payments to Johnstown are Income based. No interest is earned on the CapEx investment.
 No collateral or guarantee required. Operational risk on Municipal ISP, capital risk on Johnstown.
 ISP has rate setting authority to ensure market competitiveness and cost recovery.
 Reserve Set Aside is an operational component to municipal ISP and not included in the income return calculation to Johnstown.
 Gross Revenue shall not include taxes, fees or other charges that municipal ISP must pay governmental agencies.
 Subscription rates are for internet service only and do not include TV or phone packages.
 Year of recognized income to Johnstown is based off actual construction and service drop installation completion.

Count	Year	A	B	C	D = A - B - C	E = D - F	F	G	H	I	F-I	Running Income to Johnstown (After debt service)
		ISP Annual Gross Internet Revenue	ISP Annual Operational Expense	ISP Annual Reserve Set Aside	ISP Annual Net Revenue	ISP Ending Balance	Annualized Income to Johnstown	Running Income to Johnstown	Annualized ROI	Debt Service \$36.8MM	Annual Cash Shortfall after Debt Service	
1	2023	\$ 944,376	\$ 414,200	\$ 141,656	\$ 388,520	\$ 152,426	\$ 236,094	\$ 236,094	0.64%	\$ -	\$ 236,094	\$ 236,094
2	2024	\$ 1,416,564	\$ 621,300	\$ 212,485	\$ 582,779	\$ 228,638	\$ 354,141	\$ 590,235	0.96%	\$ 2,211,360	\$ (1,857,219)	\$ (1,621,125)
3	2025	\$ 1,888,752	\$ 828,400	\$ 283,313	\$ 777,039	\$ 304,851	\$ 472,188	\$ 1,062,423	1.28%	\$ 2,211,360	\$ (1,739,172)	\$ (3,360,297)
4	2026	\$ 2,833,128	\$ 1,242,600	\$ 424,969	\$ 1,165,559	\$ 457,277	\$ 708,282	\$ 1,770,705	1.92%	\$ 2,211,360	\$ (1,503,078)	\$ (4,863,375)
5	2027	\$ 3,305,316	\$ 1,449,700	\$ 495,797	\$ 1,359,819	\$ 533,490	\$ 826,329	\$ 2,597,034	2.25%	\$ 2,211,360	\$ (1,385,031)	\$ (6,248,406)
6	2028	\$ 4,721,880	\$ 2,112,420	\$ 708,282	\$ 1,901,178	\$ 720,708	\$ 1,180,470	\$ 3,777,504	3.21%	\$ 2,211,360	\$ (1,030,890)	\$ (7,279,296)
7	2029	\$ 4,863,536	\$ 2,154,668	\$ 729,530	\$ 1,979,338	\$ 763,453	\$ 1,215,884	\$ 4,993,388	3.30%	\$ 2,211,360	\$ (995,476)	\$ (8,274,772)
8	2030	\$ 5,009,442	\$ 2,197,762	\$ 751,416	\$ 2,060,264	\$ 807,904	\$ 1,252,361	\$ 6,245,749	3.40%	\$ 2,211,360	\$ (958,999)	\$ (9,233,771)
9	2031	\$ 5,159,726	\$ 2,241,717	\$ 773,959	\$ 2,144,050	\$ 854,118	\$ 1,289,931	\$ 7,535,680	3.51%	\$ 2,211,360	\$ (921,429)	\$ (10,155,200)
10	2032	\$ 5,314,518	\$ 2,286,551	\$ 797,178	\$ 2,230,789	\$ 902,159	\$ 1,328,629	\$ 8,864,310	3.61%	\$ 2,211,360	\$ (882,731)	\$ (11,037,930)
11	2033	\$ 5,473,953	\$ 2,332,282	\$ 821,093	\$ 2,320,578	\$ 952,089	\$ 1,368,488	\$ 10,232,798	3.72%	\$ 2,211,360	\$ (842,872)	\$ (11,880,802)
12	2034	\$ 5,638,172	\$ 2,378,928	\$ 845,726	\$ 2,413,518	\$ 1,003,975	\$ 1,409,543	\$ 11,642,341	3.83%	\$ 2,211,360	\$ (801,817)	\$ (12,682,619)
13	2035	\$ 5,807,317	\$ 2,426,507	\$ 871,098	\$ 2,509,713	\$ 1,057,884	\$ 1,451,829	\$ 13,094,170	3.95%	\$ 2,211,360	\$ (759,531)	\$ (13,442,150)
14	2036	\$ 5,981,536	\$ 2,473,037	\$ 897,230	\$ 2,609,269	\$ 1,113,885	\$ 1,495,384	\$ 14,589,554	4.06%	\$ 2,211,360	\$ (715,976)	\$ (14,158,126)
15	2037	\$ 6,160,982	\$ 2,524,537	\$ 924,147	\$ 2,712,298	\$ 1,172,052	\$ 1,540,246	\$ 16,129,800	4.19%	\$ 2,211,360	\$ (671,114)	\$ (14,829,240)
16	2038	\$ 6,345,812	\$ 2,575,028	\$ 951,872	\$ 2,818,912	\$ 1,232,459	\$ 1,586,453	\$ 17,716,253	4.31%	\$ 2,211,360	\$ (624,907)	\$ (15,454,147)
17	2039	\$ 6,536,186	\$ 2,626,529	\$ 980,428	\$ 2,929,230	\$ 1,295,183	\$ 1,634,047	\$ 19,350,299	4.44%	\$ 2,211,360	\$ (577,313)	\$ (16,031,461)
18	2040	\$ 6,732,272	\$ 2,679,059	\$ 1,009,841	\$ 3,043,372	\$ 1,360,304	\$ 1,683,068	\$ 21,033,367	4.57%	\$ 2,211,360	\$ (528,292)	\$ (16,559,753)
19	2041	\$ 6,934,240	\$ 2,732,641	\$ 1,040,136	\$ 3,161,463	\$ 1,427,903	\$ 1,733,560	\$ 22,766,927	4.71%	\$ 2,211,360	\$ (477,800)	\$ (17,037,553)
20	2042	\$ 7,142,267	\$ 2,787,293	\$ 1,071,340	\$ 3,283,634	\$ 1,498,067	\$ 1,785,567	\$ 24,552,494	4.85%	\$ 2,211,360	\$ (425,793)	\$ (17,463,346)
21	2043	\$ 7,356,535	\$ 2,843,039	\$ 1,103,480	\$ 3,410,016	\$ 1,570,882	\$ 1,839,134	\$ 26,391,628	5.00%	\$ 2,211,360	\$ (372,226)	\$ (17,835,572)
22	2044	\$ 7,577,231	\$ 2,899,900	\$ 1,136,585	\$ 3,540,747	\$ 1,646,439	\$ 1,894,308	\$ 28,285,935	5.15%	\$ 2,211,360	\$ (317,052)	\$ (18,152,625)
23	2045	\$ 7,804,548	\$ 2,957,898	\$ 1,170,682	\$ 3,675,968	\$ 1,724,831	\$ 1,951,137	\$ 30,237,073	5.30%	\$ 2,211,360	\$ (260,223)	\$ (18,412,487)
24	2046	\$ 8,038,685	\$ 3,017,056	\$ 1,205,803	\$ 3,815,826	\$ 1,806,155	\$ 2,009,671	\$ 32,246,744	5.46%	\$ 2,211,360	\$ (201,689)	\$ (18,614,536)
25	2047	\$ 8,279,845	\$ 3,077,397	\$ 1,241,977	\$ 3,960,471	\$ 1,890,510	\$ 2,069,961	\$ 34,316,705	5.62%	\$ 2,211,360	\$ (141,399)	\$ (18,755,935)
26	2048	\$ 8,528,241	\$ 3,138,945	\$ 1,279,236	\$ 4,110,059	\$ 1,977,999	\$ 2,132,060	\$ 36,448,765	5.79%	\$ 2,211,360	\$ (79,300)	\$ (18,835,235)
27	2049	\$ 8,784,088	\$ 3,201,724	\$ 1,317,613	\$ 4,264,751	\$ 2,068,729	\$ 2,196,022	\$ 38,644,787	5.97%	\$ 2,211,360	\$ (15,338)	\$ (18,850,573)
28	2050	\$ 9,047,610	\$ 3,265,758	\$ 1,357,142	\$ 4,424,710	\$ 2,162,808	\$ 2,261,903	\$ 40,906,690	6.15%	\$ 2,211,360	\$ 50,543	\$ (18,800,030)
29	2051	\$ 9,319,039	\$ 3,331,074	\$ 1,397,856	\$ 4,590,109	\$ 2,260,350	\$ 2,329,760	\$ 43,236,449	6.33%	\$ 2,211,360	\$ 118,400	\$ (18,681,631)
30	2052	\$ 9,598,610	\$ 3,397,695	\$ 1,439,791	\$ 4,761,123	\$ 2,361,471	\$ 2,399,652	\$ 45,636,102	6.52%	\$ 2,211,360	\$ 188,292	\$ (18,493,338)
31	2053	\$ 9,886,568	\$ 3,465,649	\$ 1,482,985	\$ 4,937,934	\$ 2,466,292	\$ 2,471,642	\$ 48,107,744	6.72%	\$ 2,211,360	\$ 260,282	\$ (18,233,056)
32	2054	\$ 10,183,165	\$ 3,534,962	\$ 1,527,475	\$ 5,120,729	\$ 2,574,937	\$ 2,545,791	\$ 50,653,535	6.92%	\$ -	\$ 2,545,791	\$ (15,687,265)
33	2055	\$ 10,488,660	\$ 3,605,661	\$ 1,573,299	\$ 5,309,700	\$ 2,687,535	\$ 2,622,165	\$ 53,275,700	7.13%	\$ -	\$ 2,622,165	\$ (13,065,100)
34	2056	\$ 10,803,320	\$ 3,677,774	\$ 1,620,498	\$ 5,505,048	\$ 2,804,218	\$ 2,700,830	\$ 55,976,530	7.34%	\$ -	\$ 2,700,830	\$ (10,364,270)
35	2057	\$ 11,127,420	\$ 3,751,330	\$ 1,669,113	\$ 5,706,977	\$ 2,925,122	\$ 2,781,855	\$ 58,758,385	7.56%	\$ -	\$ 2,781,855	\$ (7,582,415)
36	2058	\$ 11,461,242	\$ 3,826,356	\$ 1,719,186	\$ 5,915,699	\$ 3,050,389	\$ 2,865,311	\$ 61,623,696	7.79%	\$ -	\$ 2,865,311	\$ (4,717,104)
37	2059	\$ 11,805,079	\$ 3,902,884	\$ 1,770,762	\$ 6,131,434	\$ 3,180,164	\$ 2,951,270	\$ 64,574,965	8.02%	\$ -	\$ 2,951,270	\$ (1,765,835)
38	2060	\$ 12,159,232	\$ 3,980,941	\$ 1,823,885	\$ 6,354,406	\$ 3,314,598	\$ 3,039,808	\$ 67,614,773	8.26%	\$ -	\$ 3,039,808	\$ 1,273,973
39	2061	\$ 12,524,009	\$ 4,060,560	\$ 1,878,601	\$ 6,584,847	\$ 3,453,845	\$ 3,131,002	\$ 70,745,775	8.51%	\$ -	\$ 3,131,002	\$ 4,404,975
40	2062	\$ 12,899,729	\$ 4,141,771	\$ 1,934,959	\$ 6,822,998	\$ 3,598,066	\$ 3,224,932	\$ 73,970,708	8.76%	\$ -	\$ 3,224,932	\$ 7,629,908

Totals (40 year):	\$ 110,165,534	\$ 44,382,425	\$ 141,334,872	\$ 67,364,164	\$ 73,970,708
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Total Estimated CapEx Returned to Johnstown (40 yr):	\$ 73,970,708
Time to Recover CapEx (years):	26

**INTERGOVERNMENTAL AGREEMENT FOR
PULSE BROADBAND SERVICES
IN THE TOWN OF TIMNATH**

THIS INTERGOVERNMENTAL AGREEMENT FOR PULSE BROADBAND SERVICES IN THE TOWN OF TIMNATH (“Agreement”) is made and entered into this 14th day of December, 2023, by and between the City of Loveland, Colorado (“Loveland”) and the Town of Timnath, Colorado (“Timnath”) (individually a “Party” and collectively the “Parties”).

RECITALS

WHEREAS, Loveland is a home-rule municipality which has established the Loveland Electric and Communications Enterprise, branded as “Loveland Pulse” (“Pulse”) to undertake the financing, construction, and all further operations for the provision of municipal broadband internet service, as that term is defined at C.R.S. § 40-15-102(3.3); and

WHEREAS, Timnath is a home-rule municipality that wishes to provide its residents access to high-quality broadband internet service; and

WHEREAS, to leverage Loveland and Timnath’s respective resources and efficiencies to provide reliable, competitive, and cost-effective broadband internet service with high-speed internet capable of at least one gigabits-per-second (1 Gbps) upload and download speeds (“Broadband Service”), the Parties each desire to collaborate with each other; and

WHEREAS, Loveland has the means to design, construct, and operate a Broadband Network (defined below) within the jurisdictional boundaries of Timnath to provide Broadband Service to Timnath residents and Timnath does not currently have the financial or institutional means to directly provide such Broadband Service and would benefit from Loveland providing such service; and

WHEREAS, to establish the manner and means by which Loveland will design, construct, own, and operate a Broadband Network within Timnath and Timnath will pay for the design and construction of such Broadband Network, the Parties wish to enter this Agreement; and

WHEREAS, as Colorado governmental entities, Loveland and Timnath are authorized, pursuant to Colo. Const. art. XIV, § 18(2)(a) and C.R.S. § 29-1-203, to cooperate or contract with one another to acquire or provide any government function, service, or facility lawfully authorized to each.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the Parties agree as follows:

AGREEMENT

- 1. Recitals.** The above recitals are incorporated as though stated herein.

- 2. Grant of Access.** Timnath grants Loveland the non-exclusive authority to enter any and all parts of the Town of Timnath to provide Broadband Service. This access encompasses the right to provide Broadband Service to Timnath residents—natural persons, commercial enterprises, or otherwise—as well as install and maintain Broadband Service facilities to serve such residents. By this grant of access, Timnath does not purport to convey, nor does Loveland purport to receive, the right to enter private property that would require permission from private entities, including natural persons or corporate entities, for access to provide Broadband Services. Timnath will grant Loveland access to all Timnath owned rights-of-way through its permitting process to deliver Broadband Service to Timnath residents. Access shall not occur prior to the appropriate and necessary permit(s) being issued. Access granted by Timnath shall not impede or otherwise violate any other existing agreements with other parties and shall be subject to any existing easements, rights, or privileges of third parties and new installations shall not be located in a manner that interferes with existing facilities installed in the right-of-way. Timnath will establish a bulk right-of-way permitting process to allow Loveland to permit no less than two hundred (200) premises at a time.
- 3. Work Performed by Loveland.** In its reasonable discretion, Loveland, through Pulse or any successor entity, shall undertake the design, procurement of materials, and construction of a broadband network (“Broadband Network”), as defined in C.R.S. § 40-15-102 (3.7), (the “Work”) to serve Timnath residents and properties in accordance with work orders (“Work Order”), an example of which is attached hereto as **Exhibit A**, that will define a specific portion of the Broadband Network to design and construct. The Parties agree that the Work may be performed in phases, where each phase will consist of Loveland designing, procuring materials, and constructing a portion of the Broadband Network to serve a specified area (“Service Area”) in Timnath. Each phase may be divided into several Work Orders, and the sum of the cost for the Work Orders for a phase shall not exceed the total Broadband Services Funding for that phase (defined below) as authorized by the Town Council of Timnath. The Work shall be performed in a good and workmanlike manner and in accordance with applicable laws. The scope of work will be further defined in each Work Order. Following installation or repair of any portion of the Broadband Network that disturbs property within the Town of Timnath, Loveland shall restore the property to substantially its condition prior to the construction or repair.
- 4. Timnath to Fund All Design, Procurement, and Construction.** Timnath will pay for all design, procurement of materials, and construction undertaken under this Agreement (“Broadband Service Funding”). Once a Work Order is initiated by mutual consent and written agreement of Timnath and Loveland, Timnath will make payment to Loveland an amount sufficient to cover all estimated costs related to the Work Order. Eligible uses of Broadband Service Funding include, but are not limited to, all costs related to reasonable and necessary design, engineering, labor, licenses, outside plant and service drop installation, permitting, materials, supplies, equipment, equipment rentals, construction-related education and outreach, reimbursables, federal, state, and local income taxes, if any, payroll for Loveland employees for time actually worked on the Work Order along with related unemployment taxes, unemployment insurance and social security withholdings, and other costs necessary in the performance of the Work. Loveland shall not treat

Broadband Service Funding as revenue or profit for provision of Broadband Service. In the event the Work for a Work Order has not been initiated within one-half year (one-hundred and eighty-three days) of Timnath providing the funding to Loveland for the specific Work Order, Timnath shall be permitted to require Loveland to return the Timnath Broadband Service Funding along with any interest that has accrued in connection with the funds, if the funds have been invested in an interest-bearing account. In the event the cost of design, procurement of materials, and construction for a Work Order exceed the amount paid by Timnath at the initiation of the Work Order, Loveland will submit a change order for review and approval by Timnath, along with support showing the need for the change order, and Timnath shall pay the increased amount within 45 days of approval of the change order. If Timnath does not approve the change order, representatives of the Parties shall meet to resolve their differences over the change order and the work performed under the Work Order will be limited to the work that can be completed for the approved funds. In the event the cost of design, procurement of materials, and construction for a Work Order are less than the amount paid by Timnath at the initiation of the Work Order, Loveland will refund Timnath such excess funds within sixty (60) days of substantial completion of the Work Order along with any interest that has accrued in connection with the funds, if the funds have been invested in an interest-bearing account.

5. **Timing and Order of Construction.** Loveland shall have authority to make decisions about design, procurement of materials, construction, and delivery of Broadband Service, including the right to deny a request from Timnath that a new Work Order be initiated. Timnath, though, shall have authority to determine which neighborhoods and general areas of Timnath will receive priority in Loveland's performance of the Work under each Work Order. Each Work Order shall set forth the timeframe for completion of such Work Order, which may be extended by written agreement of the Parties. Loveland shall coordinate its Work with Timnath by providing Timnath with copies of design drawings and work schedules prior to commencement of construction in any new area. Timnath shall have ten (10) business days to comment on the proposed design and/or construction timeline, which comments shall be duly considered by Loveland. If the design or construction timeline is substantively changed, a revised copy shall be provided to Timnath.
6. **Costs.** Loveland shall be responsible to pay, using the Broadband Service Funding, any contractors or consultants who assist in designing or constructing the Broadband Network in Timnath. All amounts paid by Timnath for the Broadband Service Funding shall be restricted funds that may be used only in connection with the costs identified in a Work Order and its respective scope of work.
7. **Maintenance of Broadband Network.** Once the Broadband Network, or any portion thereof, is fully constructed, Loveland shall be responsible for the costs and performance of ongoing maintenance of the network.
8. **Services Provided to Town of Timnath Facilities.** Pursuant to a separate agreement that will be negotiated between Loveland and Timnath, Loveland will provide high-speed internet (1 Gbps or greater), managed, or other services to the town government of Timnath to serve its properties and facilities, upon Timnath's request. The Parties shall establish

market appropriate government services and pricing applicable to Timnath requests. Loveland will also establish bulk services and pricing to meet Timnath's low-bandwidth or otherwise identified needs. Timnath will pay a monthly fee applicable to the services that are provided.

9. **Service Guarantee.** Loveland shall ensure continuous availability of Broadband Service to any property which is fiber-enabled (i.e., connected for service whether or not the property is taking service) with Broadband Service Funding paid by Timnath for a twenty-five-year period to be calculated from the date the property is first fiber-enabled. In addition, Loveland shall allow new properties to connect for service during such period if active fiber runs through a public street adjacent to the property. These obligations shall survive termination of this Agreement. These obligations shall not remain in effect in the event Loveland is prohibited from providing Broadband Services to Timnath pursuant to any future law adopted by the state or federal government. These obligations also shall not remain in effect in the event Loveland has ceased broadband operations, unless this Agreement is assigned to a successor as provided below. Provided, however, that if Loveland ceases broadband operation, it shall either:
 - A. Assign all property and facilities funded by the Broadband Service Funding, as well as this Agreement, to a successor governmental entity with the capability of continuing to provide Broadband Service, with the consent of Timnath, which shall not be unreasonably withheld; or
 - B. Convey by bill of sale, free and clear of encumbrances without payment of additional consideration by Timnath, the Broadband Network constructed within Timnath's corporate limits that was funded by the Broadband Service Funding.
10. **Revenues.** Loveland shall be solely entitled to the revenues generated by the provision of the Broadband Services, except for any revenue sharing provided for herein.
11. **Gross Revenue Sharing Between Parties.** Where Loveland provides Broadband Service to a Service Area and the Broadband Network used to serve the Service Area has been at least 75% funded by Broadband Service Funding, Loveland shall distribute a portion of the Gross Revenue from such Service Area to Timnath in the following manner:
 - A. Beginning one (1) year after Loveland initiates Broadband Service to the Service Area (i.e. twelve (12) full months of Pulse service provided to any property within the Service Area, not calculated based on when the Service Area is fiber-enabled), Loveland will distribute **25% of its Gross Revenue from the area** to Timnath, on a quarterly basis.
 - B. "Gross Revenue" shall mean the revenue Loveland receives from the person for wired internet data service plans. Gross Revenue shall not include managed services including WiFi, voice (VoIP), TV services, or other non-wired internet data service packages. Gross Revenue shall not include any taxes, fees, or charges that Loveland

must remit to any regulatory or governmental body on the customer's behalf or on Pulse's own behalf.

- C. The City's obligation to share revenue with Timnath shall only apply to Broadband Service provided to properties in incorporated areas of Timnath as a result of and at the time of Timnath's funding provided under this Agreement and properties annexed into the Town of Timnath after the initial funding but prior to collection of the service fees.
- D. Loveland's Gross Revenue sharing obligation under this Agreement shall in no way extend to revenues, facilities, goods or assets, that were funded by bond proceeds garnered by the City of Loveland and are subject to any bond covenant whatsoever (i.e., any revenues or assets associated with property within Loveland Power's electric service territory); provided that Loveland represents that it has not and shall not pledge any proceeds from broadband internet service provided to residents within Timnath.
12. **Service Drop Connections.** During the first five (5) years of service to a Service Area—to be calculated from the date that the first property in the Service Area is fiber-enabled—Timnath will fund service drop connections to premises if the take rate is 40% or less. If the take rate is greater than 40%, Loveland will fund service drop connections. After five (5) years of service to the Service Area, all service drop connections will be funded by Loveland.
13. **Ownership and Management of Broadband Services Facilities.** Loveland shall own and control the facilities it constructs or uses to provide Broadband Service in Timnath. Any issues that may arise in the construction and management of the Broadband Network shall remain entirely within Loveland's control and discretion. Service questions and calls shall be directed to Loveland. Timnath may notify Loveland of any known service problem, and the Parties shall work together in good faith to resolve it.
14. **Other Agreements.** Should Loveland use a portion of the Broadband Network constructed in the Town of Timnath and paid for by Broadband Service Funding to provide services to third parties, such as, but not limited to, leasing dark fiber, leasing conduit, or participating in small-cell projects where such services generate revenue, a separate agreement shall be negotiated and entered into between Loveland and Timnath that provides reasonable revenue to Timnath for its capital investment in such revenue-generating infrastructure.
15. **New Development.** Timnath has the option to provide funding for expansion of the Broadband Network to any new development within Timnath's corporate limits at its sole discretion, in which case such installation shall be added to a new Work Order.
16. **Marketing.** Timnath and Loveland will work to jointly develop brand standards and coordinated community outreach for the Broadband Service funded under this Agreement. Loveland will direct and control all customer marketing initiatives.

- 17. Permitting and Franchise Requirements.** Loveland’s installation and maintenance activities remain subject to all applicable permitting requirements, including Timnath right-of-way rules. Any cable television service, as defined by C.R.S. § 29-27-102(2), that Loveland may offer to its customers shall be subject to any franchise requirement that may exist under Timnath’s laws.
- 18. Records and Audits.** Loveland will maintain complete and accurate records of all charges incurred for the Work, in accordance with generally accepted accounting principles, for a period of thirty-six (36) months from the date of termination or completion of the Work. Timnath will have the right to inspect the Loveland’s records relating to the Work at reasonable times and upon reasonable notice and to retain copies thereof. Such records will include: (i) the date(s) Work was performed; (ii) a description of the Work performed; (iii) names of the individuals or subcontractors performing the Work; (iv) hours worked; (v) billing or compensation rate for the Work; and (vi) all other direct expenditures allowable. In the event of a disagreement about the validity of any cost, the Parties agree to work in good faith to resolve such disagreement. While construction is active on any project described in each Work Order, Loveland shall provide monthly reporting of all expenditures and the construction status, including copies of contractor pay requests, on each Work Order, in a form agreeable to both Parties.
- 19. Procurement.** In procuring goods and services for the Work, Loveland shall comply with all applicable laws, rules, and regulations. Notwithstanding any other provision of this Agreement, Loveland shall retain full discretion and authority in determining the terms of bidding related to the Work, the project delivery method, the project design, the letting of contracts for construction, construction oversight, and budget management.
- 20. Compliance with Law.** Loveland shall be solely responsible for obtaining and maintaining any required permits, including Timnath right-of-way permits, and for complying with all applicable laws and regulations relating to the Work, including but not limited to safety, construction, easements, and employment laws and regulations.
- 21. Insurance.** Loveland shall obtain and keep in full force and effect general liability insurance or comparable self-insurance covering its actions and activities permitted under this Agreement in an amount at least equivalent to Loveland’s liability under the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, et seq. Loveland shall ensure that any contractor or subcontractor maintain all insurance customary for the completion of the Work as required by this Agreement, including without limitation general liability insurance, professional liability insurance (for design engineers), workers compensation insurance, auto liability insurance and builder’s risk insurance (for the general contractor). Timnath shall be named as an additional insured on the engineer and general contractor’s general liability insurance and auto liability insurance policies.
- 22. Loveland Liability.** Loveland shall be responsible for any and all claims, damages, liability and court awards, including costs and expenses, incurred as a result of any action or omission of its officers, employees, contractors, and agents, in connection with its performance under this Agreement.

23. Term and Termination.

- A. Effective Date. This Agreement shall be effective from the date first written above and shall not terminate unless as provided below.
- B. Termination for Convenience. Upon thirty (30) days written notice, Timnath may terminate this Agreement, in whole or in part, if it determines, in its sole discretion that termination is in Timnath's best interests. After notice of termination has been given, Loveland and all contractors or subcontractors shall stop Work on the cancellation date specified in the notice.
- C. Termination for Cause. Either Party may terminate this Agreement in the event the other Party is in default of its obligations under this Agreement and fails to substantially cure the default within thirty (30) days following written notice from the other Party; provided, however, that if such default by nature cannot reasonably be cured with due diligence within thirty (30) days, then the Party shall continue to diligently pursue a cure within sixty (60) days of receiving notice.
- D. Effect of Termination. In the event of termination, either for convenience or cause, Loveland will be compensated for the Work performed prior to the date of termination. Loveland will not be reimbursed for any anticipated work or profit. Timnath's obligation to pay Loveland for all Work performed shall survive termination of this Agreement; and Loveland's obligation to refund Timnath any Broadband Service Funding that has not been used for Work, shall also survive the termination of the Agreement. In spite of any termination, Loveland shall continue to own and maintain its Broadband Service Facilities that exist in Timnath as of the date of termination and provide Broadband Service to any property that is fiber-enabled as of the date of termination.

24. Assignment. The Parties shall not assign the right or responsibilities of this Agreement without written approval from the other party.

25. Notices. Written notices required under this Agreement and all other correspondence between the Parties shall be directed to the following and shall be deemed received when hand-delivered or three (3) days after being sent by certified mail, return receipt requested or (1) day after being sent by national overnight delivery provider, or as may be updated in writing provided according to this notice procedure.

If to Loveland: Briana Reed-Harmel
 Municipal Fiber Manager
 Loveland Pulse
 200 North Wilson Avenue
 Loveland, CO 80537
 Briana.Reed-Harmel@cityofloveland.org
 970-962-3592

With copies to: Loveland City Attorney's Office
Broadband Matters
500 East Third Street, Suite 330
Loveland, CO 80537

If to Timnath: Aaron Adams
Town Manager
Town of Timnath
4750 Signal Tree Drive
Timnath, CO 80547
aadams@timnathgov.com
970-224-3211

With copies to: Town Attorney
Town of Timnath
4750 Signal Tree Drive
Timnath, CO 80547

26. Amendment. Any amendments to this Agreement must be in writing signed by both Parties. Approval of amendments to this Agreement will be managed according to the respective approval policies of each Party. The Parties expressly agree to allow mutual administrative approval and signature in writing of amendments at any time in accordance with the Parties' administrative approval policies.

27. General Terms.

A. Subject to Appropriation; No Multiple Year Obligation. It is understood and agreed by the Parties that any obligation of Loveland or Timnath hereunder, whether direct or contingent, shall extend only to funds appropriated by the Parties' respective governing bodies and encumbered for the purpose of this Agreement. The Parties do not by this Agreement, irrevocably pledge present cash reserves for payments in future fiscal years. Likewise, this Agreement shall not create a multiple-fiscal year direct or indirect debt or financial obligation of either Loveland or Timnath.

B. Employee Status. All employees of each governmental entity who perform any services in relation to this Agreement shall remain the employees solely of the governmental entity employing them to perform such services and not of any other Party hereto. Neither Party shall obtain, by virtue of paying or being reimbursed for costs under this Agreement, any direct control over the management, scheduling or facilities of the other Party.

C. Governmental Immunity Act. No term or condition of this Agreement shall be construed or interpreted as a waiver, by either Party, express or implied, of any of the immunities, rights, benefits, protections, or other provisions of the Colorado Governmental Immunity Act, C.R.S. § 24-10-101 et seq.

D. Entire Agreement. This Agreement contains the entire agreement of the Parties relating to the subject matter hereof.

- E.** No Third-Party Beneficiary. The Parties understand and expressly agree that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to the Parties. Nothing contained in this Agreement shall give or allow any such claim or right of action by any third person. It is the express intention of the Parties that any person other than the signatories hereto receiving benefits under this Agreement shall be deemed to be an incidental beneficiary only.
- F.** Severability. In the event a court of competent jurisdiction holds any provision of this Agreement invalid or unenforceable, such holding shall not invalidate or render unenforceable any other provision of this Agreement.
- G.** Headings. Paragraph headings used in this Agreement are for convenience of reference and shall in no way control or affect the meaning or interpretation of any provision of this Agreement.
- H.** Governing Law and Venue. This Agreement shall be governed by the laws of the State of Colorado, and venue shall be in the County of Larimer, State of Colorado.
- I.** Legal Constraints. The Parties recognize the legal constraints imposed upon them by the constitutions, statutes, and regulations of the State of Colorado and of the United States and imposed upon the Parties by their respective local laws, including, charters and local codes. Subject to such constraints, the Parties intend to carry out the terms and conditions of this Agreement. Notwithstanding any other provision in this Agreement to the contrary, in no event shall either of the Parties exercise any power or take any action which shall be prohibited by applicable law.
- J.** Counterparts. This Agreement may be executed in separate counterparts, and the counterparts taken together shall constitute the whole of this Agreement.
- K.** Electronic Signature. This Agreement may be executed by electronic signature.
- L.** Recording. A copy of this Agreement shall be recorded in the real property records of the Larimer County Clerk and Recorder.

[Signature appear on the following page]

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first above written.

City of Loveland, Colorado

By: Stephen Adams

Title: City Manager

Date: 12/14/2023

ATTEST:



Chad Thompson
Deputy City Clerk

Date: 12/14/23

APPROVED AS TO FORM:

[Signature]
Assistant City Attorney

Town of Timnath, Colorado

By: DocuSigned by: Aaron Adams
A7C88DDD439C4A6...

Title: Town Manager

Date: 11/21/2023

ATTEST:

DocuSigned by: Melissa Peters-Garcia
07A6AF3B02114D7...

Town Clerk

Date: 11/21/2023

APPROVED AS TO FORM:

DocuSigned by: Carolyn Stoff
F44B3963ECD949F...

Town Attorney

EXHIBIT A

*to Intergovernmental Agreement for Pulse Broadband Services in the Town of Timnath
Template Work Order*

WORK ORDER # ____
Dated ____, 20__

This Work Order is adopted by the City of Loveland (“Loveland”) and the Town of Timnath (“Timnath”) pursuant to that certain Intergovernmental Agreement for Pulse Broadband Services in the Town of Timnath, dated XX, XX, 2023 (“Agreement”). The terms and conditions of the Agreement are incorporated herein. In the event of a conflict between this Work Order, as defined in the Agreement, and the Agreement, the terms of the Agreement shall control. Upon execution, a copy of this Work Order shall be attached to and incorporated into the Agreement; however, the Parties will not be required to re-record the Agreement for each new Work Order.

Project Title: Timnath Broadband Network

Notice to Proceed and Commencement Date: _____

Completion Date for this Work Order: _____

Funding Phase of Work Order: _____

Description of Work:

Description of Service Area(s) to be provided Broadband Network in this Work Order, *see also attached map:*

Funding Amount for this Work Order: _____

Total Funding for all Work Orders under this Phase: _____

Total Funding for all Work Orders under the Agreement: _____

City of Loveland

By: _____
City Manager

Date: _____

Town of Timnath

By: _____
Town Manager

Date: _____

Exhibit J - Glossary of Terms

The following definitions, terms, and abbreviations are applicable to this blueprint report.

Broadband Industry and Technology terms:

Backhaul – Principal routes between strategically interconnected access points of the internet, covers long distances such as submarine cables, often made from optical fibers, internet backbone

Bandwidth – Historical term for the number of frequencies used to transmit data. These days, bandwidth is used as a term for “speed” and the rate (or amount) of data transferred over time

Bit – most basic unit of digital data, encoded 1s and 0s, “on” and “off”

Broadband – Historical term for a faster data transmission technique. These days broadband is synonymous with “high speed internet”. Defined by the FCC as 25 Mbps download and 3 Mbps upload. Defined by the Colorado Broadband Office as 100 Mbps download and 20 Mbps upload

Broadband Serviceable Location – The NTIA defines a “Broadband Serviceable Location” (BSL) as any business or residential location at which fixed broadband Internet access service is, or can be, installed.

Dark Fiber – Unused fiber in a cable or network. The fiber is “dark” because there is no signal on the fiber meaning it is available for lease

Eligible Community Anchor Institution – Community Anchor Institution that lacks access to Gigabit-level broadband service (e.g., schools, fire stations, police stations, hospitals)

Fixed Broadband Technologies – Categories of fixed broadband technologies that deliver broadband service to a serviceable location:

- 1) **Copper** – Broadband service delivered over copper wireline including DSL, ADSL, VDSL, xDSL, etc.
- 2) **Cable** – Broadband service provided over coaxial cable wireline.
- 3) **Coax** – Coaxial cable, shielded copper conductor used to transmit high frequency electrical signals
- 4) **Fiber** – Broadband service offered to the end user with optical wireline equipment.
- 5) **Unlicensed Wireless** – Broadband service delivered over unlicensed wireless frequencies, meaning any provider can use the spectrum if they comply with FCC regulations. Unlicensed frequencies relevant to modern speed requirements include channels in the 2.4 GHz, 5 GHz, 6 GHz, and 60 GHz frequency range.
- 6) **Licensed Wireless** – Broadband service provided by radio frequencies that are allocated by the FCC and NTIA for auction and exclusive use by the licensed carrier (Verizon, T-Mobile, AT&T, Dish Wireless, etc.) These technologies are sometimes referred to as LTE, 2G, 3G, 4G, 5G.

- 7) **Geostationary Satellite (GSO)** – Broadband service provided from satellites in a geostationary orbit. GSO broadband is the traditional service offered from satellites beginning with communications and television covered dating back to 1960s.
- 8) **Non-Geostationary Satellite** – Broadband service provided from satellites orbiting much closer to the Earth than GSO satellites, and therefore capable of providing broadband services at a much lower latency and higher bandwidth than previously available via GSO service.

Fixed Broadband Service – Any broadband service offered to a location that does not physically move. This includes DSL, Cable, Fiber, Licensed Wireless, Unlicensed Wireless, and Satellite services. Fixed broadband is defined as a category in comparison to *mobile broadband service* offered to mobile phones.

FTTH - Fiber To The Home.

FTTP – Fiber To The Premise.

FTTx - Fiber To The X ("anything").

Gbps - Gigabit per second (Gbps), (1,000 Mbps)

GIS – Geographic Information system. Software that combines maps and databases to manage, analyze, and visualize data. Many different programs offer GIS functionality, common software is ESRI's "ArcGIS", such as ArcMap or ArcPro

Latency – Time taken for source-to-destination data transfer.

Mbps – Megabit per second (Mbps), one million bits per second.

Middle Mile Infrastructure – Any broadband infrastructure that does not connect directly to an end-user. This includes leased dark fiber, backhaul, carrier-neutral internet exchange facilities, transport connectivity to data centers, and 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.

Municipal Fiber – Publicly owned Internet Service Provider classified as a utility, fully accountable to voters, "future proofed" with easily scalable bandwidth.

National Broadband Map - The national broadband map¹ shows all broadband service offerings to all BSLs in the United States. This is the map replaced the previous form 477 broadband data collection method. Using the fabric dataset, the National Telecommunication and Information Administration (NTIA) will apportion federal dollars to the states and the CBO will award grants to agencies using this data.

¹ <https://broadbandmap.fcc.gov/home>

Open Access— The term “open access” refers to an arrangement in which nondiscriminatory access to and use a network on a wholesale basis to other providers seeking to provide broadband service to end-user locations.

Optical Fiber – Typically made from glass (silica/quartz) approximately same size as a strand of hair: 0.002” - 0.005” (50 – 125 µm).

Reliable Broadband Service – The NTIA defines “Reliable Broadband Service” as a broadband service shown available to a serviceable location on the National Broadband Map.

ROW – (Right-of-way) A strip of land used to construct, operate, maintain and repair transmission line utilities. Right of way is the legal right to pass along a specific route through property belonging to another.

Terrestrial Broadband – Terrestrial broadband is any fixed wireless or wireline (cable or fiber) broadband service offered to a serviceable location. This term is in comparison to satellite broadband technologies.

Wireline Broadband – Wireline broadband is any service delivered to a serviceable location over a wire or cable. This includes copper wires, coaxial cables, and optical fiber cables.

Grants, Organizations and Regulations

Affordable Connectivity Program (ACP) – The Affordable Connectivity Program is an FCC monthly benefit program that helps ensure households can afford the broadband they need for work, school, healthcare, etc. The stipend provides up to \$30 per month for eligible households or \$75 per month on qualifying Tribal lands.

Broadband Equity, Access, and Deployment (BEAD) - The Broadband Equity, Access, and Deployment Program, provides \$42.45 billion to expand high-speed internet access by funding planning, infrastructure deployment and adoption programs in all 50 states.

Colorado Broadband Office (CBO) – The Colorado Broadband Office² is part of the Governor’s Office of Information Technology (OIT) and is charged with overseeing and coordinating broadband activity across state agencies. The agency has developed a five-year strategic plan outlining how Colorado will invest \$500 to \$700 million to connect 99% of households to high-speed broadband.

Colorado Senate Bill 152 - In 2005, the Colorado General Assembly passed Senate Bill 05-152, which excludes local governments from entering the broadband market and prohibits most uses of municipal or county money for infrastructure to improve local broadband service without voter permission. This took away local governments’ ability to compete with the private sector within the broadband marketplace. More than 100 municipalities have opted out of this restriction as of 2022 through local ballot initiatives.

Colorado Senate Bill 22-083 – Signed into law in 2022, Senate Bill 22-083 required CDOT to develop an electronic application, permitting, contract, and fee structure to facilitate access by

² <https://broadband.colorado.gov/>

nongovernmental entities to public rights-of-way for the deployment of broadband and requires acceptances and denials of such access by CDOT to be provided in writing and made available to the public.

Department of Local Affairs (DOLA) – The Department of Local Affairs³ earmarks \$5 million each year to assist local government efforts to enhance broadband access. The majority of grant funding is directed to smaller and more rural communities where sufficient broadband service is lacking.

Infrastructure Investment and Jobs Act (IIJA) – The Infrastructure Investment and Jobs Act⁴ was signed into law by President Biden on November 15, 2021. The law authorizes \$1.2 trillion for transportation and infrastructure spending with \$550 billion of that figure going toward new investments and programs.

National Telecommunications and Information Administration (NTIA) - The NTIA⁵ is the Executive Branch agency that is principally responsible for advising the President on telecommunications and information policy issues.

³ <https://cdola.colorado.gov/funding-programs/broadband-program>

⁴ <https://www.gfoa.org/the-infrastructure-investment-and-jobs-act-ijja-was>

⁵ <https://www.ntia.doc.gov/>