UTAH BROADBAND CENTER CONNECTING UTAH

TOWN OF BRIGHTON LOCAL BROADBAND PLAN

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EXECUTIVE SUMMARY

VISION	The Town of Brighton's vision for broadband infrastructure is to establish service to all unserved areas of the community and ensure current services meet the minimum requirements for the community.			
KEY BARRIERS	**Regulatory**	**Procurement or Contracting**	**Labor**	**Topography**
	Strict watershed and forest service regulations create barriers.	The community is small pockets of private property land locked by public land.	The community has limited staff and resources to accomplish large projects.	Residential pockets are dispersed across a mountainous terrain.
COVERED POPULATIONS	Individuals who reside in a rural area	Veterans	Individuals who are members of racial or ethnic minority group	Individuals who live in low-income households	Aging individuals
GOALS	Provide high-speed internet access to all highly populated areas of the community.	Establishing high-speed internet in all unserved areas.	Ensuring areas with existing internet are receiving adequate services including download and upload speeds.	Ensure that adequate service exists throughout the canyon to provide reliable emergency management and is accessible to both primary homes, secondary homes, and tourists.	Ensure that all residents can participate in broadband services that are provided in the community.
KEY STRATEGIES	**Collaborative Planning**	**Engage Stakeholders**	**Use Data**	**Maximize Existing Infrastructure**
	Work closely with ISPs, schools, nonprofits, and community groups to align efforts.	Involve residents, businesses, and community leaders from the start.	Regularly track progress and adjust strategies based on feedback and data insights.	Make use of existing utility infrastructure to minimize costs and expedite deployment.

1 OVERVIEW OF THE LOCAL BROADBAND PLAN

1.1 VISION

The Town of Brighton's vision for broadband infrastructure is to establish service to all unserved areas of the community and ensure current services meet the minimum requirements for the community. This will be done in such a way as to minimize the impact on the Town's valuable natural land, and to economically utilize resources. Success looks like providing all residents in our community with broadband in their homes. This will help achieve the community's goal of retaining long standing residents, welcoming new residents, improving emergency services, and being able to communicate with remote residents.

Remote households may have more obstacles than others and therefore need special attention to establish broadband. The Town of Brighton will work collaboratively with existing internet service providers and stakeholders in the area to reduce the impact of construction on the land and efficiently complete projects. To work economically, the most populated unserved areas may see improvements first. Remote areas may need greater attention and more time to coordinate partners and finances.

1.2 GOALS AND OBJECTIVES

The Town has identified the following goals and objectives for the improvement of broadband infrastructure in the community:

Broadband Deployment

Goal #1: Provide high-speed internet access to all developed areas throughout the community, in order to increase access to opportunity, facilitate social connections, and bolster emergency response services.

Objective: Within the next two years, ensure that denser areas or areas with year-round residents are considered for funding and construction by internet services providers.

Objective: Within the next five years, ensure that remote or dispersed neighborhoods are considered for funding and construction by internet services providers.

Goal #2: Confirm areas with existing internet receive adequate services, including download and upload speeds.

Objective: Monitor the recent construction of internet services in the Brighton Loop and Forest Glen neighborhoods.

Goal #3: Ensure that adequate service exists throughout the canyon to provide reliable emergency management and is accessible to primary homes, secondary homes, and tourists.

Objective: Ensure adequate mobile coverage throughout the Town and verify the connection of the Town's emergency management system to fiber.

Broadband Affordability and Adoption

Goal #4: Establish diverse options for broadband connection to all developed areas.

Objective: Appeal to new internet service providers to establish new services in the community.

Objective: Work with existing service providers to establish a variety of packages with different price points and speeds.

Goal #5: Ensure that all residents can participate in broadband services provided in the community.

Objective: Identify multiple ways for the Town of Brighton to assist property owners with broadband adoption to increase subscribership.

Digital Equity

Goal #6: Promote digital equity in the community.

Objective: Develop ways to improve the community's digital skills especially for the community's older population.

Objective: Continue to increase the efficiency of online communication and promote user-friendly services and online platforms.

2 BACKGROUND

2.1 SCOPE OF BROADBAND PLAN

The Town of Brighton is a collection of private land that sits in the Uinta-Wasatch-Cache National Forest. Its population is currently 432, as of the 2020 Census. The Town is accessed from the mouth of Big Cottonwood Canyon, a famous recreational canyon in the Wasatch Mountains that is known for its world-renowned ski resorts. Just west of the Wasatch Mountain Range is the Salt Lake City metropolitan area. The metropolitan area consists of more than twenty different municipalities, with a population of more than one million people. It is the most densely populated area in Utah, and also home to Utah's capital. The Town of Brighton is approximately 15 miles east of Salt Lake City and 4,377 feet higher in elevation due to its location in the Wasatch Mountains. The Town is surrounded by National Forest land and includes two ski resorts in its boundaries. At this point, the Town has no plans to annex any additional land.

Within the community there are eleven different developed areas of various densities, shown in Figure 1 on page 4. These are referred to in the Town's general plan as character areas. A few of these areas have densities similar to standards suburban neighborhoods or even metropolitan areas. The Solitude Village character is a large collection of multi-family condos, but since this development benefits from Solitude resorts infrastructure this area is already adequately served by broadband. The second densest areas in the community are the Brighton Loop, Silver Fork, and Forest Glen. Some parts of these areas have had recent broadband installation while others are still waiting for adequate broadband services, which is reflected in the Broadband Plans goals for broadband deployment. The most remote and dispersed areas of development are Mt Haven, Mill D, and Cardiff Fork identified in Figure 1. These are considered lower canyons and the furthest away from resort infrastructure so the community members in these areas cannot benefit from larger broadband projects.

This Broadband Plan reviews the current broadband network in the community, analyzes gaps, and prioritizes broadband infrastructure installation projects. The ultimate goal of the plan is universal broadband service for all residents, but this goal has been broken down into specific priorities that target areas in the community currently identified as "unserved" or "underserved" as defined by the Federal Communications Commission (FCC). Breaking down the larger goal into priorities helps the community quickly identify necessary projects that can incrementally build up the Town's broadband network for the long-term. Internet service providers in the community can use this plan to seek funding for projects that align with the community's vision. By using this plan and working closely with internet service providers, the Town can efficiently fund projects with community buy-in and improve the feasibility and timeline for implementation.

Figure 1. Town of Brighton Character Areas from the General Plan (Dark Green Areas are Forest Service Land or Unpopulated Land, Yellow Areas are Residential, Red Areas are Commercial)

2.2 WHAT IS BROADBAND?

Broadband is a dedicated connection to high-speed internet. The threshold for what speed is defined as high-speed internet changes according to the standards presented by the Federal Communication Commission (FCC). Currently, broadband is defined as any speeds above 25 megabits per second (Mbps) download speed and 3 Mbps upload speed (25/3 Mbps). The FCC is proposing to redefine broadband as 100/20 Mbps.

The Broadband Equity, Access, and Deployment (BEAD) Program defines households with less than 25/3 Mbps as unserved locations and those with less than 100/20 Mbps as underserved locations. Community anchor institutions with less than 1/1 gigabits per second (Gbps) speeds

are also considered underserved, as defined by Section 60102 of the Infrastructure Investment and Jobs Act, which also sets forth the BEAD program[1].

2.2.1 Broadband Network Distribution

The infrastructure that data travels along is called a network. Similar to other public utilities such as roads or water pipes, the network infrastructure is carefully planned and then built according to how many people need to be served in both the present and the future. Within the network, data is carried across fiber, wires, or radio signals in the air (wireless). These various means of carrying data have different capacities and speeds. The part of the network used to transport data between cities or across cities is known as Middle Mile infrastructure. The Middle Mile network connects to hubs built throughout a city. The part of the network that connects from a hub to the end user is called Final Mile or Last Mile infrastructure. End users can be businesses, residential homes, or individuals connecting to cell service.

MIDDLE MILE   **FINAL MILE**
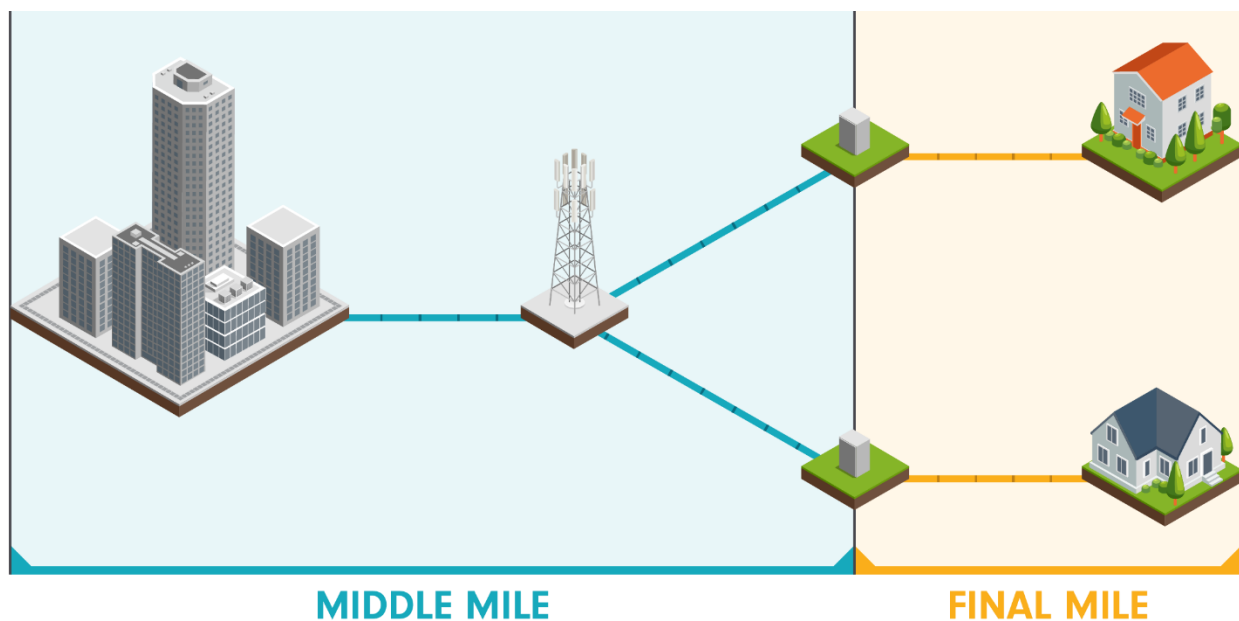
Figure 2. The blue lines connecting the city to the hubs represent Middle Mile infrastructure. The orange lines connecting the hubs to the residential houses represent Final Mile infrastructure.

2.2.2 Types of Broadband

There are various technologies that high-speed broadband internet can be served through, such as fiber optic, digital subscriber line (DSL), cable modem (Coax), and wireless technologies. Each form of technology has pros and cons.

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[1] United States Congress. (2021). H.R. 3684- Infrastructure Investment and Jobs Act. 60401(e)(3)(C). https://www.congress.gov/bill/117th-congress/house-bill/3684/text

2.2.2.1 Fiber Optic

Fiber optic technology sends data-carrying digital signals as light through cables made of glass fibers. It provides the fastest, most reliable networks. Because fiber is a newer technology, many areas do not have fiber networks developed, and this type of network can require building new infrastructure. Fiber optic cables can be placed on existing power poles, or they can be placed inside conduit buried in the ground. If the network is designed and installed correctly, symmetrical speeds can be up to 400 Gbps; however, 400 Gbps speeds are typically only designed for and installed in the backbone/distribution cables of the network. **Fiber optic is the gold standard for high-speed broadband internet as it provides the fastest speeds and can support emerging digital technologies into the future.**

2.2.2.2 DSL

DSL uses existing copper telephone cables to transmit data. Speeds vary widely based on local providers, the condition of cables, the distance between homes, and the equipment at the primary connection point. Because of this, DSL speeds can be less than 1 Mbps or up to 100 Mbps. With maximum DSL speeds at 100 Mbps, DSL does not meet the ever-growing needs of future technologies, so it is not a preferred option when building modern broadband infrastructure.

2.2.2.3 Cable Modem (Coax)

Cable modem delivers increased speeds over DSL and transmits broadband data over the same coaxial cables that are used for cable televisions. Like DSL, it is not a preferred option when building new broadband infrastructure, but it can be used where existing infrastructure is in place. Cable modems use a protocol called Data Over Cable Service Interface Specification (DOCSIS). There are six versions of DOCSIS (1.0, 1.1, 2.0, 3.0, 3.1, and 4.0). The speeds range between 40 Mbps download and 10 Mbps for upload for version 1.0 to 10 Gbps download and 6 Gbps upload for version 4.0.

2.2.2.4 Wireless

Wireless broadband includes several technologies, including satellite broadband, Wireless Local Area Networks (WLANs), Wi-Fi, and cellular 4G, 5G, and LTE. These technologies use radio spectrum to transmit broadband data. Please note that BEAD funding can only be used to build wireless broadband technology when it is connected to a terrestrial Middle Mile network and cannot be used on satellite broadband technologies.

Satellite Broadband – Satellite internet involves satellites that orbit the earth while transmitting long-range signals to individual subscriber locations anywhere on earth with a clear view of the sky. It is primarily a middle mile wireless solution, but many people use satellite internet directly to their homes as well. Satellite connection speeds vary based on location, and weather and tree foliage can affect the signal. Typical connection speeds are 12-100 Mbps. However, satellite internet has a higher latency (a delay of transmission also known as lag), making video calls extremely "glitchy" on this type of internet. An acceptable range of latency is between 50-100 ms.

Satellite connection latency typically falls within 594-624 ms.[2] For the BEAD program, the NTIA currently does not recognize satellite broadband technologies as a reliable wireless technology.

WLANs – WLANs are the Last Mile networks used at homes or businesses to distribute internet to phones, computers, and other devices through radio signals. Wi-Fi and hotspots are both examples of a WLAN. Connection speeds are dependent on the service provided at the access point.

Cellular 4G, 5G, and LTE – Cellular 4G, 5G, and LTE involve antennas mounted on cell towers transmitting radio signals, which are then received through the modems in cell phones, mobile routers, cellular antennas, or various signal boosters. Mobile carriers now offer residential fixed wireless broadband plans supported by their mobile towers. A middle mile fiber network connected to a tower will increase the network capabilities and provide a better final connection to the cellular user. The download speeds can often reach 600 Mbps if specialized equipment is used to boost the signal. This is usually the fastest high-speed broadband internet available for users who do not have access to fiber optic technology. This technology supports broadband speeds for mobile devices as well as fixed wireless broadband service to residences.

2.2.3 Benefits of Broadband

High-speed broadband internet has become an integral part of society. It is critical for work, education, telehealth, and the completion of everyday tasks.

High-speed broadband internet has transformed the way the world does business. There are few businesses that can operate today without the internet, and while some can get by with a low-speed connection, high-speed internet is becoming more and more necessary. A Pew Research Center survey[3] conducted in April 2021 found that 90% of adults surveyed considered internet "essential or important for them personally during the [COVID-19] pandemic."[4] High-speed broadband internet has allowed for remote work possibilities, which opens the possibility of highly skilled workers relocating to smaller communities and benefiting the economies of those communities. Readily available access to the internet has allowed businesses to widen their customer base to a global market. The Town of Brighton's primary business is outdoor recreation tourism that includes world class skiing, mountain biking, hiking, and camping. High-speed broadband internet helps distribute emergency information, regulate heavy visitation of tourists, and improve visitor experience. In today's world, broadband can grow the Town of Brighton's economic outlook.

While high-speed broadband internet is benefitting many regions across the globe, it is important to ensure that the Town of Brighton does not get left behind. There is a growing digital divide where those that do not have access to the internet do not learn the digital skills necessary for

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[2] Cooke, K. (2023). Is Satellite Internet a Good Option? Pros and Cons of Satellite Internet Service. SatelliteInternet.com.
https://www.satelliteinternet.com/resources/satellite-internet-pros-and-cons
[3] https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/
[4] https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/

high paying jobs, pushing them further into poverty. Conversely, increasing high-speed broadband internet access increases economic opportunities for low-income families.

Developing digital skills at a young age has become increasingly important, as high-speed broadband internet is an integral tool in modern education and preparation for the future workforce. Access to online classes, homework submissions, and research opportunities can be lost if a reliable high-speed broadband internet connection is not secured. Many districts are also utilizing online learning on snow days and other times when it isn't possible for students to gather at the school. Online classes can be made available for specialized subjects like foreign language or technological courses that do not have a local teacher available. Children without access to a broadband internet connection may be left out in these scenarios.

Other online resources are also becoming more important for communities. For example, telehealth is a tool that allows users to connect to doctors and medical providers online. Some of the benefits of telehealth include decreased healthcare costs, access to specialists not available locally, travel time reductions, and reducing the risk of exposing others to viral infections. High-speed broadband internet is necessary when completing a video call with a health professional.

High-speed broadband internet has become increasingly essential for daily tasks. High-speed internet is used when paying bills, accessing banks and retirement accounts, and applying and interviewing for jobs. High-speed broadband internet is also vital when enjoying modern-day entertainment, such as video streaming, watching live sports, or playing live video games. It is used when communicating with family and friends, especially when making a video call. Even using a smartphone with 4G or 5G service involves broadband technology.

3 CURRENT STATE OF BROADBAND AND DIGITAL ACCESS

3.1 METHODS TO DETERMINE THE CURRENT STATE OF BROADBAND

The planning team took several steps to determine the current state of high-speed broadband internet in the Town of Brighton. This planning team included the following individuals and/or organizations:

- **Town of Brighton** This plan has been created for the Town of Brighton to achieve goals identified by the community to improve internet services.

- **Greater Salt Lake Municipal Services District (MSD) –** The Town of Brighton contracts with the MSD for all planning and development services. The planners at the MSD worked with the consultant to develop the community vision, goals, and objectives in this plan and provided the community background information.

- **Big Cottonwood Community Association (BCCA) –** The BCCA works with the residents of the community and advocated for this plan to be completed by the Town in order to prioritize new infrastructure projects.

- **Horrocks –** Horrocks was the professional consultant for the plan. They worked on the data collection for the asset inventory, internet service provider coordination, and recommended projects with estimated costs and timelines.

- **Utah Broadband Center (UBC)** – The Utah Broadband Center granted funding to hire the consultant, Horrocks, and provided the community with resources to develop the digital infrastructure plan including methods for outreach and public engagement.

- **National Telecommunications and Information Administration (NTIA) –** The NTIA provided guidance for how to bolster the community's local plan to best qualify for federal funding.

- **SenaWave –** SenaWave is the community's largest internet service provider and has continually coordinated with the community on their projects.

- **Rocky Mountain Power –** Rocky Mountain Power provides electric services to the community and coordinates with other internet service providers to find new solutions for deployment of digital infrastructure facilities.

- **Salt Lake City Department of Public Utilities (SLCPU) –** The community is located in a watershed that is regulated through SLCPU. New digital infrastructure projects will need to be reviewed and approved by SLCPU before construction.

- **Utah Department of Transportation (UDOT) –** UDOT oversees the construction of utilities under the main access road to the community. They have coordinated with Rocky Mountain Power and other internet service providers for various solutions related to digital infrastructure.

- **Solitude Mountain Ski Resort –** Solitude Mountain Ski resort provides a lot of infrastructure and services that benefit the community. Many residential dwellings near or within the resort boundary have benefited from receiving internet services.

- **Brighton Ski Resort –** Brighton Ski resort provides a lot of infrastructure and services that benefit the community. Many residential dwellings near the resort boundary have benefited from receiving internet services.

- **U.S. Forest Service –** The Forest Service is the largest landowner in the community. If infrastructure projects are proposed over forest service land, additional regulations or permit approvals will be required.

- **Crown Castle –** Wireless internet service provider in the area.

- **Century Link (Lumen) –** Internet service provider in the area.

The activities performed included:

- **Public Outreach:** On July 12th, 2023, the Town hosted an open house to invite residents to read the first draft of Utah's Five -Year Action Plan and the Town of Brighton's Local Broadband Plan to provide feedback on the recommended priorities and projects identified. 13 residents of the community attended the open house and weight on the plans goals and objectives.

- **Public Surveys:** In April 2023, the Town sent out a survey on current broadband infrastructure conditions for residents. The survey collected 133 responses from Brighton residents. The results from the survey are included in the Appendix and have been cited throughout the document.

- **Internet Speed Tests:** The residents of the Town of Brighton successfully completed the speed test in all residential neighborhoods and commercial areas. As of July 5, 2023, there were a total of 106 tests taken. Out of the 106 tests taken, nearly 66% (70) of the locations classify as unserved (download speeds below 25 Mbps). See **Section 3.5.1** for more detailed Internet Speed Test results and information.

- **Stakeholder Meetings:** During the summer of 2023 the community met with multiple stakeholders and asked them to provide feedback on the draft digital infrastructure plan.

- **Meeting With Internet Service Providers:** On April 19th, 2023, the Town of Brighton and the consultant, Horrocks Engineering, met with the Community's current and potential internet service providers to discuss possible opportunities of new infrastructure projects.

- **Existing Assets Assessment:** Using data collected from state GIS mapping efforts, the FCC, the Utah Residential Broadband Map[5], surveys, meetings with stakeholders, and internet speed tests, the technical team created an asset inventory of all existing broadband assets within Brighton. The integration of GIS data into the assessment provided valuable insights into the existing broadband landscape, aiding in the development of targeted strategies for enhancing connectivity. The community also completed a digital infrastructure assessment and action plan in 2022 to identify program or policy gaps that would contribute to completing the digital infrastructure plan.

- **Disparity Analysis:** Analysis was conducted to identify and map areas within Brighton that are unserved and underserved. To further understand potential disparities in broadband access, socioeconomic and demographic variables were considered that could contribute to inequalities in broadband access between members of one group versus another. Examples of groups considered include Age 60+, Disabled Individuals, Veterans, Incarcerated Individuals, Non-White, and Rural Areas. This data was gathered from both public outreach efforts and the U.S. Census and analyzed. GIS mapping technology allows visualization of those areas that may require targeted intervention for digital inclusion efforts.

- **Research:** The team collected research from various sources and agencies regarding broadband infrastructure and deployment best practices, federal funding opportunity qualifications, all resources produced by the NTIA, and broadband outreach best practices.

  Additional research was conducted by utilizing the latest U.S. Census data to provide insights into an area's population and household data, geographic distribution, demographic information, socioeconomic information, internet adoption and usage, and commuting patterns. These factors contribute to the formation of a comprehensive plan that is based upon data.

- **Geographic Information System (GIS) Mapping:** GIS mapping and data collection was performed as part of this plan. The GIS data collected can be found through the plan and any GIS data collected and not used in the plan can be found in the appendix.

3.2 EXISTING RESOURCES

Existing programs include all the programs and activities that the Town of Brighton currently performs or has performed in the past.

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[5] UGRC. Utah Residential Broadband Map. https://broadband.ugrc.utah.gov/

Table 1. Current Broadband-Related Activities

ACTIVITY NAME	DESCRIPTION	INTENDED OUTCOME(S)
Town of Brighton Digital Infrastructure Plan	The digital infrastructure identifies realistic projects, based on current data, which can be accomplished in the next five years.	Finalize a list of prioritized digital infrastructure projects to apply for funding for construction of new projects.
MSD Digital Infrastructure Assessment and Action Plan	This plan identified gaps in infrastructure services and coordination, determined government role in the digital divide, and recommended actionable strategies for the community.	Recommend that Brighton improve coordination with internet service providers and facilitate public engagement, develop an ongoing transparent process for new digital infrastructure projects, and identify and allocate ongoing tax revenues to address digital infrastructure.
MSD Digital Infrastructure Assessment and Action Plan	SenaWave has continued to collaborate with the community on their recent construction projects they've accomplished in the last two years.	Consult with the community on existing and planned projects.

Table 2. Current and Planned Full-Time and Part-Time Employees

CURRENT / PLANNED	FULL TIME / PART TIME	POSITION	DESCRIPTION OF ROLE
Current	Full Time	Town Clerk	The employee assists the Town Council and carries necessary record keeping and public noticing as required by State law. The employee also assists in community outreach and public meeting coordination.
Planned	Part Time	Community Service and Support Officer	The employee carries out enforcement of Town ordinances, codes, and other applicable regulations including Health Regulation No. 14. "Watersheds".

Table 3. Current and Planned Contractor Support

CURRENT / PLANNED	FULL TIME / PART TIME	POSITION	DESCRIPTION OF ROLE
Current	Full Time	Horrocks	The contractor assists with data collection and internet service provider coordination for the purpose of developing this local broadband plan.

Current	Full Time	Long Range Planner	The contractor assists the community in creating long-term visioning and plans to achieve the community's goals. The employee also assists with grant writing and funding procurement for long-term projects or planning efforts.
Current	Full Time	Planner	The contractor carries out enforcement of the Town of Brighton's municipal code, including land use, business licensing, development and building permitting.
Current	Full Time	Planner	The contractor carries out enforcement of the Town of Brighton's municipal code, including land use, business licensing, development and building permitting.

Table 4. Broadband Funding

SOURCE	PURPOSE	TOTAL	EXPENDED	AVAILABLE
Federal Broadband Equity, Access, Deployment (BEAD)	Town of Brighton Digital Infrastructure Plan	$25,000	$24,900	$100
Economic Development Administration (EDA) CARES ACT	MSD Digital Infrastructure Assessment and Action Plan	$50,000	$50,000	$0

3.3 PARTNERSHIPS

This section identifies existing and potential partners and community anchor institutions that the Town of Brighton may engage for the development and implementation of the Local Broadband Plan. Such partners include organizations that are already engaged in issues related to broadband deployment and digital inclusion, such as local governments, college and university systems, school systems, faith-based organizations, foundations, chambers of commerce, and local internet service providers.

Table 5. Local Community Partners and Community Anchor Institutions

COMMUNITY PARTNER / ANCHOR INSTITUTION	DESCRIPTION OF CURRENT OR PLANNED ROLE IN BROADBAND DEPLOYMENT AND ADOPTION
Resorts	The two resorts, Solitude Mountain and Brighton Ski Resort, are exceptional community partners. They will often help with public engagement by hosting workshops or public meetings, as well as offer community gathering spaces and amenities like retail services and restrooms.
Silver Fork Lodge	Silver Fork Lodge is a great place for locals to gather and enjoy events. This is a valuable landmark in the community.
Fire Station	The fire station acts as a civic center for the community. The council and planning commission meetings are held here as the anchor location for all public meetings.
Big Cottonwood Canyon Association (BCCA)	The BCCA is a long-established community group that advocates for members of the community to the town Council or to large canyon partners. They advocated that the Town create this digital infrastructure plan.

Table 6. State-Wide Partners

NAME	CONTACT INFORMATION	ROLE IN BROADBAND DEPLOYMENT AND ADOPTION
Rebecca Dilg	rdilg@utah.gov (801) 538-8681	Utah Broadband Center Director *Governor's Office of Economic Opportunity*
Claire Warnick	cwarnick@utah.gov (801) 450-6682	Utah Broadband Center Program Manager *Governor's Office of Economic Opportunity*
Teri Mumm	tmumm@utah.gov	Utah Broadband Center Digital Access Program Manager *Governor's Office of Economic Opportunity*
Lynne Yocom	yocom@utah.gov (801) 514-4565	Fiber Optics Manager *Utah Department of Transportation*
Vikram Ravi	vravi@ntia.gov	Federal Program Officer for Utah *National Telecommunications and Information Administration*

3.4 ASSET INVENTORY

Broadband assets include hard assets (e.g., towers, buildings, and utility poles) and soft assets (e.g., programs, activities, strategies, skills, and people) that can be leveraged to close the digital divide. Hard assets in the Town of Brighton are described in Section 3.4.1. The Town of Brighton's soft assets are described in Sections 3.4.2 and 3.4.3.

3.4.1 Broadband Availability

Broadband availability relates to whether the physical broadband infrastructure is available in a region to support specific speeds. To deliver broadband speeds of at least 100/20 Mbps to the end-user, a robust network must be in place.

General Service Areas

Figure 3 and Figure 4 below depict the wireline and fixed wireless broadband currently available in the Town of Brighton, Utah. Local ISPs are required to submit their corresponding service areas twice a year through FCC Form 477, but the accuracy of the service locations can be influenced by the optimism and interests of ISPs. These maps, part of the Utah Residential Broadband Map[6], provide specific upload and download speed information as well as fixed and mobile wireless data. Figure 3 shows service areas considered "served" which have at least 100/20 Mbps speeds. Figure 4 shows service areas considered "underserved" which have speeds of at least 25/3 Mbps. Underserved and unserved will be further discussed in the needs and gaps analysis in Section 3.5.

Figure 3. Broadband Coverage Area in the Town of Brighton with 100/20 Mbps Minimum Speeds (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

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[6] UGRC. Utah Residential Broadband Map. https://broadband.ugrc.utah.gov/

Figure 4. Broadband Coverage Area in the Town of Brighton with 25/3 Mbps Minimum Speeds (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

Table 7 summarizes the availability of different internet technologies for the population of the Town of Brighton, including fiber, cable/DSL, licensed wireless, and unlicensed wireless for all available speeds. These numbers were obtained from GIS data as reported from FCC Form 477.[7] In addition to margin of error estimates, categories are not mutually exclusive; as such, percents do not total 100.

Table 7. Technology Available to Region's Population

TOWN	PERCENT OF HOUSEHOLDS			
	WIRELINE SERVICE (FIBER OPTIC)	WIRELINE SERVICE (CABLE/DSL)	UNLICENSED WIRELESS	LICENSED WIRELESS
Brighton	12.0%	86.3%	100.0%	0%

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[7] Federal Communications Commission. Fixed Broadband Deployment Data from FCC Form 477. https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477

Internet Service Providers (ISPs)

Private ISP companies provide internet service to residents and businesses and typically own the networks that distribute the broadband to their customers. Twice a year, ISPs report their service areas through FCC Form 477. In Utah, these coverage areas are mapped onto the Utah Residential Broadband Map[8], a state GIS map from the Governor's Office of Economic Opportunity. In the Town of Brighton, a range of ISPs cater to the diverse needs of residents and businesses. Figure 15 below in Section 3.5.1 Broadband Availability depicts the survey results as they relate to the ISPs in the Town of Brighton Area.

Wired and fixed wireless ISPs currently serving the Town of Brighton are:

- CenturyLink
- Senawave
- Utah Broadband

Satellite ISPs currently serving the Town of Brighton are:

- Google Fi
- HughesNet
- Starlink
- Viasat

Figure 5 and Figure 6 show the current coverage areas of each of the available wired and fixed wireless ISPs in the Town of Brighton. Areas in red are wired service while areas in green are fixed wireless service. These coverage areas show any coverage available by the ISP, regardless of whether it is a high or low speed.

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[8] UGRC. Utah Residential Broadband Map. https://broadband.ugrc.utah.gov/
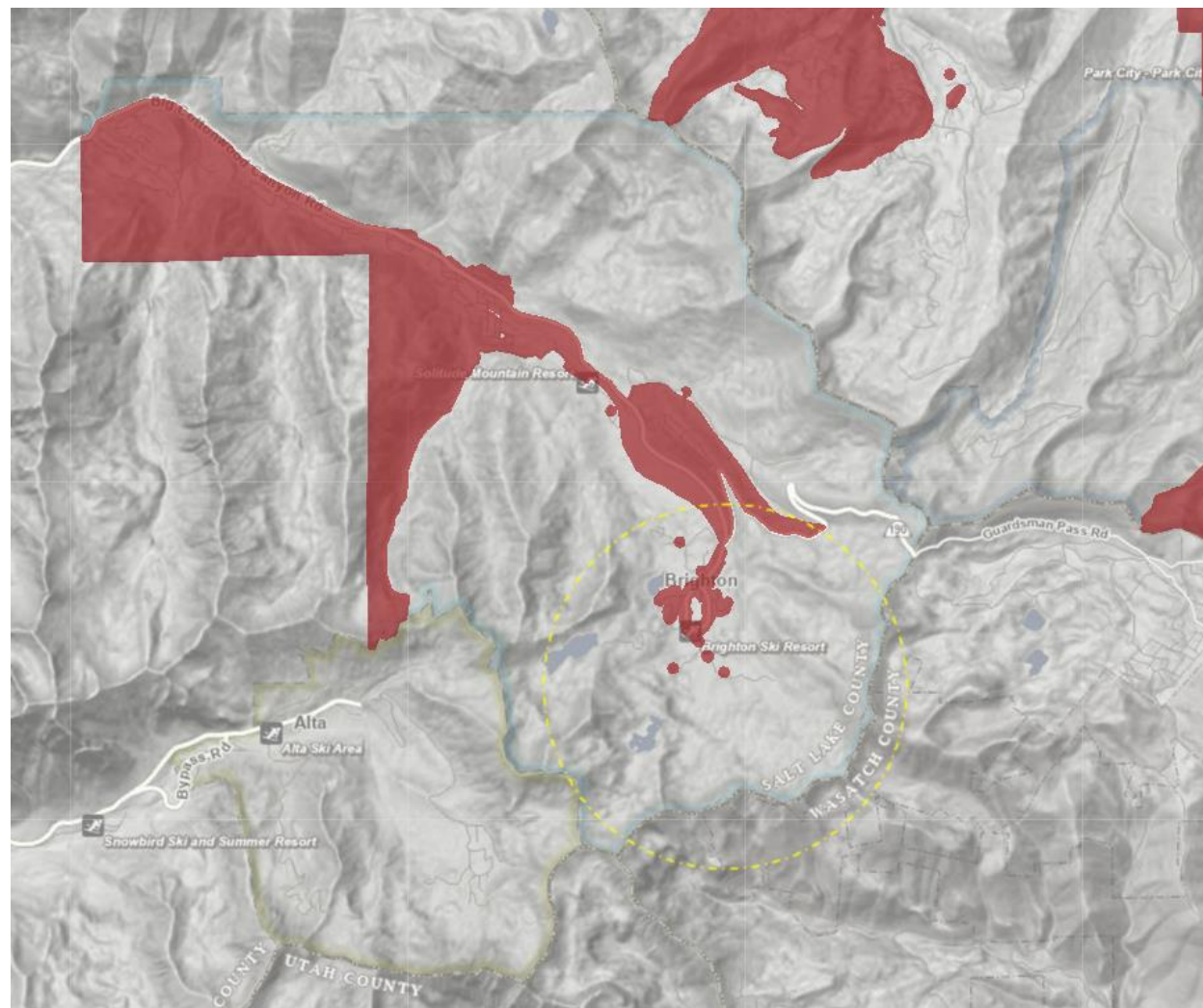
Figure 5. CenturyLink Coverage Area in the Town of Brighton with Any Speed (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)
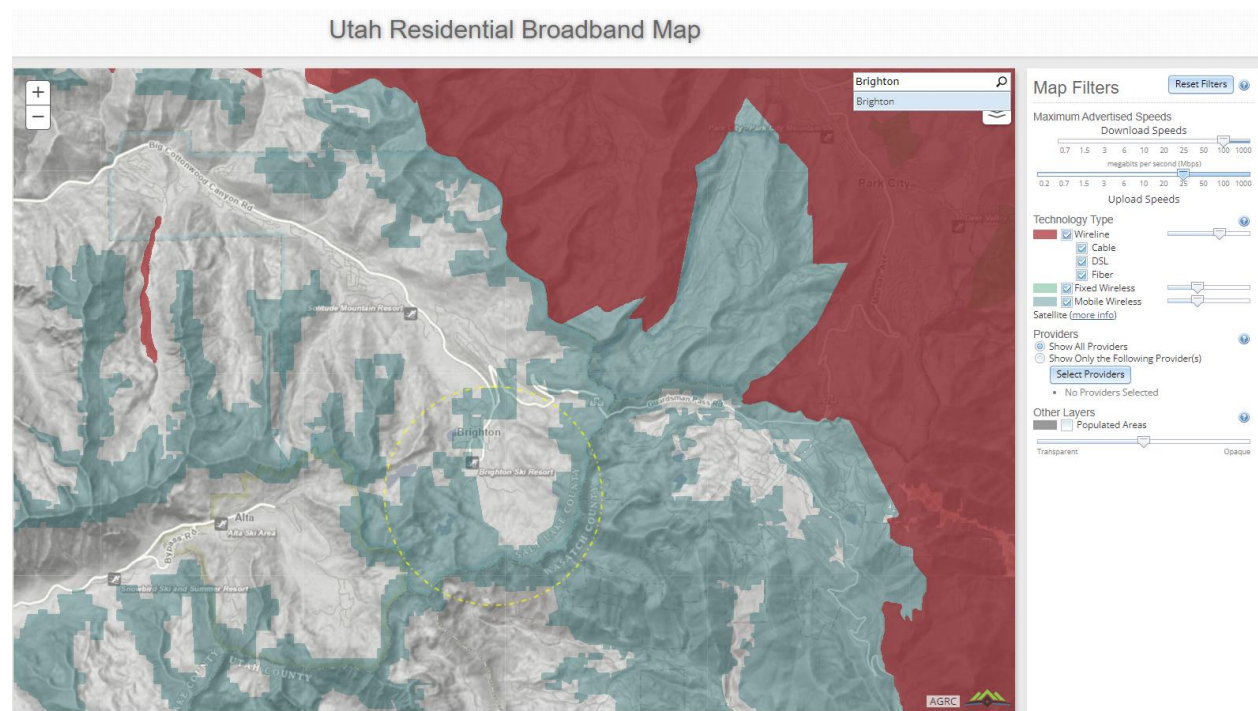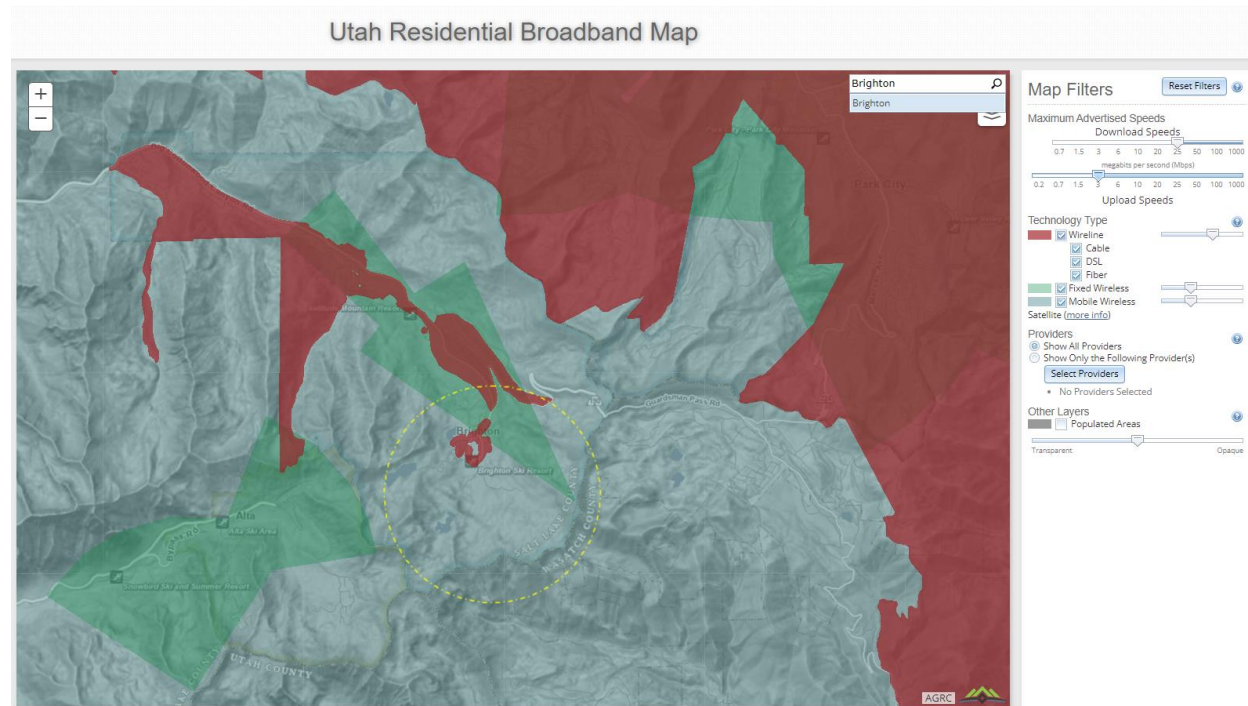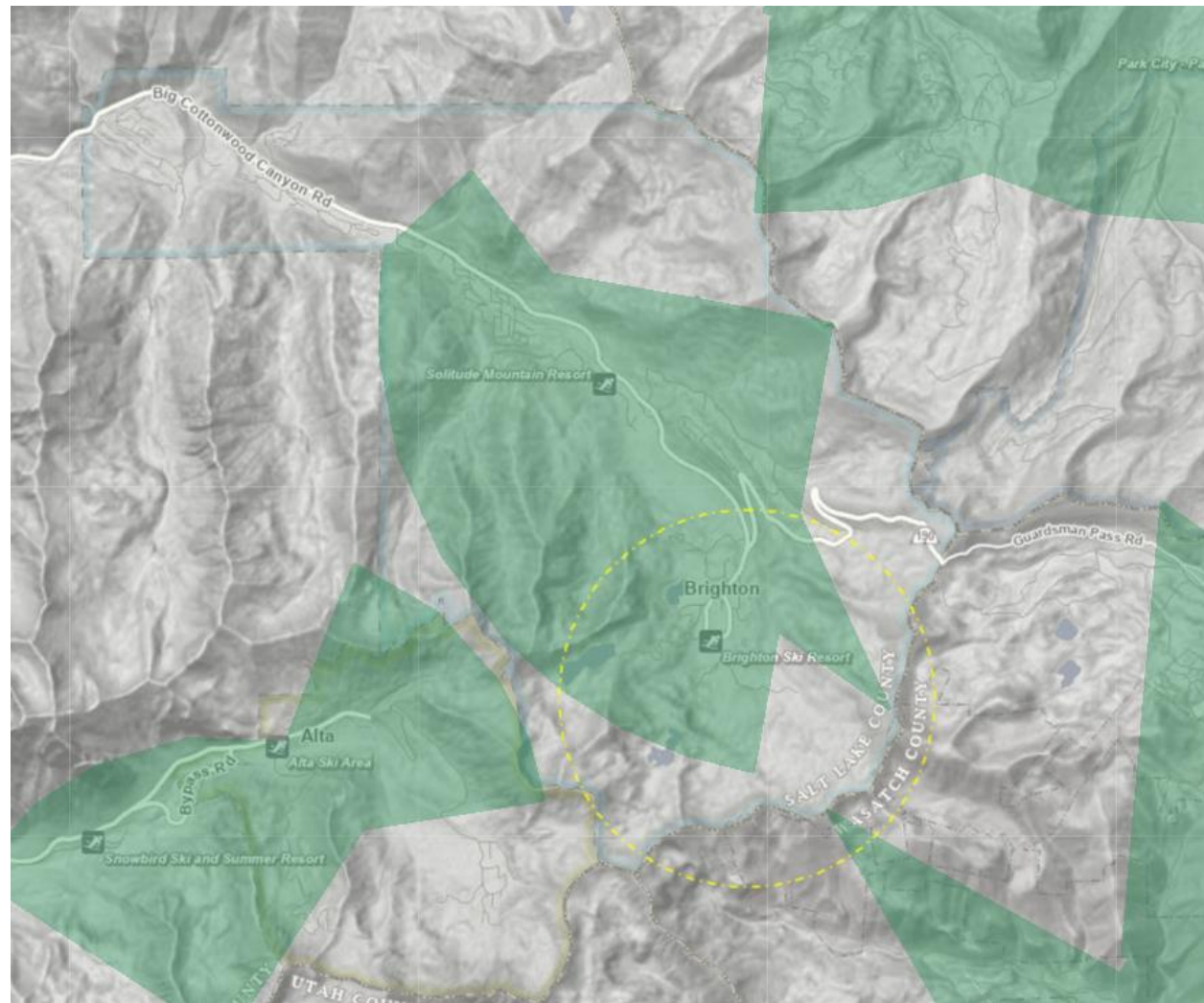
Figure 6. Utah Broadband Coverage Area in the Town of Brighton with Any Speed (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

Wireless Towers

Point-to-point wireless towers, also known as microwave towers or wireless backhaul towers, are structures used in telecommunications to establish wireless communication links between two specific points. These towers facilitate the transmission of data, voice, or other forms of communication over long distances without the need for physical cables or fiber optic lines.

The primary purpose of point-to-point wireless towers is to establish a direct and dedicated connection between two locations. These towers are typically equipped with directional antennas, which transmit and receive signals in a focused beam, allowing for high-speed and reliable data transmission.

Figure 7 shows wireless tower locations within the Town of Brighton. These towers are especially critical in the Town of Brighton for emergency management, specifically for tourist safety. Reliable cell service allows for communication between those in need and emergency services.

Mobile Wireless Access

Mobile wireless carriers provide strong coverage areas across the Town. According to the data provided by the major mobile wireless carriers: AT&T, T-Mobile, and Verizon all claim to offer 250/20 Mbps speeds throughout Big Cottonwood. The Utah Residential Broadband Map[9] depicts the entire boundaries within the Town of Brighton to be covered with mobile wireless service.

---

[9] UGRC. Utah Residential Broadband Map. https://broadband.ugrc.utah.gov/

Wireless Cell Towers

Reynolds Gulch

190

Reynolds Flat

Big Cottonwood Cyn

McDonald

West Monitor Flat

Iron Canyon

10007 ft

Greens Basin

Silver Fork

Kessler Peak
10422 ft

Mill D South Fork

Reed And Benson Ridge

Silver Fork

Cottonwood Canyon

Mill F East Fork

Brighton

Mineral Fork

Vina Flat

Montreal Hill

190

Walker And Webster Gulch

9545 ft

Thaynes Canyon

Walker & Webster Gulch

Pioneer Ridge

Jupiter Hill

224

Flagstaff Mountain

Davenport Hill

Honeycomb Cliffs

Brighton

Superior Peak

Little Cottonwood Canyon

Clayton Peak

Lavina Creek

Bonanza Flat

N Pine Canyon Rd

Little Cottonwood Canyon

Mountain

Course

Salt Lake City

White City

Jordan River

11747 ft

Orem

Provo

Hill

6

N

Figure 7: Wireless Cell Towers in Town of Brighton

0   0.25   0.5   1
Miles

Utah Department of Transportation (UDOT)

UDOT has been actively deploying fiber optic infrastructure along the state highway system for many years. This infrastructure includes conduit, fiber optic cabling, access points, distribution hubs, and communications equipment. This infrastructure is a publicly owned asset that UDOT uses to monitor traffic and other transportation-related activities and facilitate broadband deployment across state highways. Whenever UDOT builds or expands a roadway, their practice is to install fiber optic conduits as an incremental cost to the project. UDOT exchanges sections of their empty conduit to private ISPs to allow them to install their own cabling. In exchange, private ISPs provide their own empty conduit for UDOT to use in different locations. Often, an ISP that provides shared communications infrastructure, such as Crown Castle or Syringa, will own and manage the fiber in the conduit leased from UDOT. This network creates the primary middle mile fiber network throughout the region. The ISPs that provide final mile internet service to the end-user can often start their build-out from the nearest state road.

One of the advantages of using the UDOT fiber network for broadband is that it can reduce the cost and complexity of deploying new infrastructure. Rather than building new fiber optic cables, ISPs can lease or use existing UDOT fiber to provide broadband services to customers. This can make it more feasible for ISPs to offer high-speed internet service in rural areas where the population density may be lower and the cost of deploying new infrastructure is higher.

Figure 8 shows the UDOT fiber network infrastructure in the Town of Brighton, along with FCC unserved and underserved locations. The significance of these unserved locations will be discussed in Section 3.4.1 Broadband Availability.

Date: 6/28/2023 12:22 PM

Legend

FCC Locations
- Underserved (25-100 M Down)
- Unserved (<25 M Down)

Structures
- Buildings
- Hub
- Hub-Mini
- Existing Fiber

Horrocks.
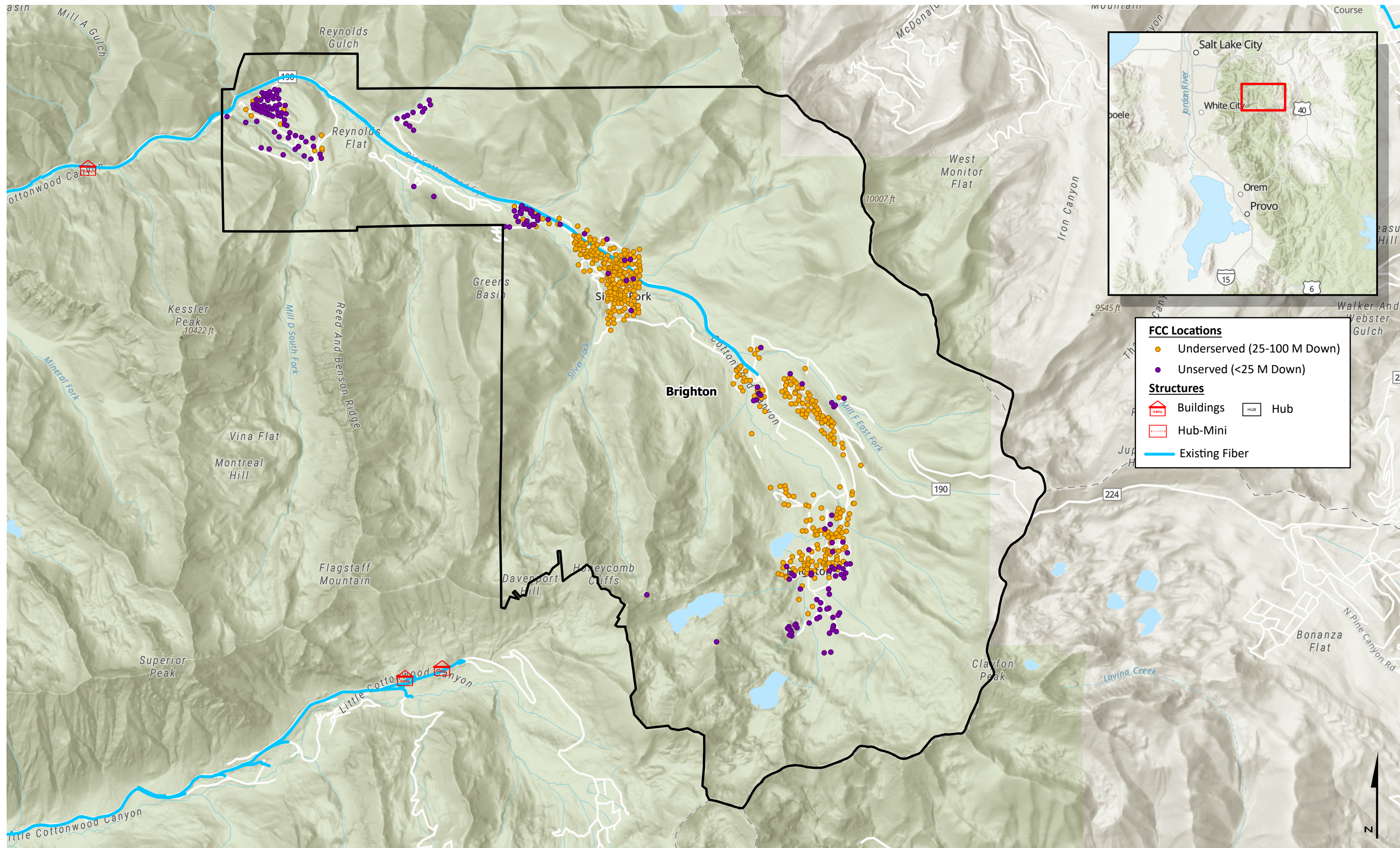
Figure 8: UDOT Fiber Network in Town of Brighton

0   0.25   0.5   1 Miles

3.4.2 Digital Access

Digital access refers to the ability of individuals to use and benefit from digital technologies, including high-speed internet. In addition to the availability of broadband infrastructure, digital access also depends on factors such as knowledge, skills, and personal hardware. As digital technologies continue to play an increasingly important role in our daily lives, the need for equitable access to high-speed internet becomes more pressing. Digital equity is an important aspect of this issue, as it refers to the fair and just distribution of digital resources and opportunities, particularly for covered populations. In the Town of Brighton, ensuring digital access and digital equity for all residents is a critical part of building a thriving and inclusive community.

3.4.3 Broadband Affordability

Broadband affordability is a critical component of digital equity, as the cost of high-speed internet can be a significant barrier for many households. In the Town of Brighton, the economic affordability of broadband varies depending on a variety of factors, including the availability of affordable ISPs and discounted or subsidized broadband programs. While some ISPs offer competitive pricing and bundles that can make high-speed internet more accessible, others may charge higher prices for their services. Understanding the overall economic affordability of broadband in the Town of Brighton is essential for ensuring that all residents have access to the digital resources and opportunities they need to thrive. Table 8 outlines the providers available in the area as well as their respective costs, available speeds, and participation in the Affordable Connectivity Program (ACP). Participation in the ACP is a requirement for ISPs to be awarded federal BEAD implementation funding.

Table 8. Providers and Prices

PROVIDER	PRICE	DESCRIPTION OF SERVICE TIER, ADVERTISED SPEEDS, AND AFFORDABILITY	PARTICIPATES IN AFFORDABLE CONNECTIVITY PROGRAM?
CenturyLink	$25/mo - $175/mo	10Mbps-1Gbps	Yes
Comcast	$34/mo - $289/mo	10Mbps-1Gbps	Yes
SenaWave	$50/mo - $170/mo	50Mbps - 1Gbps	Yes
Utah Broadband	$50/mo - $70/mo	Up to 25mbps	Yes
Hughesnet	$70/Mo	Up to 25mbps	Yes
Google Fi	$45/Mo	Up to 25mbps	Yes

There are various federal and state programs that aim to make broadband more affordable for low-income households, including the ACP, FCC's Lifeline program, the E-Rate program, the Utah Universal Service Fund, and the Emergency Broadband Benefit Program.

Affordable Connectivity Program (ACP)

The most impactful affordability asset currently available to residents of the Town of Brighton is the ACP. This federal benefit provides a service discount of up to $30 per month on a home internet plan, and households on Tribal lands are eligible for up to $75 per month to mitigate the higher cost of service in rural and remote areas. Unfortunately, the ACP is underutilized in Utah. Other assets include efforts to increase the awareness and use of ACP, such as grant-funded projects and the state-led Act Now campaign. The FCC provides participation metrics for Utah.[10]

Lifeline

Lifeline[11] is an FCC program that helps make communications services more affordable for low-income consumers. Lifeline provides a discount on qualifying monthly telephone service, broadband internet service, or bundled voice-broadband packages. The Lifeline program offers $9.25 per month to certain qualifying households and plans, and the State of Utah provides an additional $3.25 per month.

E-Rate

The Schools and Libraries Universal Service Support Program, commonly known as the E-rate program, helps schools and libraries obtain affordable broadband. The E-rate program is administered by the Universal Service Administrative Company (USAC) under the direction of the FCC. USAC is responsible for processing applications for support, confirming eligibility, and reimbursing service providers and eligible schools and libraries for the discounted services. USAC also ensures that the applicants and service providers comply with the E-rate rules and procedures established by the FCC. Four service categories are eligible for E-rate funding: telecommunications, internet access, internal connections, and basic maintenance of internal connections.[12]

The Utah Education Network (UEN) is the E-rate consortium lead in applying for and implementing E-rate funds received in Utah. UEN helps schools and libraries apply for discounts on broadband services through the E-rate program. This program utilizes Utah Universal Service Funds (UUSF), which are collected through fees on consumers' phone bills.

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[10] FCC. April 2023. Affordable Connectivity Program Providers. https://www.fcc.gov/affordable-connectivity-program-providers

[11] Universal Service Administrative Co. Jan. 2023. Lifeline Program Data. https://www.usac.org/lifeline/resources/program-data/#Lifeline-Subscribership-by-County-by-Service-Type

[12] Universal Service Administrative Co. Eligible Services List. https://www.usac.org/e-rate/applicant-process/before-you-begin/eligible-services-list

Utah Universal Service Fund

The Utah Universal Service Fund (UUSF) also enables rural customers to have access to the same quality of service as urban customers at a reasonably comparable price. Enacted in 1997 and governed by Utah Administrative Rule R746-8,[13] funding from UUSF is used to support programs that advance and maintain telecommunication networks and services in rural areas. This program provides rural telecommunication providers a rate-of-return to advance the operation and maintenance of rural networks.

3.5 NEEDS AND GAPS ASSESSMENT

To ensure that all residents of the Town of Brighton have access to high-quality broadband internet, a needs and gaps assessment is essential. This assessment will identify gaps between the current state of broadband deployment and the needs of residents, businesses, and institutions. Through needs identification, data collection, and analysis, policymakers and community leaders can develop and implement strategies that address these gaps, ensuring that all residents have access to the digital resources necessary for success in today's economy.

To gather more qualitative data from the public about their experience with internet connectivity, a survey was created and distributed to the public. Questions in this survey covered topics such as residents' current internet connections, device accessibility, affordability options, connectivity for businesses, community internet needs, and voluntary disclosure of demographics. A toll-free hotline number was provided for residents taking the survey who did not have access to the internet. As of Thursday, May 17, 2023, there were 142 surveys completed for the Town of Brighton's broadband planning efforts. Survey results and charts are included in the following sections.

3.5.1 Broadband Availability

The ability to interact with friends and family, access educational and health care resources, and fully engage in the digital economy are all made possible by having access to high-speed broadband. However, not every part of the Town of Brighton has access to dependable and reasonably priced broadband connectivity.

The primary metric by which broadband availability is evaluated is what speeds are available to residents and businesses throughout the Town of Brighton. The BEAD program aims to provide service of 100/20 Mbps speeds to every American. Serviceable locations with speeds under 25/3 Mbps are considered unserved locations that are given the top priority for broadband funding. Locations with speeds less than 100/20 Mbps are considered underserved locations and are the second priority for BEAD funding. Figure 9 shows the areas where there is no wired or fixed wireless service above 25/3 Mbps.

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[13] Utah Office of Administrative Rules. (January 2022). Rule 8: Utah Universal Public Telecommunications Service Support Fund. https://adminrules.utah.gov/public/rule/R746-8/Current%20Rules?

No provider reports broadband services at 25 Mbps
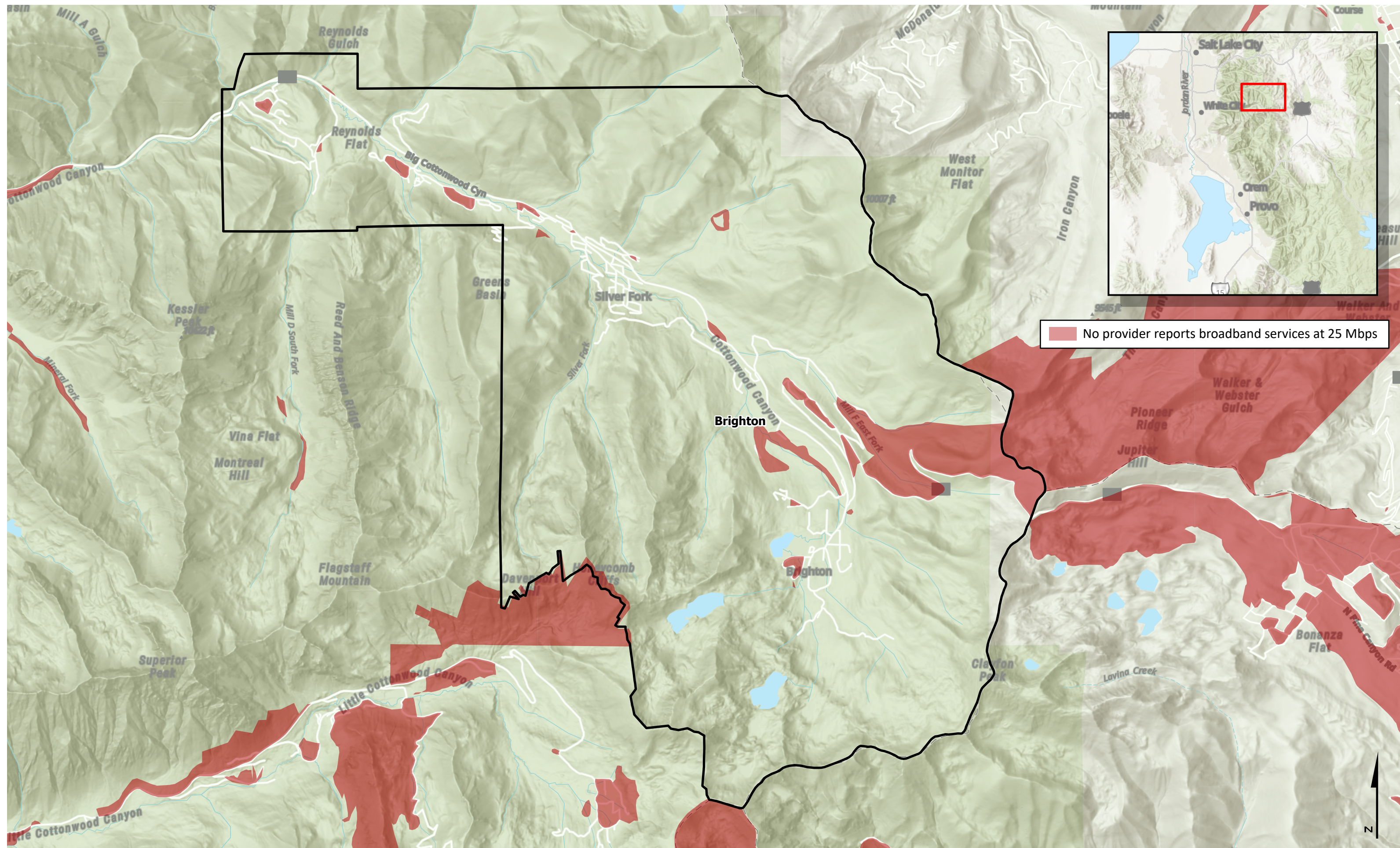
Figure 9: Areas with No Services at 25 Mbps in Town of Brighton

Horrocks.

0   0.25   0.5   1
Miles

FCC Service Locations

The FCC has created a map that shows the service availability at each broadband serviceable location.[14] Residences and businesses that are classified as unserved or underserved will qualify for BEAD funding. Service designations were initially assigned from data from ISPs sent through FCC Form 477[15]. By analyzing the FCC service locations data, we can identify gaps in broadband coverage, which allows for prioritization of efforts to provide high-speed internet to unserved and underserved communities in the Town of Brighton.

FCC service designations help determine what areas qualify for BEAD implementation funding. The data within the other sections of 3.5.1 generally support the FCC service designations.

Figure 10 shows all FCC serviceable locations. The classifications only show underserved and unserved residences. The map depicts extreme lack of service in the Town of Brighton.

Figure 11 illustrates the unserved and underserved locations.

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[14] FCC. National Broadband Map. https://broadbandmap.fcc.gov/home
[15] Federal Communications Commission. Fixed Broadband Deployment Data from FCC Form 477. https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477

Figure 10: FCC Service Locations in the Town of Brighton
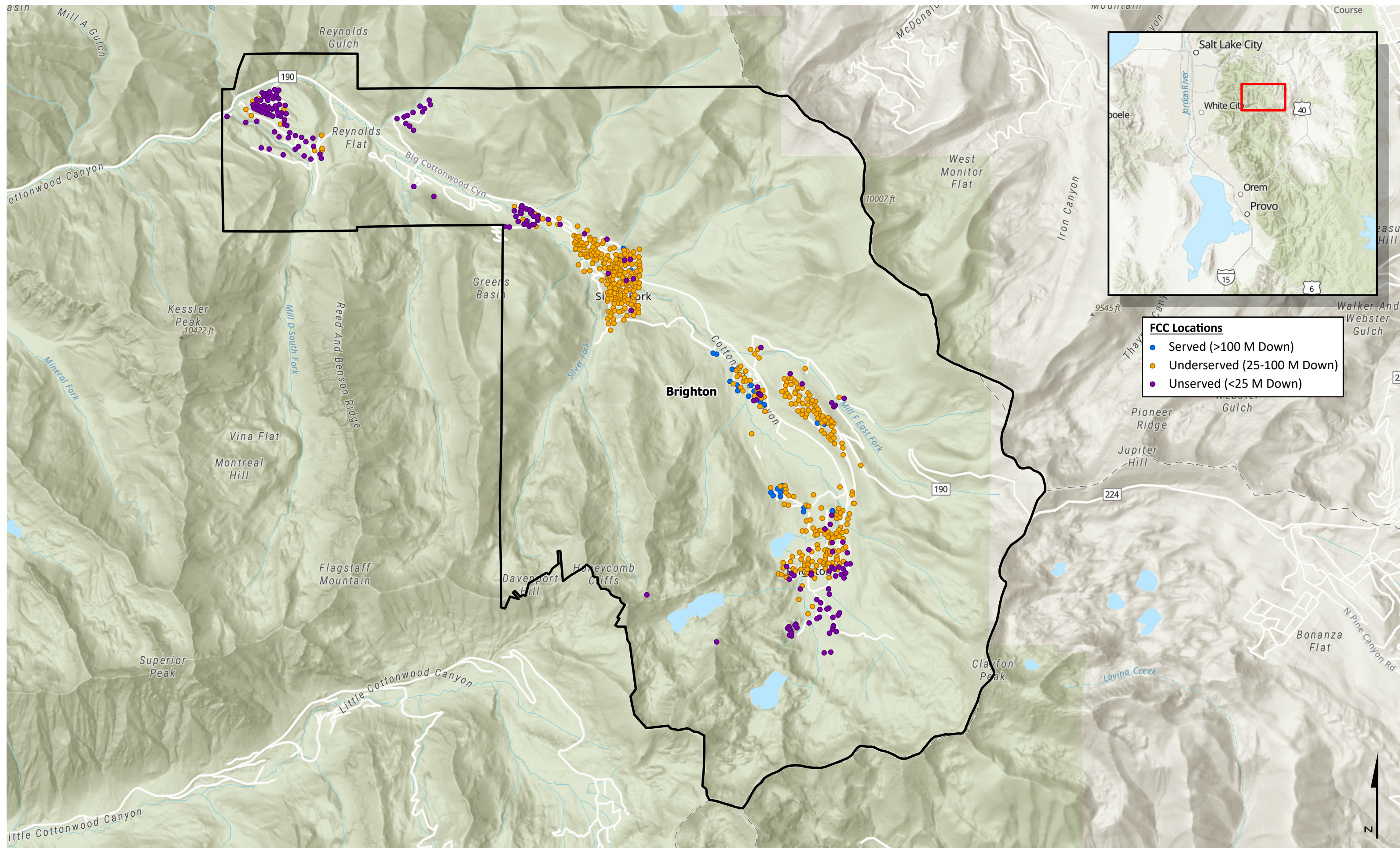
FCC Locations

- Served (>100 M Down)
- Underserved (25-100 M Down)
- Unserved (<25 M Down)

Horrocks.

FCC Locations
- Underserved (25-100 M Down)
- Unserved (<25 M Down)
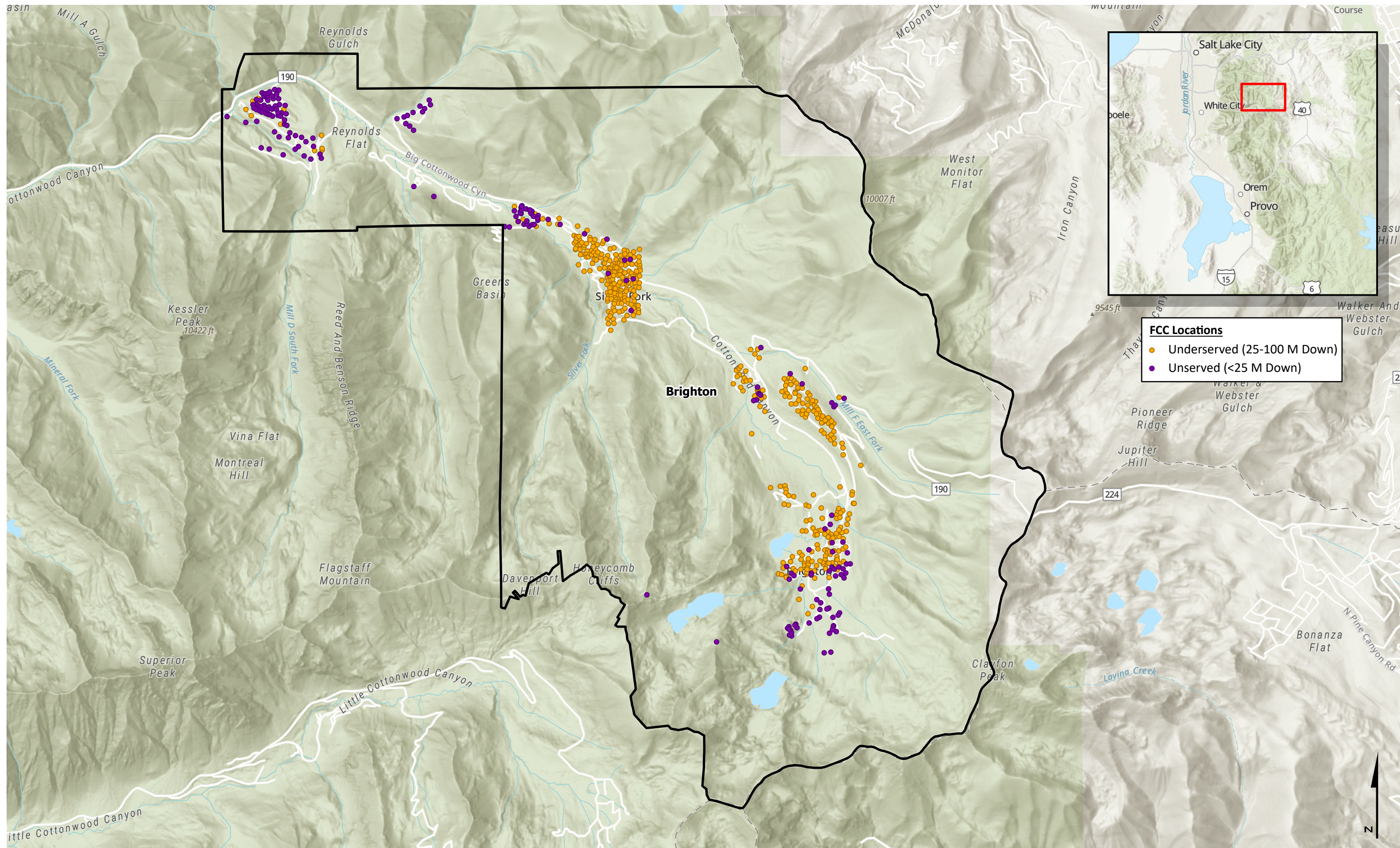
Figure 11: FCC Underserved/Unserved Service Locations in the Town of Brighton

Horrocks.

0   0.25   0.5   1 Miles

Table 9 shows the number of FCC locations that fall within each speed tier in the Town of Brighton. Margin of error estimates may be a factor of the percents not totaling 100.

Table 9. Broadband Speeds Available

TOWN	UNSERVED (BELOW 25/3 MBPS)		UNDERSERVED (BELOW 100/20 MBPS)		SERVED (ABOVE 100/20 MBPS)		TOTAL FCC LOCATIONS
	NUMBER OF LOCATIONS	%	NUMBER OF LOCATIONS	%	NUMBER OF LOCATIONS	%	
Brighton	224	33.4%	442	65.9 %	5	0.7%	671

Internet Speed Test

In order to correctly gauge accuracy of FCC broadband data and ISP coverage areas, the Town of Brighton and the state of Utah held a speed test campaign throughout the region. Residents could test the current speeds that their device was experiencing at the time of the test. Speed tests provide insight into unserved and underserved locations, showing gaps and discrepancies beyond the information provided by ISP data and FCC broadband data. These real-time internet download and upload speeds, while beneficial, did not come without limitations. For example, residents may be experiencing lower speeds because they are paying for a slower speed tier, which indicates an affordability issue. In addition, slower speeds may be due to personal hardware that's been incorrectly installed, which would be a digital access issue. The speed test cannot show if these other factors are happening, so it is used to assess general trends.

Figure 12 indicates the locations of the speed test results. None of the participants reported no service, and the remaining results were disbursed between the remaining speed categories.

Speed Test Results

- ● No Service
- ● <10 M down
- ● <25 M down
- ● <500 M Down
- ● >500 M down

Reynolds Gulch

190

Reynolds Flat

Big Cottonwood Cyn

West Monitor Flat

Greens Basin

Silver Fork

Kessler Peak
10422 ft

Reed And Benson Ridge

Mill D South Fork

Silver Fork

Cottonwood Canyon

Brighton

Mill F East Fork

190

224

Mineral Fork

Vina Flat

Montreal Hill

Flagstaff Mountain

Davenport Hill

Honeycomb Cliffs

Brighton

Clayton Peak

Superior Peak

Little Cottonwood Canyon

Little Cottonwood Canyon

Pioneer Ridge

Jupiter Hill

Walker & Webster Gulch

Bonanza Flat

Lavina Creek

Salt Lake City

Jordan River

White City

Orem

Provo

11747 ft

9545 ft

6

Horrocks.

Figure 12: Speed Test Results for Brighton City

0   0.25   0.5   1
Miles

Table 10 shows the results of the speed tests. Out of the total 181 tests taken, nearly 66% (121) of the locations classify as unserved (download speeds below 25 Mbps).

Table 10. Speed Test Results

DOWNLOAD SPEED	BRIGHTON
No Service	0
Below 10 Mbps	65
Below 25 Mbps	56
Below 500 Mbps	60
Above 500 Mbps	0
Total Locations	181

Figure 13 displays the FCC locations (both underserved and unserved) in addition to the speed test results. It also shows that much of the current population in the Town of Brighton is unserved with respect to broadband connectivity.

FCC Locations
- Underserved Location (25-100 M Down)
- Unserved Location (<25 M Down)

Speed Test Results
- No Service
- <10 M down
- <25 M down

Figure 13: Unserved Speed Test Results and Underserved/Unserved FCC Locations in Town of Brighton

Horrocks.

0 0.25 0.5 1 Miles
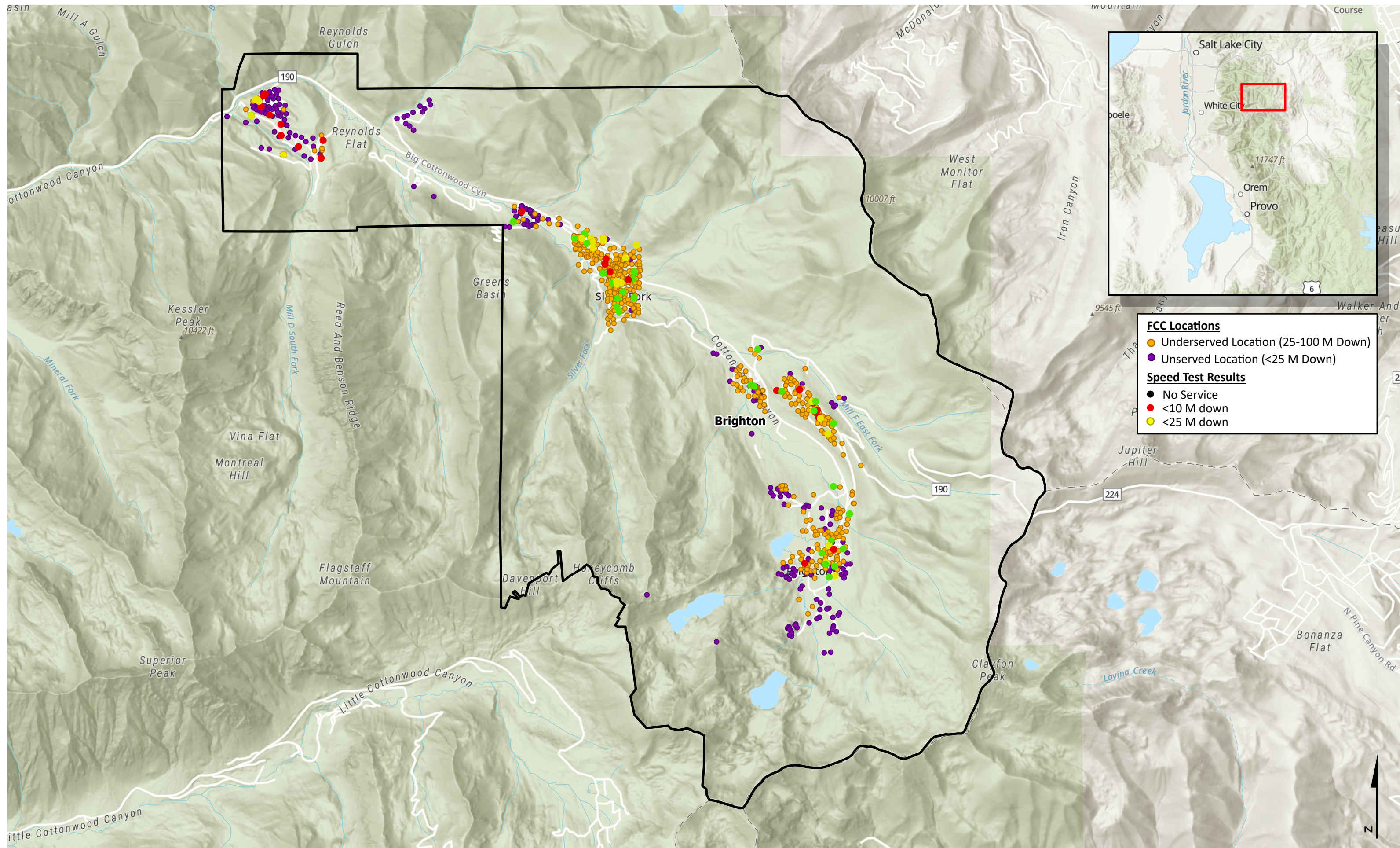
Survey Data

The Town of Brighton Broadband Survey asked respondents to indicate if they had a household internet connection. Of 146 respondents, 120 responded, "Yes, I have an internet connection at my residence" and 26 selected "No, I don't have an internet connection at my residence." This data is detailed in Figure 14 below.

Internet at Residence

82%

18%

Yes, I have an internet connection at my residence.

No, I don't have an internet connection at my residence.
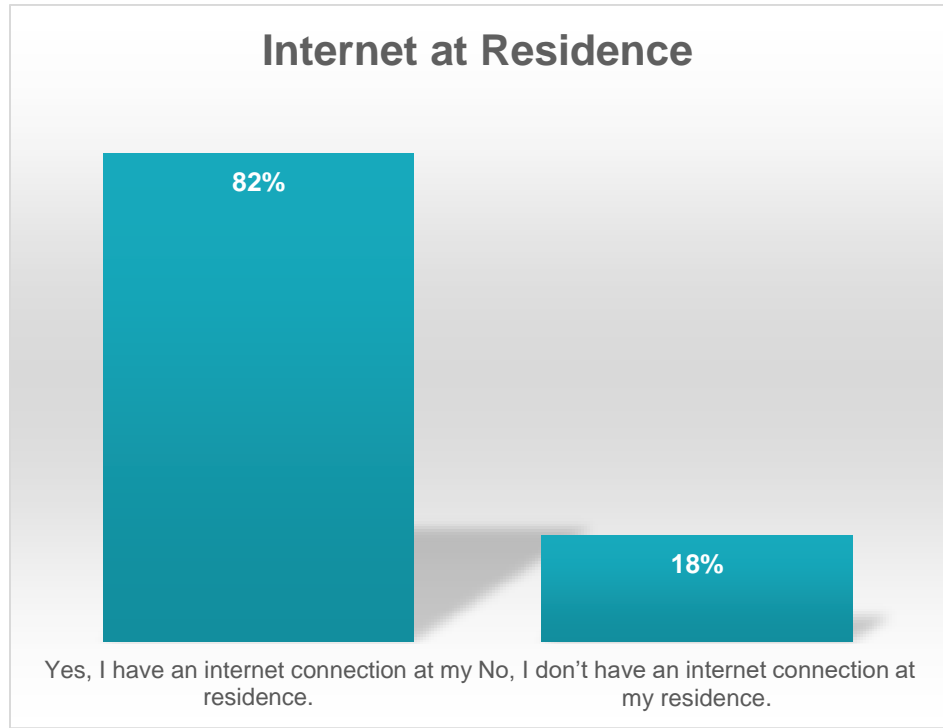
Figure 14. Percentage of Survey Respondents with a Household Internet Connection

The survey asked respondents what company they use for internet service. There were 109 responses to this question with 75 respondents indicating that CenturyLink was their ISP. This data is detailed in Figure 15 below. Of the current ISPs available in the Town of Brighton, Google Fi, HugesNet, Starlink and Viasat are satellite internet providers. Century Link, SenaWave and Utah Broadband are wired and fixed wireless providers. CenturyLink offers DSL services in the area. Utah Broadband and SenaWave are fixed wireless providers servicing the area.

Current Internet Service Providers (ISP)

Legend:
- Infinite Internet
- CenturyLink
- Utah Broadband
- Viasat
- Starlink
- Verizon
- SenaWave
- Unknown
- HughesNet
- Google Fi
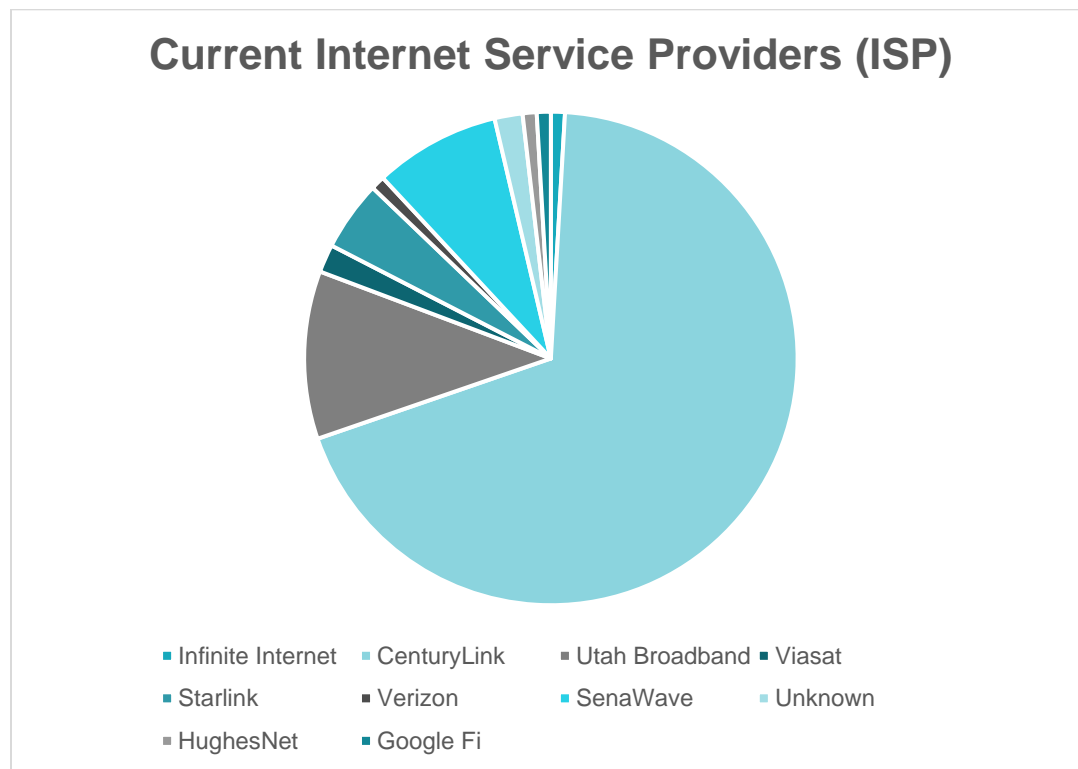
Figure 15. ISPs in the Town of Brighton Area

Survey respondents who answered "No, I do not have an internet connection at my residence" were directed to a follow-up question about why the internet is not available for them. Of 38 respondents, nine people shared that they did not have connectivity because the internet is not available in their area. Six respondents shared that initial connection fees are too expensive. More information is detailed in Figure 16 below.
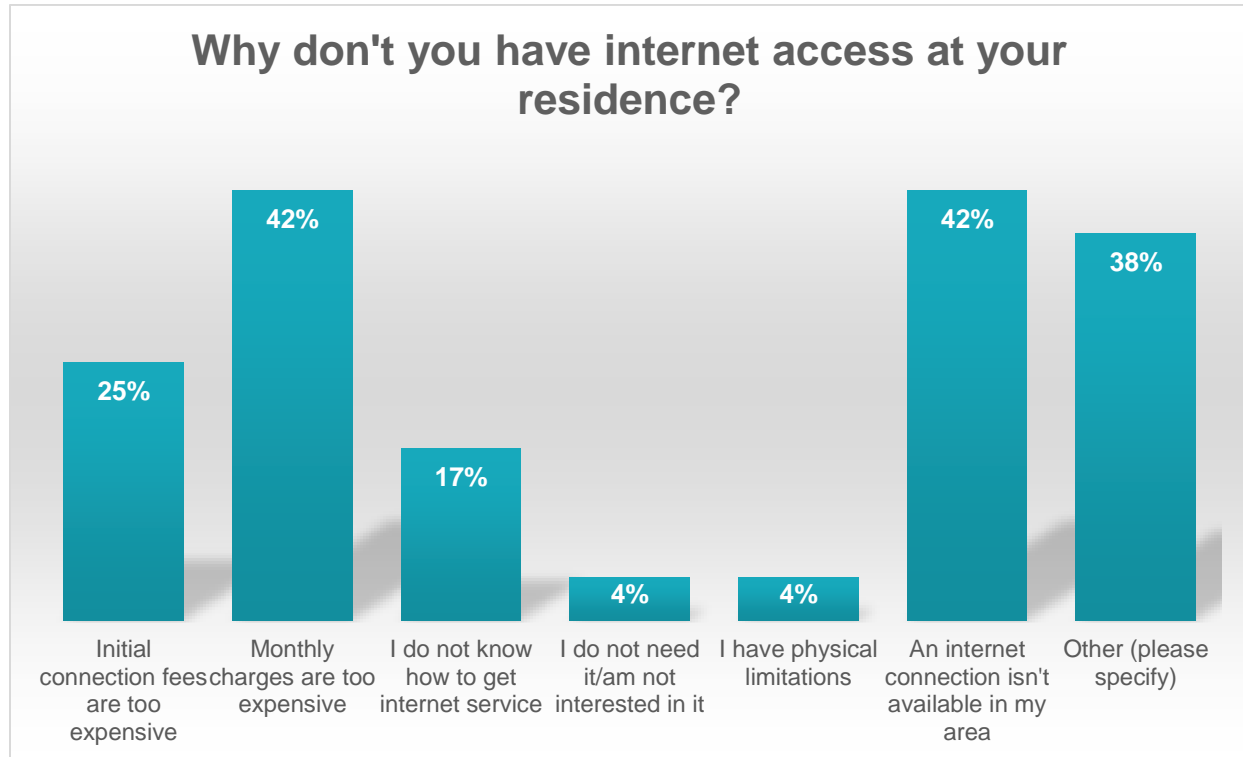
Figure 16. Common Reasons Residents Do Not Have Internet

3.5.2 Digital Access

There are many barriers to digital access in the Town of Brighton which have made it difficult for residents to access high-speed broadband internet. These barriers include affordability, digital literacy, lack of devices, language barriers, and community anchor institutions that lack access to broadband connectivity and/or devices. To address these needs, it is important to prioritize initiatives that improve digital literacy and provide affordable access to high-speed internet, particularly in underserved areas of the Town of Brighton.

Covered Populations

A covered population refers to a group of individuals who are eligible for a particular program or intervention based upon economic or socioeconomic factors. The goal of defining a covered population is to target resources and focus them on those who are most in need.

Covered populations include:[16]
- Individuals who primarily reside in a rural area
  - Brighton has a population density of 25.4 people per square mile, which is significantly less than the FCC definition of 100 persons per square mile or less to establish a baseline definition of "rural area"
- Veterans
  - 5.4%
- Individuals who are members of racial or ethnic minority groups
  - 13% (includes all individuals who are non-white)
- Individuals who live in low-income households
  - 10.7% (persons below poverty line)
- Aging individuals (60 and above)
  - 31%

Internet Subscription Rates

The Town of Brighton recognizes the vital role that broadband internet plays in the community. Census data provides valuable insights into the adoption and accessibility of broadband services among the population. This data assists in identifying areas of opportunity and addressing existing gaps in broadband access.

As of 2021, 50.3% of Brighton households have a broadband internet subscription.

Table 11 lists the internet subscription rates within Brighton.[17] Only 147households occupy the Town of Brighton year-round. The percentage of year-round residents without an internet subscription is 49.7%.

Table 11. Internet Subscription Rates

TOWN	TOTAL HOUSEHOLDS	HOUSEHOLDS WITHOUT AN INTERNET SUBSCRIPTION	% WITHOUT AN INTERNET SUBSCRIPTION
Brighton	147	73	49.7%

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[16] U.S. Census Bureau. (2021).Census Trak 1101.06, Salt Lake, Utah. https://censusreporter.org/profiles/14000US49035110106-census-tract-110106-salt-lake-ut/
[17] U.S. Census Bureau. (2021). American Community Survey 5-Year Estimates. S2801 - Types of Computers and Internet Subscriptions. https://data.census.gov/table?q=internet+brighton+utah

Survey Data

The Town of Brighton Broadband Survey asked respondents what they use internet for at their household. There were 112 responses to this question, and most respondents indicated they were using the internet for entertainment, remote working, shopping, and video conferencing. This data is detailed in Figure 17 below.

Current Internet Use

Category	Percentage
Remote working	83%
Remote learning	52%
Remote health care/telehealth	43%
Video conferencing/chatting	70%
Entertainment/streaming services	88%
Shopping	71%
Gaming	15%
Other (please specify)	13%
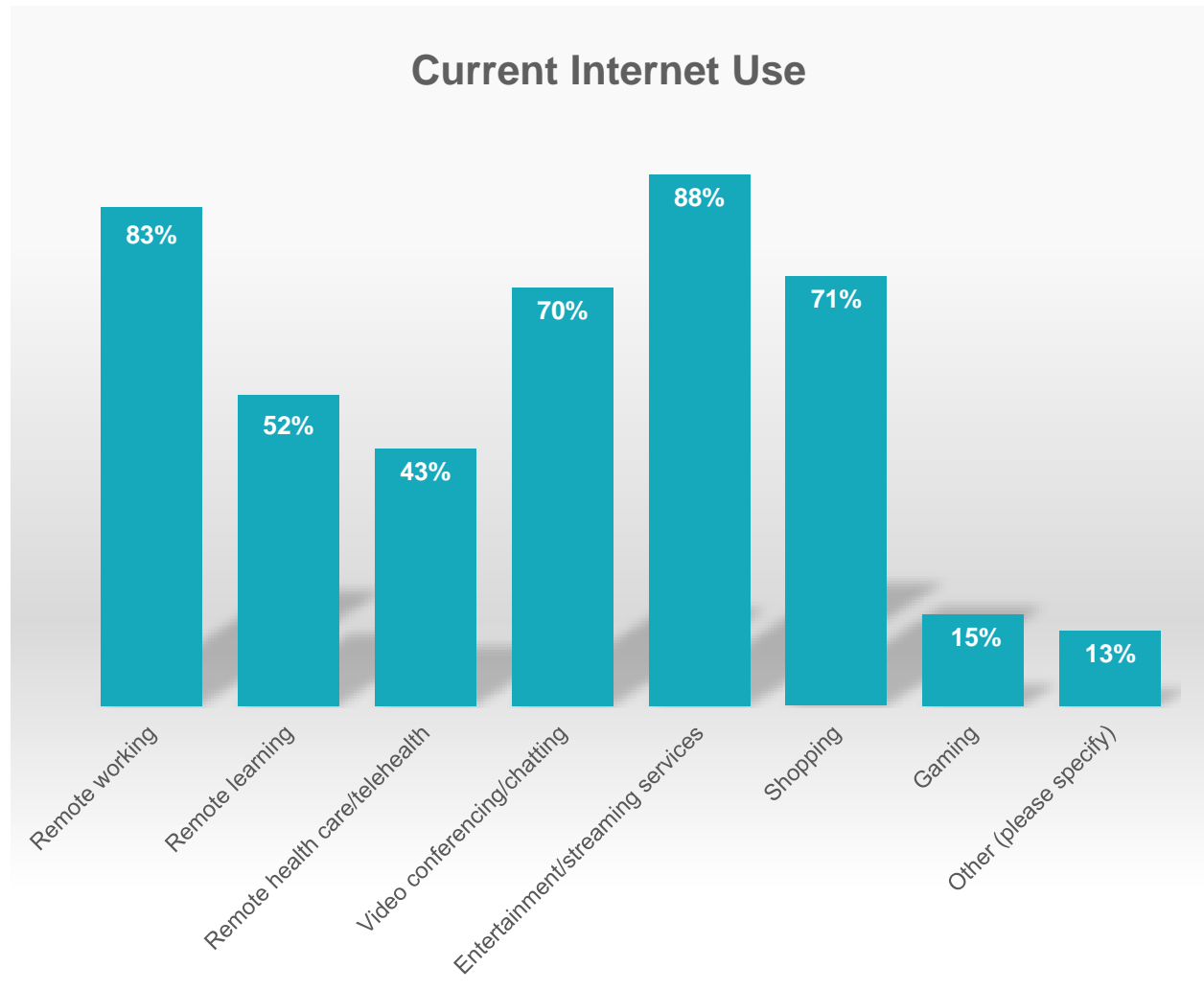
Figure 17. Household Internet Uses

3.5.3 Broadband Affordability

Affordability is a significant barrier to broadband access in the Town of Brighton. While access to high-speed internet has become increasingly important for education, health care, and business opportunities, many residents are unable to afford the cost of broadband services. To address these needs and gaps in broadband affordability, it is important to develop initiatives that provide affordable broadband options for low-income households, increase competition among broadband providers, and address the root causes of broadband affordability challenges.

Survey Data

The Town of Brighton Broadband Survey included a question about what the monthly charge is for respondents' household internet service. There were 97 responses to this question, with more than 25% of respondents indicating they pay between $40.01 and $50 for monthly internet service and 20% indicating they pay between $50.01 and $70. This data is detailed in Figure 18 below.
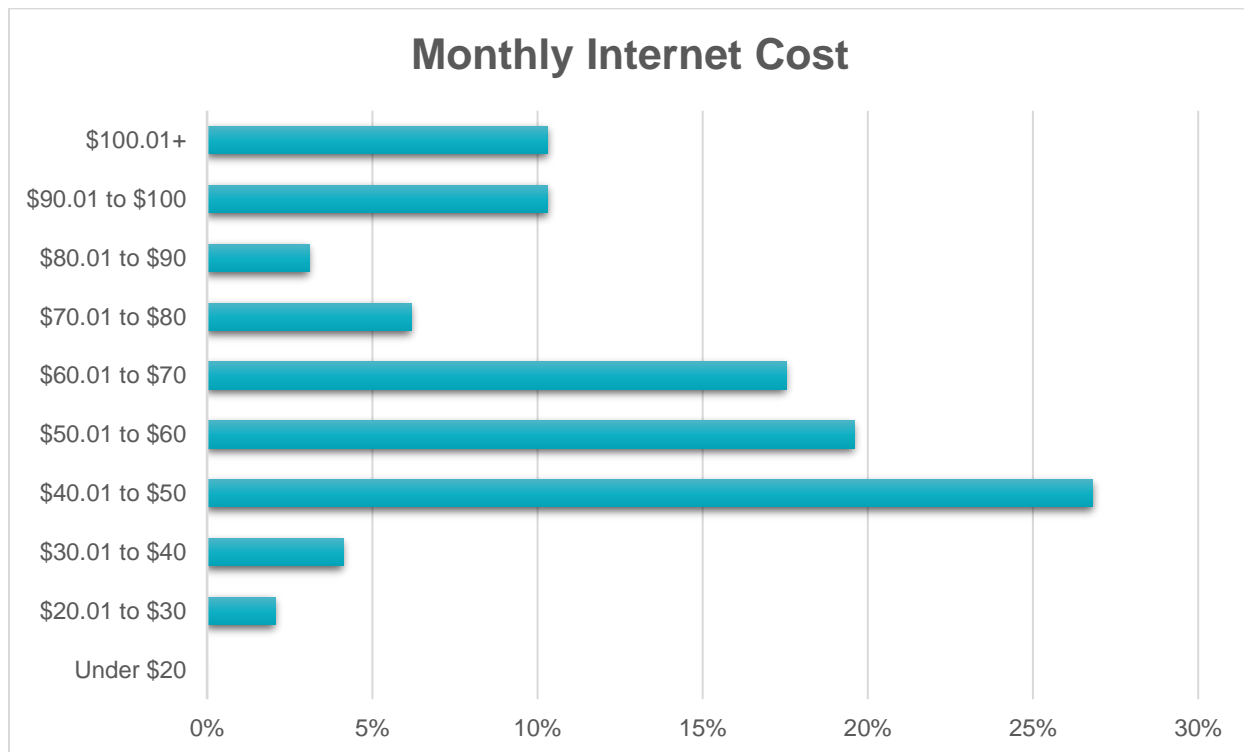
Figure 18. Monthly Household Internet Cost

Survey respondents were also asked about their awareness of the Affordable Connectivity Program (ACP). Of 146 responses to this question, 101 people shared they were not aware of the ACP. Information is detailed in Figure 19.

Affordable Connectivity Program Awareness

Category	Percentage
Yes, I participate in the Program.	0%
Yes, I am aware of the Program, but do not participate in it.	25%
No, I am not aware.	75%
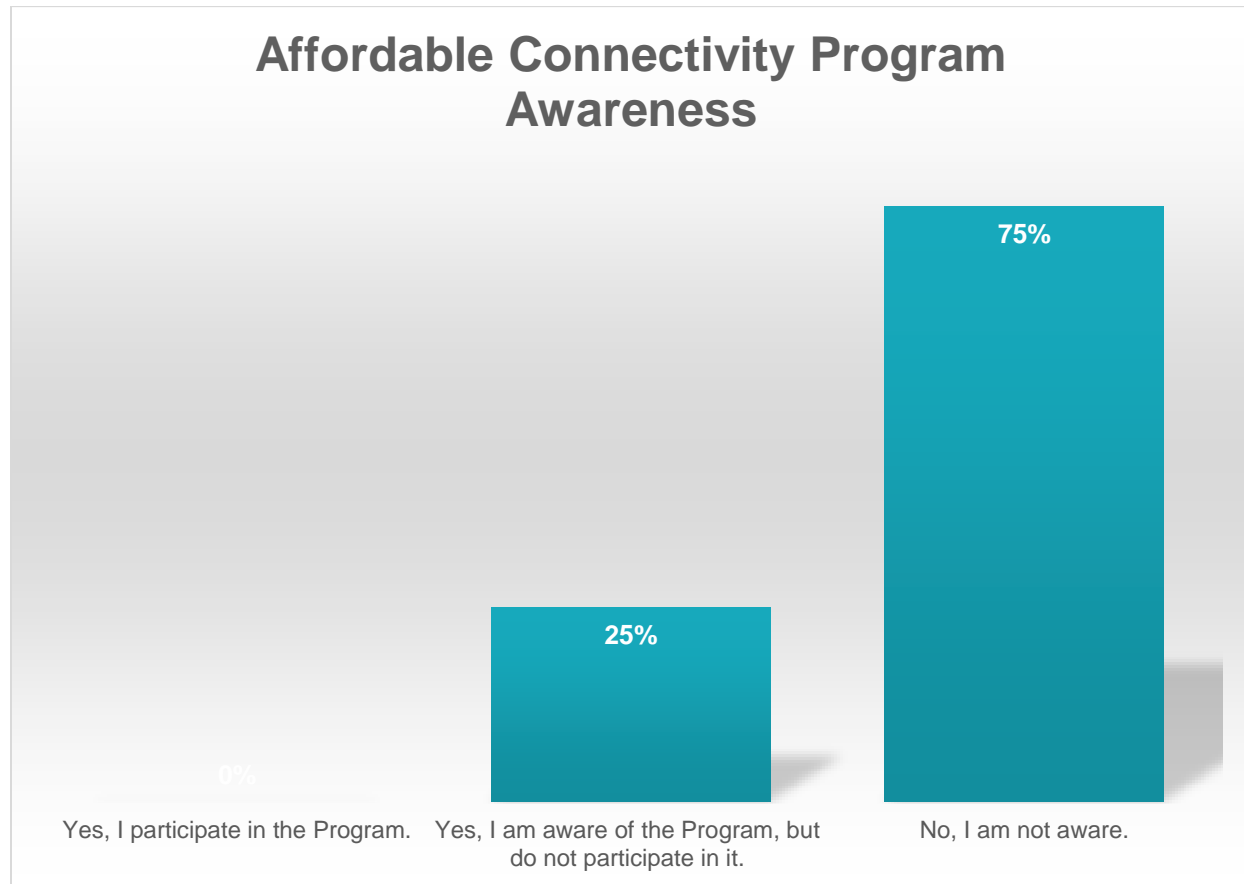
Figure 19. Affordable Connectivity Program Awareness

4 OBSTACLES OR BARRIERS

Regulatory Barriers

The entire community sits in one of the biggest watersheds that provides water to the Salt Lake Metropolitan Area. This watershed is subject to regulations that preserve water quality, including development buffers from surface waters and special permitting through Salt Lake City Public Utilities. If the proposed development is on Forest Service land, the application may need additional National Environmental Policy Act (NEPA) approvals as well. Every complex permitting process required for infrastructure projects increases the implementation timeline and budget, creating considerable barriers for internet service providers.

Table 12 shows many of the permitting entities within the Town of Brighton with longer lead times. Figure 20 shows land ownership throughout the region, which informs permitting. In the Town of Brighton, it can take up to 90-180 days to receive all relevant permits. Initiating the permitting application process promptly is essential to meet any of the funding opportunity's implementation deadlines. It is important to note that this list is not exhaustive and may evolve between the publication of this plan and the construction phase.

Table 12. Potential Permitting Entities within the Town of Brighton

LEVEL	APPROXIMATE TIMEFRAME FOR PERMITTING	ENTITY
Local	30 Days	Salt Lake County Engineering
State	30 Days	State Trust Lands
State	30 Days	State Wildlife Reserve
State	30 Days	UDOT
Federal	180 Days	U.S. Corps of Engineers
Federal	180 Days	U.S. Forest Service
Utility	45 Days	Electrical Company
Utility	45 Days	Gas Company
Utility	45 Days	Other Telecom
Utility	45 Days	Salt Lake City Public Utilities

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Land Ownership

Bureau of Reclamation	National Forest
Bureau of Land Management	National Wildlife Refuge
National Wilderness Area	State Land
Tribal Lands	State, County, City: Wildlife, Park and Outdoor Recreation Areas
Bankhead-Jones Land Use Lands	Other Federal
Military Reservations and Corps of Engineers	Private
National Parks Service	

Horrocks.
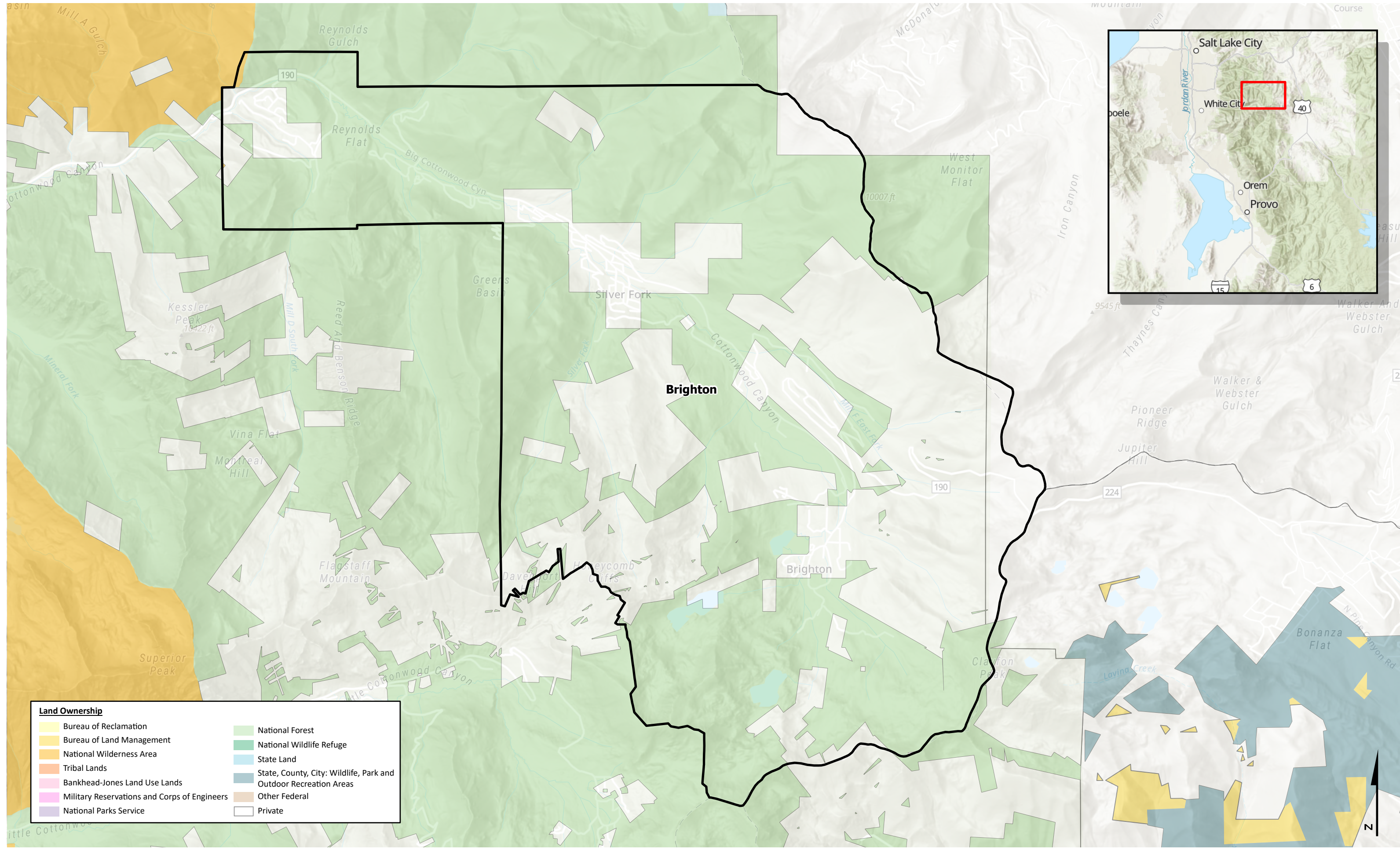
Figure 20: Land Ownership in the Town of Brighton

0   0.25   0.5   1
Miles

Procurement or Contracting Issues - Land Ownership

Over sixty percent (60%) of the land in the community's municipal boundary is owned by the United States Forest Service. This land is part of the Uinta-Wasatch-Cache National Forest and is held to a higher regulatory standard than if subject to the community's local municipal regulations. The large swaths of public land surround small pockets of private land dispersed throughout the canyon. A couple expanding residential communities with some year-round residents are tucked back between the Canyon's mountains and abut the national forest. In some instances, it is necessary for property owners to cross Forest Service land in order to access their private properties. Creating cross-access agreements with the Forest Service is complicated, and the agreements often include a set expiration date. This recently was the case with one Brighton neighborhood, and the property owners are currently in discussions with the Forest Service to revise and extend the agreement. Anytime new access is needed across Forest Service lands this process starts over to form a new agreement, each with its own unique conditions required by the Forest Service.

Labor Resources

The Town of Brighton was incorporated in 2020 and, since then, has only hired a few full-time employees. The employees hired are the Town Clerk, Finance Manager, and Attorney. All of the community's services, like garbage, building permitting, or code enforcement, are contracted out to other agencies. All utilities in the community are contracted through private companies. This makes the process of coordinating larger projects difficult. The community does not have the digital infrastructure knowledge or experience to procure land or execute permitting processes necessary for the implementation of digital infrastructure.

Topography

The community is spread out throughout Big Cottonwood Canyon. In areas where the topographic conditions are ideal for development, clumps of residential houses have sprung up. Initially, these residential houses were historically used as summer cabins, although the year-round population of the community increases every year. In total there are eight different neighborhoods in the community, some more accessible than others. These neighborhoods are identified on page 4 in Figure 1 referred to as Character Areas that are in the Town of Brighton's General Plan. The Mount Haven community has an incredibly steep access road that climbs in elevation until you reach the neighborhood at the top of a small peak. The Silver Fork neighborhood which is currently underserved and has the largest population of year-round residents, intersects with Big Cottonwood Canyon Creek, a small creek protected by watershed regulations. Some cabins in this community are incredibly hard to access. Their driveways are so steep that driving on them in the winter can be dangerous.

Access and Right of Way

The Silver Fork community is accessible through more than one entry point and has a large network of roads. However, once off the main highway in the canyon, all of the roads become private roads with limited access by the public. The private roads are held under HOAs or private

ownership. The Town of Brighton does not have plans to adapt these private roads into a public road system. Each road has a complex network of right-of-way or ownership agreements that would take a long time to resolve. Even if these private roads could be adopted by the Town, the community does not have the resources to maintain or improve these roads. Because these roads are privately owned, they have not been updated to meet industry standards. Most of the roads are one lane and unpaved without curb, gutter, or sidewalk.

Seasonal Barriers – Snow

Snow is present in the canyon for more than six months out of the year, even at the lowest point. The average snowfall around the Brighton Resort is 500 inches each winter. During the winter months, snow is so heavy that it causes damage to existing buildings, roads, and utilities. Most utility lines in the canyon that reach residential properties are above ground on poles. Although some projects have made improvements to bury lines underground, the community still faces issues with complex networks of above ground power lines every year. The community is trying to work out the ownership of these above ground poles. Originally these poles were used to get electricity to properties but Rocky Mountain Power has been working to bury all of their existing lines, so internet service providers have been able to utilize these existing poles for internet services.

5 IMPLEMENTATION PLAN

The deployment of broadband infrastructure and expanded digital access throughout the Town of Brighton follows the priorities, actions, strategies, and stakeholder involvement set forth in the implementation plan. With an emphasis on addressing the identified needs and gaps in broadband availability, affordability, and adoption, the plan lays out a roadmap for achieving universal access. The plan includes a projected timetable and cost as well as planned activities, key strategies, and stakeholder engagement. This implementation plan ensures that access to the possibilities and resources that come with dependable broadband infrastructure and connection are available to residents of the Town of Brighton. The implementation plan seeks to build a connected community with a strong commitment to stakeholder involvement and collaboration.

5.1 PRIORITIES

The priorities defined in Table 13 act as the foundation for executing the Town of Brighton's Local Broadband Plan. They are intended to ensure that the plan is in line with the community's vision for broadband infrastructure and digital access. Together with the stakeholders, the Town of Brighton community can concentrate efforts on attaining the most crucial broadband goals and objectives.

Table 13. Priorities for Broadband Deployment and Digital Access

PRIORITY	RANKING	DESCRIPTION
Establishing high-speed internet in all developed areas.	High	Some developed areas still do not have access to internet services.
Establishing high-speed internet in all unserved areas.	Med	Other, more remote, communities have year-round residents without any options for internet services.
Ensuring areas with existing internet are receiving adequate services including download and upload speeds.	Med	New construction has been completed to install internet services in the community's other two most populated areas. The Town of Brighton wants to ensure these residents receive adequate services.
Ensure that all residents can participate in broadband services that are provided in the community.	Low	Many residents in the community may not be aware of or able to fully participate in the internet services necessary to be an informed and contributing member to this remote community. Visitors who can participate in broadband services may also benefit.

5.2 KEY EXECUTION STRATEGIES

Drawing on the vision and goals in Section 1.2, this section explains the specific strategies that the Town of Brighton will undertake to realize those goals.

GOAL 1: PROVIDE HIGH SPEED-INTERNET ACCESS TO ALL DEVELOPED AREAS THROUGHOUT THE COMMUNITY.

OBJECTIVE	STRATEGY
Within the next two years, ensure that denser areas or areas with year-round residents are considered for funding and construction by internet services providers.	Work with internet service providers to secure funding for construction of new internet services in the Silver Fork neighborhood.
	Identify and apply for additional funding opportunities.
	Identify and mitigate obstacles and barriers preventing expansion.
Within the next five years, ensure that remote or dispersed neighborhoods are considered for funding and construction by internet services providers.	Work with internet service providers for solutions to provide internet in Cardiff Fork, Mill D, and Mount Haven.
	Identify and mitigate obstacles and barriers preventing expansion.

GOAL 2: CONFIRM AREAS WITH EXISTING INTERNET RECEIVE ADEQUATE SERVICES, INCLUDING DOWNLOAD AND UPLOAD SPEEDS

OBJECTIVE	STRATEGY
Monitor the recent construction of internet services in the community	Continue to gather feedback from residents regarding service dependability
	Communicate with ISPs if the speeds are not according to contract

GOAL 3: ENSURE THAT ADEQUATE SERVICE EXISTS THROUGHOUT THE CANYON TO PROVIDE RELIABLE EMERGENCY MANAGEMENT AND IS ACCESSIBLE TO PRIMARY HOMES, SECONDARY HOMES, AND TOURISTS

OBJECTIVE	STRATEGY
Ensure adequate mobile coverage throughout and verify the connection of the Town's emergency management system to fiber	Gather feedback regarding cell service in Big Cottonwood Canyon
	Ensure fiber is connected to both primary and secondary residences

GOAL 4: ESTABLISH DIVERSE OPTIONS FOR BROADBAND CONNECTION TO ALL DEVELOPED AREAS

OBJECTIVE	STRATEGY

Appeal to multiple internet service providers to establish new services in the community.	Reach out to other internet service providers that could expand in the area.
	Identify and mitigate obstacles and barriers preventing expansion.
Work with existing service providers to establish a variety of packages with different price points and speeds.	Understand how the Town of Brighton could assist ISPs with providing services at a lower cost.
	Understand how the Town of Brighton could property owners with accessing services at a lower cost.

GOAL 5: ENSURE THAT ALL PROPERTIES CAN PARTICIPATE IN BROADBAND SERVICES PROVIDED IN THE COMMUNITY

OBJECTIVE	STRATEGY
Identify multiple ways the Town of Brighton can assist property owners with broadband adoption.	Educate eligible properties on programs that may assist with broadband adoption or subscriptions.
	Consider how the Town could help reduce the cost of broadband adoption.
	Identify and mitigate obstacles and barriers preventing adoption.

GOAL 6: PROMOTE DIGITAL EQUITY IN THE COMMUNITY

OBJECTIVE	STRATEGY
Develop ways to improve the community's digital skills especially for the community's older population.	Host classes in the community to teach residents how to find information and digitally participate in community events.
	Distribute educational information and other resources to increase knowledge of online services.
Continue to increase the efficiency of online communication and promote user-friendly services and online platforms.	Provide all information and documents for property owners on the Town website.
	Provide the option for hybrid participation in Town meetings and events and educate the community on how to participate.

5.3 PLANNED ACTIVITIES

The purpose of this section is to outline activities that will support universal service, identify key players responsible for implementing these activities, specify funding sources, and highlight the

expected outcomes in terms of broadband availability, digital access, and broadband affordability. Universal service is the principle that all Americans should have access to both telecommunications and high-speed internet at just, reasonable, and affordable rates.

Table 14. Broadband Availability

PLANNED ACTIVITY	KEY PLAYERS	FUNDING SOURCES	TIMELINE	EXPECTED OUTCOMES
City Policies – Add requirements for new developments to add HDPE Conduit for fiber during new builds	TOB, MSD	n/a	3-6 months	Ensure future development will provide opportunities for new broadband
Develop and Maintain Relationships with ISPs	ISPs, TOB, MSD,	n/a	Ongoing	Provide valuable ISPs with necessary support
Add broadband-supportive language to community master plans	TOB, MSD	Town Budgeted services through the MSD	3 months	Provide valuable ISPs with necessary support
Identify additional funding sources (such as the USDA Rural Broadband Fund)	TOB, MSD, ISPs	n/a	Ongoing	Provide valuable ISPs with necessary support
Work with property owners to understand barriers by neighborhood	TOB, MSD, ISPs, BCCA	n/a	Ongoing	Help provide solutions to broadband barriers and facilitate communication
Actively communicate with Canyon partners to find new opportunities for broadband installation	TOB, MSD, ISP	n/a	Ongoing	Efficiently use resources and assist ISPs

Table 15. Digital Access

PLANNED ACTIVITY	KEY PLAYERS	FUNDING SOURCES	TIMELINE	EXPECTED OUTCOMES
Classes	TOB, BCCA, MSD	TOB, Grants	1-2 years, ongoing	Expand residents' knowledge of online resources and community engagement
Develop a strategy for community Wi-Fi hotspots	TOB, MSD, Salt Lake County Engineering, UDOT, Salt Lake County Libraries	Grants	3 years	Expand digital access for residents and visitors
Provide Online Resources through the Town Website	TOB	Town Budgeted services through the MSD	1-2 Years, ongoing	Ensure that residents can access resources whenever needed

Table 16. Broadband Affordability

PLANNED ACTIVITY	KEY PLAYERS	FUNDING SOURCES	TIMELINE	EXPECTED OUTCOMES
Raise awareness of programs such as ACP and Lifeline	TOB, MSD, BCCA	Town Budgeted services through the MSD	Ongoing	Reduce or remove cost barriers for residents
Partner with organizations that raise awareness of the ACP program	TOB	Town Budgeted services through the MSD	Ongoing	Reduce or remove cost barriers for residents
Collect data on broadband costs and packages currently available and identify gaps.	TOB, ISPs	N/A	Ongoing	Provide new services at different costs than existing services.
Reach out to other internet service providers who may be able to provide diverse packages at different prices.	TOB, ISPs	N/A	1-2 Years	Provide new services at different costs than existing services.

5.4 ONGOING STAKEHOLDER ENGAGEMENT

Continued stakeholder engagement is vital to the success of Town of Brighton's broadband deployment strategies. Town of Brighton will continue to build strong relationships with community partners and key stakeholders as this plan is implemented. The success of getting all residents connected to reliable high-speed internet will be dependent on the ability to continually coordinate efforts with local community partners.

Key initiatives to support continued engagement include:

- **Create a Broadband Working Group:** This working group should be diverse and represent a variety of roles. Important representation in this group includes municipal officials, educators, community influencers, business leaders, and technical experts. A broadband working group will ensure that there is city-wide support for resulting broadband projects.

- **Meet with Internet Service Providers:** Building a relationship with an internet service provider (ISP) can be beneficial for both the Town of Brighton and the ISP. By working together, the Town of Brighton can help to ensure that their residents have access to high-quality, affordable broadband internet.

  The following strategies promote the establishment of a collaborative partnership with local ISPs:

  - IMPORTANT: Only meet with one ISP company at a time. Ask them to share their future build-out plans for the Town of Brighton. They are more willing to share information when their competition is not in the room.

  - Streamline permitting and processes: Review and streamline the permitting and approval processes for ISPs to facilitate efficient infrastructure deployment.

  - Create incentives: Offer incentives such as tax breaks or expedited permit processing for ISPs that invest in broadband infrastructure.

  - Foster public-private partnerships: Explore opportunities for public-private partnerships with ISPs to leverage resources, expertise, and funding.

  - Collaborate on funding opportunities: Work together with ISPs to identify and pursue available funding sources, grants, or subsidies for broadband projects.

  - Share infrastructure resources: Explore possibilities for sharing existing infrastructure, such as utility poles or conduit, to reduce costs and deployment timelines.

  - Regular communication and updates: Establish regular communication channels to keep ISPs informed about city initiatives, policies, and upcoming projects related to broadband infrastructure

- **Continue Stakeholder Communication:** Stakeholder communication that is frequent and transparent helps build and maintain community support. Town of Brighton should aim to educate, garner support, and celebrate accomplishments through stakeholder communication. Tactics for communicating with stakeholders should be varied and represent traditional and virtual engagement. Specific tactics to continue stakeholder communication include:

  o Utilize existing communication networks that the Town has already established to make it easier for stakeholders to engage in the process.

  o The Town Council meeting, held twice a month, is where most coordination between the Town and ski resorts occurs.

- **Identify and Update Community Priorities**: Each neighborhood within Town of Brighton has different needs, resources, technologies, financing, and partnership options. Reevaluation of priorities will be required to keep community members engaged, achieve a local vision of connectivity, and increase broadband utilization. Updates to the Local Broadband Plan may become necessary through the process of planning, implementing, and evaluating success.

- **Understand Regional Context:** By establishing and strengthening working relationships with a variety of stakeholders, Town of Brighton may identify additional opportunities, barriers or initiatives. Continued coordination with key stakeholders will allow Town of Brighton to clearly communicate the benefits of connectivity, empower local entities to advocate for broadband initiatives and build enthusiasm and support for projects.

- **Advertise and continue to increase enrollment in the Affordable Connectivity Program.** The ACP is an FCC benefit program that helps ensure that all households can afford broadband. The benefit provides a discount of up to $30 per month toward internet service for eligible households and up to $75 per month for households on qualifying Tribal lands.

5.5 ESTIMATED TIMELINE FOR UNIVERSAL SERVICE

Universal service is the goal of providing broadband service to every resident in the Town of Brighton. Achieving this goal depends upon receiving sufficient funding for broadband infrastructure projects, the timeline by which ISPs build at, and the timeline by which the BEAD program is administered. Due to this timeline being determinant on external elements, the Town of Brighton intends to communicate closely with all ISPs building in the area and follow the state timeline as listed in the statewide Digital Connectivity Plan. The state aims to provide universal broadband service for all Utahns by December 31, 2028. The timeline more specific to items relevant to the Town of Brighton officials is shared in Section 5.3 of this plan.

This estimated timeline is provided for the purpose of assisting internet service providers in seeking funding for installation projects. Proposals, designs, permitting, and construction are the

responsibility of the internet service providers. The Town assists the internet service providers during this process wherever possible with coordination between partners or necessary engagement. It is the intent of this plan that internet service providers who wish to expand their network in the community will generally follow this estimated process and timeline.

Individual Broadband Project Minimum Timeline

It will be up to the ISPs to carry out the design and construction of broadband infrastructure projects within the Town of Brighton, however, a sample broadband project timeline is listed here for reference. An estimated timeline concerning activities necessary to implement broadband services include the following:

Table 17. Broadband Infrastructure Project Design and Build Phase Estimated Timeline for ISPs

STEP	DESCRIPTION	TIMELINE
High-Level Design (HLD)	Create a preliminary FTTP (Fiber to the Premise) design before fielding and jurisdictional research	30-60 Days
Low-Level Design (LLD)	Create a FTTP design that is constructable using fielding data and jurisdictional research	60-90 Days
Permitting	Get approval from the appropriate jurisdictions for construction	Up to 180 Days
Construction	Build a functioning FTTP network	90-180 Days
Project Audit	Review construction documents, conduct AARs, create audit documentation	Up to 90 Days

Note that some of these phases may overlap, while others must be completed sequentially. Unforeseen circumstances or delays might impact the overall timeline.

Minimum duration: 30 days (HLD) + 60 days (fielding and LLD) + 180 days (permitting) + 90 days (construction) = 360 days (about 1 year) for full turn-key implementation.

If some phases can be completed concurrently, the duration could be shortened. For example, construction can be started on certain segments of the broadband build that have approved permits much sooner than the predicted 180 days, shortening the original estimate for the overall project duration.

It is crucial to account for potential delays and other factors that may affect the project schedule. Regular communication with relevant stakeholders and close monitoring of progress can help mitigate risks and keep the project on track.

5.6 ESTIMATED COST FOR UNIVERSAL SERVICE

An estimated cost for the project is calculated using GIS analysis and incorporating data from various sources such as the State of Utah's roads layer and address points as well as FCC data on served, underserved, and unserved points. The length attribute from the roads layer is used to determine the distance, considering several key parameters including aerial percentage, aerial cost, and underground cost (can vary based on the location geology).

The estimated cost for materials, design, and installation can vary. Costs for aerial fiber hung on power poles can range up to $10/FT. Underground fiber costs range from $30/FT when installing in easy-to-bore areas, up to $35-$60/FT when boring in rocky or hilly areas.

The formula for calculating the total cost of construction is as follows:

> Total Cost of Construction = ((Road Length * Aerial Cost * Aerial Percentage) + (Road Length * Underground Cost * (1 – Aerial Percentage)))

> *For this estimate, the following numbers were used:*

> > *Aerial Cost: $10/FT*

> > *Underground Cost: $30/FT*

> > *Aerial Percentage: See Table 14 below*

To obtain the cost per passing, the total cost of construction is divided by the count of address points (in some instances FCC points) within a defined geographic area, as determined by a polygon selection. This methodology ensures that the estimated cost is derived from reliable data sources and considers the specific characteristics of the project area, providing an accurate and comprehensive financial projection for the implementation of universal services.

Table 18 explains in detail the areas comprising the Town of Brighton and their respective costs. Some areas in this table are already served by broadband and therefore may not be considered a priority in this plan. However, cost estimates for these remain in the plan if further work is needed to update services in the future.

Table 18. Estimated Cost of Construction Per Polygon Area

AREA	Total Length (Miles)	% Aerial	Total Cost (Dollars)	Cost Per Passing (Dollars)	# Of Locations	Under-Served	Un-Served	Cost For Just Unserved & Under-served
TOWN OF BRIGHTON								
Brighton Loop	4.1	85%	379,514.24	2,417.29	157	29	128	$379,514.53
Cardiff Fork	1.87	15%	51,9739.44	17,324.65	30	1	21	$381,142.30

Evergreen and Camp Tuttle	0.58	40%	122,824.65	6,464.46	19	0	9	$58,180.14
Forest Glen Residential	6.6	30%	1,558,482.96	11,717.92	133	2	89	$1,066,330.72
Giles Flat Residential	0.48	30%	113,977.15	12,664.13	9	2	7	$113,977.17
Lady of the Lake	0.43	40%	91,455.29	3,517.51	26	0	14	$49,245.14
Mill D Cabins	1.16	10%	336,416.06	14,626.79	23	0	16	$234,028.64
Mt Haven	1.32	15%	365,193.63	4,246.44	86	4	49	$225,061.32
Pine Tree Residential	2.6	35%	582,836.24	9,878.58	59	7	36	$424,778.94
Silver Fork Residential	7.64	70%	1,008,685.90	3,777.85	267	112	129	$910,461.85
Solitude Village	1.17	30%	276,852.21	1,052.67	263	7	14	$22,106.07

Each of the Town of Brighton's identified underserved and unserved polygon areas are highlighted in Figure 21.
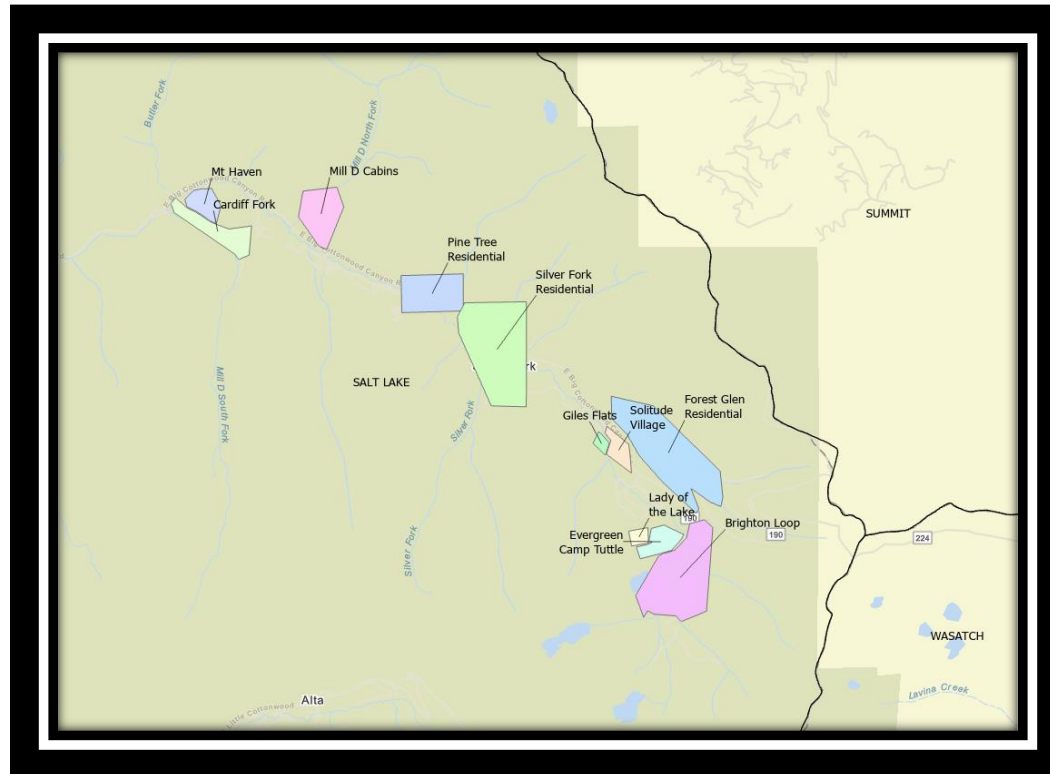
Figure 21. Identified Polygon Areas

5.7 ALIGNMENT

In 2022 the Town of Brighton set a goal in its general plan to expand digital infrastructure in the Town of Brighton. This was further expanded upon in the Digital Infrastructure Assessment and Action Plan: "facilitate the public engagement process to determine feasibility of incorporating high-speed internet and computer access, convene a digital infrastructure workgroup with service providers, and develop an ongoing transparent process for residents to report fixed wireless and cellular dead zones or other digital connectivity challenges to Brighton leadership and the Digital Infrastructure Workgroup" .

Now, with this Local Broadband Plan, the community will have a five-year action plan for implementation related to its previous broadband goals in the plans mentioned above. As the town works to implement its local broadband plan, it will inherently assist with accomplishing other community goals from the general plan including:

- to preserve existing residential properties that contribute to the community's character by assisting property owners,
- improving online resources and updating frequently for accuracy and relevance,
- provide educational opportunities within the Town,
- connect residents with programs to assist with housing maintenance,

- and wildfire resilience.

The implementation of the Broadband Plan will also help achieve other economic goals related to the community's thriving outdoor recreation opportunities like supporting sustainable and responsible recreation and tourism and continuing to be a leader in educating the public on natural resources, recreation, tourism, and culture. The community will also continue to support small-scale businesses that promote outdoor recreation, community services for residents, environmental preservation, or sustainable transportation, as identified in the community's general plan. **If universal service is achieved, all these aspects of the community will be enhanced.**

5.8 TECHNICAL ASSISTANCE

The Town of Brighton is eager to adopt the digital infrastructure plan and move on to implementation. To continue moving forward with the project, the community anticipates it will need further assistance with the following:

Application Process

The Utah Broadband Center has provided the community with continued educational opportunities to understand the grant process and expectations. This was instrumental in easily moving through the process and completing the Broadband Plan in the time allotted. Continued education for small communities moving through federal processes would be valuable to the community.

Design and Technical Assistance

The community does not have the available staff to complete the technical tasks required in some grant applications. This may be supplemented with additional education, but in most cases may be better solved with technical assistance to the community. If grant applications require drafted drawings of infrastructure networks, complicated mapping, or surveys the community will need additional help on what that looks like.

Construction Process and Reporting Assistance

It may be a barrier to the community to keep track of infrastructure projects while fulfilling all reporting obligations from grants with its limited staff capacity. They may require assistance during the construction and reporting phases. The community has been in touch with the NTIA representative of the State of Utah, and this resource has proven to be highly beneficial.

Continue Opportunities for Digital Literacy

As new digital infrastructure projects are completed, and residents receive internet access, the community would like to continue expanding digital literacy opportunities to these new areas. This means having continuous access to online resources and how-to guides that the community can provide to the residents. It is expected that we may need to perform multiple educational campaigns as new residents get the internet.

Continued Access to Various Funding Opportunities

The community is worried about missing out on potential funding opportunities due to the complicated nature of certain grant applications. It would be beneficial to have more than one chance to apply, but it is essential to receive help with the first application to ensure a complete and strong submission. This assistance would increase the likelihood of success for future grants.

6 CONCLUSION

Since the Town of Brighton's incorporation in 2020, the council and residents have been working quickly to establish plans and visions that will move them toward a greater goal of providing safety, health and welfare for residents and visitors while preserving the Town of Brighton's pristine mountain landscape. Their early vision for the community identified in the town's general plan was to retain and increase the number of year-round residents by providing better services for daily life. Early in the process, internet services were immediately identified as a necessity to bolster multiple goals the community wanted to accomplish such as: maintain communication with remote residents, improving working conditions for those that work from home, reducing vehicle driving in the canyon by cutting down on unnecessary trips, improving residents access to healthcare such as telehealth, improving emergency services in the canyon, and creating a better opportunity for small businesses to be established.

As the Town mobilized to implement new digital infrastructure projects with existing internet service providers, gaps in communication, data, and priorities appeared. The community sought for a digital infrastructure plan to help resolve these issues and set a clear path ahead for new projects built on transparent communication with service providers and reliable data. The community also knew that taking this step to establish a plan would better situate them for future funding.

Establishing a universal minimum standard of access to adequate internet services in the Canyon is the first milestone the community hopes to achieve. This will be accomplished by planned activities that will deploy fiber-optic networks to underserved areas. Additional work may be needed to establish a network of reliable wireless connectivity. As the community continues to develop and increase public spaces, we anticipate that Wi-Fi hotspots will also be made available. The community will accomplish these activities by continuing to work closely with ISPs, schools, and community groups to align efforts; involve residents, businesses, and community leaders from the start; and regularly track progress and adjust strategies based on feedback and data insights. It is also important to the Town of Brighton to utilize existing utility infrastructure to minimize costs and expedite deployment. This method is both economical for the community and environment as it can prevent unnecessary construction, reducing the risk of impacts to the community's valuable natural resources.

Appendix A: Survey Data

The following pages include the individual responses from surveys gathered as part of the Town of Brighton local broadband planning outreach. Survey responses gathered as part of the Connecting Utah statewide survey in the Brighton area are also included as part of this appendix.

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
											Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
146	6/13/2023 6:31	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Century link	66	No	Remote working			Video conferencing/chatting	Entertainment/streaming services			
145	5/28/2023 10:23	Brighton	Own	No, I don't have an internet connection at my residence.													
144	5/22/2023 17:25	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	I do not know (you can test your internet speed at speedtest.utah.gov)	century Link	49	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		
143	5/12/2023 21:47	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	50	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		
142	5/6/2023 14:31	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics	I do not know (you can test your internet speed at speedtest.utah.gov)	Century Link	unknown	No	Remote working	Remote learning			Entertainment/streaming services	Shopping		
141	5/1/2023 8:04	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	Up to 25 Mbps	Utah Broadband	69	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
140	4/25/2023 21:32	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	CenturyLink	50	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
139	4/25/2023 15:34	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	Century link	49	No	Remote working			Video conferencing/chatting	Entertainment/streaming services			
138	4/25/2023 15:18	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	I do not know (you can test your internet speed at speedtest.utah.gov)	CenturyLink	55	Yes	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
146														No, and I am not interested.
145		Monthly charges are too expensive			I do not know how to get internet service				An internet connection isn't available in my area			50	Access to internet for safety, cameras and entertainment	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
144														No, and I am not interested.
143														No, and I am not interested.
142														No, and I am not interested.
141														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
140														No, and I am not interested.
139														No, and I am not interested.
138														Yes, I am aware of the Program, but do not participate in it or am not eligible.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
146																				
145	White		English		$100,000-$149,999								71 or older	No						Bachelor's degree
144	White		English		$75,000-$99,999		20-Nov				51-60			Yes			High school (9th grade to 12th grade)	College or university		Master's degree or doctorate
143	White		English		$150,000 or more		20-Nov			41-50				Yes		Middle school (7th grade to 9th grade)				Master's degree or doctorate
142	White		English		$150,000 or more		20-Nov	21-30			51-60			Yes			High school (9th grade to 12th grade)	College or university		Master's degree or doctorate
141	White		English		$75,000-$99,999					41-50		61-70		No						Master's degree or doctorate
140	White		English		$100,000-$149,999	0-10	20-Nov	21-30	31-40	41-50	51-60	61-70		Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university		Master's degree or doctorate
139	White		English		$100,000-$149,999	0-10			31-40					No						Associate degree
138	White		English		$150,000 or more				31-40		51-60			No						Master's degree or doctorate

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
137	4/23/2023 19:25	Brighton	Rent	Yes, I have an internet connection at my residence.	Wireless	Up to 100 Mbps	CenturyLink	unkown	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
136	4/23/2023 16:46	BRIGHTON	Own	No, I don't have an internet connection at my residence.													
135	4/23/2023 12:29	Brighton	Own	Yes, I have an internet connection at my residence.			Century link	$55	Yes		Remote learning	Remote health care/telehealth		Entertainment/streaming services	Shopping		
134	4/23/2023 7:23	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Century Link	50	No	Remote working				Entertainment/streaming services			
133	4/22/2023 15:36	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	CenturyLink	Unknown						Entertainment/streaming services			
132	4/22/2023 14:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	49.99	No	Remote working	Remote learning	Remote health care/telehealth		Entertainment/streaming services	Shopping		
131	4/22/2023 9:32	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	45	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
130	4/22/2023 7:22	Brighton	Own	No, I don't have an internet connection at my residence.													
129	4/21/2023 16:58	BRIGHTON	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Centurylink	$131.00	No				Video conferencing/chatting	Entertainment/streaming services			Remote access to utilities for building
128	4/21/2023 9:52	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 100 Mbps	Starlink	110	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
127	4/20/2023 22:25	brighton	Own	Yes, I have an internet connection at my residence.	Wireless	I do not know (you can test your internet speed at speedtest.utah.gov)	verizon	$25	Yes	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
137														No, and I am not interested.
136									An internet connection isn't available in my area		Waiting for SenaWave	90	I need internet for working at home!	Yes, I am aware of the Program, but do not participate in it or am not eligible.
135														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
134														No, and I am not interested.
133														Yes, I am aware of the Program, but do not participate in it or am not eligible.
132														Yes, I am aware of the Program, but do not participate in it or am not eligible.
131														Yes, I am aware of the Program, but do not participate in it or am not eligible.
130														
129														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
128														Yes, I am aware of the Program, but do not participate in it or am not eligible.
127														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.

Appendix A. Town of Brighton Resident Survey Responses

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
137	White		English		$25,000-$49,999			21-30			51-60			No						Master's degree or doctorate
136	White		English		$75,000-$99,999					41-50	51-60		71 or older	No						Master's degree or doctorate
135	White		English		$25,000-$49,999					41-50				No						Associate degree
134	White		English		$150,000 or more							61-70	71 or older	No						Bachelor's degree
133	White		English		$150,000 or more	0-10	20-Nov			41-50				Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)				Master's degree or doctorate
132	White		English		$150,000 or more		20-Nov			41-50				Yes		Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)			Master's degree or doctorate
131	White		English		$150,000 or more			21-30			51-60			Yes				College or university		Master's degree or doctorate
130																				
129	White		English		$50,000-$74,999	0-10								No						Master's degree or doctorate
128	White		English		$100,000-$149,999							61-70		No						Bachelor's degree
127	Asian		English		$0-$24,999							61-70		No						Master's degree or doctorate

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
126	4/20/2023 15:43	Brighton (Cardiff)	Own	No, I don't have an internet connection at my residence.													
125	4/20/2023 13:30	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Century Link	$98.00	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
124	4/20/2023 13:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	centurylink	49	No	Remote working	Remote learning	Remote health care/telehealth		Entertainment/streaming services			
123	4/19/2023 14:43	Brighton	Own	No, I don't have an internet connection at my residence.													
122	4/19/2023 13:40	Brighton	Own	No, I don't have an internet connection at my residence.													
121	4/19/2023 12:53	Brighton	Own	Yes, I have an internet connection at my residence.	Utah Broadband	Up to 25 Mbps	Utah Broadband	$69.99	No			Remote health care/telehealth		Entertainment/streaming services	Shopping		
120	4/19/2023 12:22	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Centurylink	$40	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
119	4/19/2023 10:54	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	Century Link	$120	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
118	4/19/2023 10:38	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 25 Mbps	Utah Broadband	$70	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
117	4/19/2023 8:22	Brighton	Own	Yes, I have an internet connection at my residence.			Century link	$116	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
126	Initial connection fees are too expensive	Monthly charges are too expensive							An internet connection isn't available in my area			20	Access to internet	Yes, I am aware of the Program, but do not participate in it or am not eligible.
125														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
124														Yes, I am aware of the Program, but do not participate in it or am not eligible.
123							I have physical limitations				I am building my residence there this year!	50	It would allow for better connectivity, remote work and entertainment.	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
122	Initial connection fees are too expensive	Monthly charges are too expensive									Need a month to month service. Not there all year	50	Internet access, banking, health care, Amazon	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
121														No, and I am not interested.
120														Yes, I am aware of the Program, but do not participate in it or am not eligible.
119														No, and I am not interested.
118														No, and I am not interested.
117														No, and I am not interested.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	Which age groups live in your home? Select all that apply. 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Which education level? Select all that apply. Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
126	White		English		$100,000-$149,999								71 or older	No						Master's degree or doctorate
125	White		English		$0-$24,999							61-70		No						Master's degree or doctorate
124	White		English		$75,000-$99,999							61-70	71 or older	No						Master's degree or doctorate
123	White		English		$50,000-$74,999				31-40					No						Master's degree or doctorate
122	White		English		$100,000-$149,999								71 or older	No						Bachelor's degree
121	White		English		$75,000-$99,999								71 or older	No						Bachelor's degree
120	White		English		$150,000 or more		20-Nov				51-60			Yes			High school (9th grade to 12th grade)			Master's degree or doctorate
119	White		English		$100,000-$149,999	0-10	20-Nov	21-30	31-40			61-70	71 or older	Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)			Master's degree or doctorate
118	White		English		$100,000-$149,999						51-60			Yes				College or university		Bachelor's degree
117	White		English									61-70		No						Master's degree or doctorate

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
116	4/18/2023 21:03	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 25 Mbps	Starlink	120	No	Remote working							
115	4/18/2023 20:59	Brighton	Own	No, I don't have an internet connection at my residence.													
114	4/18/2023 20:58	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	Century link	68.09	No	Remote working		Remote health care/telehealth		Entertainment/streaming services	Shopping		Weather
113	4/18/2023 19:46	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	78	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
112	4/18/2023 17:12	Brighton	Own	Yes, I have an internet connection at my residence.	Broadband	Up to 100 Mbps	Utah Boradband	$80	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
111	4/18/2023 16:53	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	CenturyLink	60	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		remote access to thermostat and security cameras
110	4/18/2023 16:44	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Century Link	45	No	Remote working			Video conferencing/chatting	Entertainment/streaming services			
109	4/18/2023 16:24	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line), broadband	Up to 25 Mbps	Senawave	64	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
108	4/18/2023 16:02	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	CenturyLink	$50	No	Remote working				Entertainment/streaming services			Communication
107	4/18/2023 15:25	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurydink	$100	Yes	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services			Manage personal affairs
106	4/18/2023 15:19	Brighton	Rent	Yes, I have an internet connection at my residence.													

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
116														No, and I am not interested.
115		Monthly charges are too expensive										25	Could possibly work from home.	No, and I am not interested.
114														No, and I am not interested.
113														No, and I am not interested.
112														No, and I am not interested.
111														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
110														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
109														No, and I am not interested.
108														No, and I am not interested.
107														
106														

Appendix A. Town of Brighton Resident Survey Responses

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
116	White		English		$150,000 or more	0-10	20-Nov		31-40					No						Master's degree or doctorate
115	White		English											No						Master's degree or doctorate
114			English											No						Master's degree or doctorate
113	Multiple ethnicity / Other (please specify)	Multiple	English		$150,000 or more		20-Nov				51-60			Yes				College or university		Master's degree or doctorate
112	White		English		$100,000-$149,999					41-50		61-70		No						Master's degree or doctorate
111	White		English		$50,000-$74,999							61-70			Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university		Some college but no degree
110	White		English		$25,000-$49,999						51-60			No						Master's degree or doctorate
109	White		English		$100,000-$149,999						51-60			Yes				College or university		Master's degree or doctorate
108	White		English		$75,000-$99,999						51-60			No						Master's degree or doctorate
107	White		English		$150,000 or more							61-70		No						Master's degree or doctorate
106																				

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
105	4/18/2023 15:04	Brighton	Own	No, I don't have an internet connection at my residence.													
104	4/18/2023 13:35	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Century Link	unknown	Yes	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
103	4/18/2023 13:34	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless, Century Link	10 Mbps or less	CenturyLink	unknown	No					Entertainment/streaming services	Shopping		
102	4/18/2023 12:15	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	10 Mbps or less	Utah Broadband	95	No			Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		email
101	4/18/2023 11:46	Brighton	Own	No, I don't have an internet connection at my residence.													
100	4/18/2023 11:37	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	CenturyLink	$60	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		Security of property and surroundings
99	4/18/2023 11:33	Brighton	Own	No, I don't have an internet connection at my residence.													
98	4/18/2023 11:25	Brighton		Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Century Link	Around $60/month	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		
97	4/18/2023 10:48	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$80	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
96	4/18/2023 10:43	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	Up to 25 Mbps	Centry Link	$65	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services			
95	4/18/2023 10:20	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	66.09	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	

Appendix A. Town of Brighton Resident Survey Responses

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
105									An internet connection isn't available in my area			75		No, and I am not interested.
104														No, and I am not interested.
103														Yes, I am aware of the Program, but do not participate in it or am not eligible.
102														No, and I am not interested.
101									An internet connection isn't available in my area			51	Canyon property. Security would be the main reason.	No, and I am not interested.
100														Yes, I am aware of the Program, but do not participate in it or am not eligible.
99		Monthly charges are too expensive										20	I could check email	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
98														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
97														No, and I am not interested.
96														No, and I am not interested.
95														Yes, I am aware of the Program, but do not participate in it or am not eligible.

Appendix A. Town of Brighton Resident Survey Responses

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
105	White		English									61-70	71 or older	No						High school diploma or equivalent (GED)
104	White		English		$100,000-$149,999							61-70		No						Master's degree or doctorate
103	White		English		$50,000-$74,999	0-10			31-40	41-50				No						Master's degree or doctorate
102	White		English									61-70	71 or older	No						Master's degree or doctorate
101	White		English		$0-$24,999							61-70	71 or older	No						Bachelor's degree
100	White		English		$150,000 or more	0-10	20-Nov			41-50				Yes	Elementary school (kindergarten to 6th grade)		High school (9th grade to 12th grade)			Master's degree or doctorate
99	White		English		$100,000-$149,999						51-60			No						Master's degree or doctorate
98	White		English								51-60		71 or older	No						Master's degree or doctorate
97	White		English		$150,000 or more				31-40	41-50				No						Master's degree or doctorate
96	White		English		$100,000-$149,999	0-10			31-40					Yes	Elementary school (kindergarten to 6th grade)					Bachelor's degree
95	White		English		$150,000 or more				31-40					Yes				College or university		Bachelor's degree

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
94	4/18/2023 10:15	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless, Satellite or mobile	I do not know (you can test your internet speed at speedtest.utah.gov)	Unknown	Unknown	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services			
93	4/18/2023 10:12	Brighton	Own	No, I don't have an internet connection at my residence.													
92	4/18/2023 9:54	Brighton, UT	Own	No, I don't have an internet connection at my residence.													
91	4/18/2023 9:27	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	Up to 25 Mbps	CenturyLink	40	Yes				Video conferencing/chatting	Entertainment/streaming services	Shopping		
90	4/18/2023 8:15	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	10 Mbps or less	direct tv	unknown	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
89	4/18/2023 8:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	10 Mbps or less	centurylink	$49	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		
88	4/18/2023 8:05	Birghton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	I do not know (you can test your internet speed at speedtest.utah.gov)	Exede Viasat	99	No	Remote working		Remote health care/telehealth	Video conferencing/chatting				
87	4/18/2023 7:48	Brighton	Own	Yes, I have an internet connection at my residence.													
86	4/18/2023 7:43	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	Up to 25 Mbps	I believe it is century link but I'm uncertain.	0 - I have not built yet.	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services			

Appendix A. Town of Brighton Resident Survey Responses

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
94														No, and I am not interested.
93	Initial connection fees are too expensive				I do not know how to get internet service				An internet connection isn't available in my area		Only summer seasonal access needed		Currently, we only use cell phones as our access to internet data sources.	No, and I am not interested.
92											Still building	200	High-speed internet is essential for remote work and also for connecting with family and access to entertainment during free time.	No, and I am not interested.
91														Yes, I am aware of the Program, but do not participate in it or am not eligible.
90														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
89														No, and I am not interested.
88														No, and I am not interested.
87														
86														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.

Appendix A. Town of Brighton Resident Survey Responses

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	Which age groups live in your home? Select all that apply.								Do students live at your household?	Which education level? Select all that apply.					What is the highest level of education completed by someone in your household?
						0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older		Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	
94	White		English		$150,000 or more							61-70		No						Master's degree or doctorate
93	Multiple ethnicity / Other (please specify)	Brighton Girls Camp staff	English				20-Nov	21-30			51-60	61-70		Yes		Middle school (7th grade to 9th grade)		College or university		Master's degree or doctorate
92	White		English		$150,000 or more				31-40			61-70		No						Master's degree or doctorate
91	White		English		$75,000-$99,999								71 or older	No						High school diploma or equivalent (GED)
90	White		English		$25,000-$49,999							61-70	71 or older	Yes					Adult education or technical training	Master's degree or doctorate
89	White		English		$100,000-$149,999			21-30		41-50		61-70	71 or older	No						Master's degree or doctorate
88	Multiple ethnicity / Other (please specify)	TMTC	English		$150,000 or more						51-60	61-70	71 or older	No						Master's degree or doctorate
87																				
86	White		Other (please specify)	English, Spanish, ASL	$0-$24,999				31-40					Yes				College or university	Adult education or technical training	Bachelor's degree

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
85	4/18/2023 7:43	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Century Link	72	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
84	4/18/2023 7:13	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	I do not know (you can test your internet speed at speedtest.utah.gov)	Century link	95	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
83	4/18/2023 7:06	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics	Up to 100 Mbps	Senawave	$95	No	Remote working				Entertainment/streaming services	Shopping		
82	4/18/2023 6:55	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	CenturyLink	$50	No	Remote working	Remote learning						Zoom meetings
81	4/18/2023 6:44	Brighton	Own	Yes, I have an internet connection at my residence.	Century Link	I do not know (you can test your internet speed at speedtest.utah.gov)	Century Liink	$50	No								All
80	4/18/2023 6:28	Brighton	Own	Yes, I have an internet connection at my residence.													
79	4/18/2023 6:23	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	Up to 25 Mbps	Utah Broadband	$80.00	No		Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		news
78	4/18/2023 6:05	Brighton	Rent	No, I don't have an internet connection at my residence.													
77	4/17/2023 23:47	Brighton	Rent	Yes, I have an internet connection at my residence.	Wireless, Centurylink	Up to 25 Mbps	Centurylink	$66	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
76	4/17/2023 22:36	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 25 Mbps	Hughesnet	70	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	

Appendix A. Town of Brighton Resident Survey Responses

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
85														Yes, I am aware of the Program, but do not participate in it or am not eligible.
84														No, and I am not interested.
83														No, and I am not interested.
82														Yes, I am aware of the Program, but do not participate in it or am not eligible.
81														No, and I am not interested.
80														
79														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
78											Use my phone as a hot spot	83	Keep my informed. Communicate with others, research and shopping.	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
77														No, and I am not interested.
76														No, and I am not interested.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	Which age groups live in your home? Select all that apply.								Do students live at your household?	Which education level? Select all that apply.					What is the highest level of education completed by someone in your household?
						0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older		Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	
85	White		English		$100,000-$149,999		20-Nov			41-50				Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)		College or university	Adult education or technical training	Bachelor's degree
84	White		English		$150,000 or more							61-70		No						Bachelor's degree
83	White		English		$100,000-$149,999							61-70		No						Master's degree or doctorate
82	White		English		$150,000 or more							61-70		No						Master's degree or doctorate
81	White		English		$100,000-$149,999							61-70		No						Master's degree or doctorate
80																				
79	White		English		$75,000-$99,999							61-70		Yes				College or university	Adult education or technical training	Bachelor's degree
78	White		English		$0-$24,999								71 or older	No						Bachelor's degree
77	White		Spanish		$25,000-$49,999			21-30						Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)		Adult education or technical training	Some college but no degree
76	White		English		$150,000 or more	0-10	20-Nov		31-40	41-50				Yes	Elementary school (kindergarten to 6th grade)				Adult education or technical training	Bachelor's degree

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
75	4/17/2023 22:27	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	I do not know (you can test your internet speed at speedtest.utah.gov)	Centurylink	120	No	Remote working				Entertainment/streaming services	Shopping		
74	4/17/2023 22:20	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Century Link	50	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
73	4/17/2023 22:11	Brighton	Own	Yes, I have an internet connection at my residence.	I do not know	Up to 1 Gigabit	Senawave	Unknown	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
72	4/17/2023 22:10	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurylink	49	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
71	4/17/2023 22:05	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	I do not know (you can test your internet speed at speedtest.utah.gov)	Century link	70	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		
70	4/17/2023 22:03	Brighton	Own	Yes, I have an internet connection at my residence.													
69	4/17/2023 21:37	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$60	No	Remote working	Remote learning			Entertainment/streaming services	Shopping		
68	4/17/2023 21:37	Brighton	Own	No, I don't have an internet connection at my residence.													
67	4/17/2023 21:34	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line), Fiber optics	10 Mbps or less	CenturyLink and - as of this fall (but it's been down for days) Senawave	$95 for Senwave	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
66	4/17/2023 21:02	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Centurylink	60	No	Remote working	Remote learning	Remote health care/telehealth					

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
75														No, and I am not interested.
74														Yes, I am aware of the Program, but do not participate in it or am not eligible.
73														No, and I am not interested.
72														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
71														No, and I am not interested.
70														
69														No, and I am not interested.
68					I do not know how to get internet service							100		Yes, I am aware of the Program, but do not participate in it or am not eligible.
67														No, and I am not interested.
66														

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
75	White		English		$150,000 or more			21-30			51-60			No						Master's degree or doctorate
74	Hispanic/Latino or Spanish Origin		English		$100,000-$149,999	0-10			31-40					No						Bachelor's degree
73	White		English		$150,000 or more						51-60			Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university		Bachelor's degree
72	White		English		$25,000-$49,999	0-10			31-40	41-50				No						Master's degree or doctorate
71						0-10				41-50				Yes	Elementary school (kindergarten to 6th grade)					Bachelor's degree
70																				
69	White		English		$150,000 or more	0-10	20-Nov			41-50		61-70		Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)				Master's degree or doctorate
68	White		English		$100,000-$149,999								71 or older	No						Bachelor's degree
67	White		English		$150,000 or more		20-Nov				51-60			Yes			High school (9th grade to 12th grade)			Master's degree or doctorate
66																				

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
65	4/17/2023 20:59	Brighton UT	Own	Yes, I have an internet connection at my residence.													
64	4/17/2023 20:52	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	I do not know (you can test your internet speed at speedtest.utah.gov)	Utah broadband	69.95	No					Entertainment/streaming services	Shopping		Google searches, security cameras, smart thermostats
63	4/17/2023 20:50	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	I do not know (you can test your internet speed at speedtest.utah.gov)	Utah Broadband	$50	No					Entertainment/streaming services			
62	4/17/2023 20:46	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line), Wireless	10 Mbps or less	CenturyLink	$50	No	Remote working		Remote health care/telehealth	Video conferencing/chatting		Shopping		
61	4/17/2023 20:44	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics	Up to 100 Mbps	Senawave	Unknown	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting				
60	4/17/2023 20:39	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurylink	$60	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
59	4/17/2023 20:25	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$66	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
58	4/17/2023 20:16	Brighton	Own	No, I don't have an internet connection at my residence.													
57	4/17/2023 20:10	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics	Up to 100 Mbps	Senawave	64	No		Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
65														
64														No, and I am not interested.
63														No, and I am not interested.
62														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
61														No, and I am not interested.
60														Yes, I am aware of the Program, but do not participate in it or am not eligible.
59														No, and I am not interested.
58		Monthly charges are too expensive									15		Would be able to use my cabin when on call for work. As it is now, when on call, I can't spend any time at my cabin in Big Cottonwood Canyon.	Yes, I am aware of the Program, but do not participate in it or am not eligible.
57														No, and I am not interested.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
65																				
64			English										71 or older	No						Bachelor's degree
63	Asian		English		$100,000-$149,999	0-10			31-40					No						Master's degree or doctorate
62	White		English		$25,000-$49,999							61-70		No						Bachelor's degree
61	White		English		$75,000-$99,999							61-70		No						Master's degree or doctorate
60	White		English				20-Nov			41-50		61-70		Yes			High school (9th grade to 12th grade)	College or university		Bachelor's degree
59																				
58	White		English		$75,000-$99,999					41-50			71 or older	No						Master's degree or doctorate
57	White		English		$100,000-$149,999							61-70		No						Master's degree or doctorate

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
56	4/17/2023 20:06	Brighton	Rent	Yes, I have an internet connection at my residence.	The house has an antenna at house receives internet from 1/2 miles away. That internet source is fiber.	Up to 100 Mbps	Senawave	Unknown	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
55	4/17/2023 20:02	Brighton	Own	No, I don't have an internet connection at my residence.													
54	4/17/2023 19:52	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics, Before now we had Starlink satellite.	Up to 1 Gigabit	Senawave	$96.00	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
53	4/17/2023 19:46	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$50	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		
52	4/17/2023 19:41	Brighton, Utah	Own	No, I don't have an internet connection at my residence.													
51	4/17/2023 19:39	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	CenturyLink	$49	No	Remote working				Entertainment/streaming services			
50	4/17/2023 19:36	Brighton	Own	No, I don't have an internet connection at my residence.													
49	4/17/2023 19:16	Brightob	Own	No, I don't have an internet connection at my residence.													
48	4/17/2023 19:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$45	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
56														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
55		Monthly charges are too expensive									Senawave is the only one provided and its really expensive	60	We would LOVE it! If I could have what i have at home for the same cost I would work from my cabin. And we would visit up there more often	Yes, I am aware of the Program, but do not participate in it or am not eligible.
54														No, and I am not interested.
53														Yes, I am aware of the Program, but do not participate in it or am not eligible.
52									An internet connection isn't available in my area			75		No, and I am not interested.
51														No, and I am not interested.
50									An internet connection isn't available in my area			25		No, and I am not interested.
49									An internet connection isn't available in my area			76	Allow me to run a business remotely.	No, and I am not interested.
48														Yes, I am aware of the Program, but do not participate in it or am not eligible.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
56	White		English		$50,000-$74,999				31-40					No						Master's degree or doctorate
55	White		English		$50,000-$74,999		20-Nov				51-60			Yes		Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)			Master's degree or doctorate
54	White		English		$150,000 or more							61-70	71 or older	No						Associate degree
53	White		English		$50,000-$74,999	0-10				41-50				Yes	Elementary school (kindergarten to 6th grade)					Bachelor's degree
52	White		English		$75,000-$99,999								71 or older	No						Associate degree
51	White		English		$150,000 or more			21-30	31-40			61-70		No						Master's degree or doctorate
50	White		English		$150,000 or more							61-70		No						Master's degree or doctorate
49	White		English		$100,000-$149,999				31-40					Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	Associate degree
48	White		English		$100,000-$149,999			21-30				61-70		Yes				College or university		Master's degree or doctorate

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
											Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
47	4/17/2023 19:06	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	CenturyLink	$58	No	Remote working			Video conferencing/chatting	Entertainment/streaming services			
46	4/17/2023 18:59	Brighton	Own	No, I don't have an internet connection at my residence.													
45	4/17/2023 18:58	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurylink	50	No	Remote working							Connect community water system to water master
44	4/17/2023 18:47	Brighton	Own	Yes, I have an internet connection at my residence.													
43	4/17/2023 18:31	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	Up to 25 Mbps	Utah Broadband	$60	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
42	4/17/2023 18:25	Brighton	Own	No, I don't have an internet connection at my residence.													
41	4/17/2023 18:24	Brighton Utah	Own	Yes, I have an internet connection at my residence.	Wireless	10 Mbps or less	Century link	65iah	No	Remote working	Remote learning				Shopping	Gaming	
40	4/17/2023 18:15	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 100 Mbps	Viasat	$100	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
39	4/17/2023 18:12	Brighton	Own	Yes, I have an internet connection at my residence.	Starlink	Up to 100 Mbps	Starlink	$125	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
38	4/17/2023 18:07	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 100 Mbps	Starlink	$130.00	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
37	4/17/2023 18:06	BRIGHTON	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CENTURY LINK	$60	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
36	4/17/2023 18:05	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics	Up to 25 Mbps	Sensawave	$95.45 per month	No					Entertainment/streaming services			

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
47														No, and I am not interested.
46									An internet connection isn't available in my area			50	Everything is internet based these days, it is essential to being able to function in today's world.	No, and I am not interested.
45														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
44														
43														No, and I am not interested.
42												55		Yes, I am aware of the Program, but do not participate in it or am not eligible.
41														No, and I am not interested.
40														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
39														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
38														No, and I am not interested.
37														No, and I am not interested.
36														Yes, I am aware of the Program, but do not participate in it or am not eligible.

Appendix A. Town of Brighton Resident Survey Responses

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
47	White		English		$150,000 or more								71 or older	No						Master's degree or doctorate
46	White		English															College or university		Master's degree or doctorate
45	White		English		$25,000-$49,999							61-70		No						Bachelor's degree
44																				
43	White		English									61-70		No						Bachelor's degree
42	White		English		$50,000-$74,999							61-70		No						Bachelor's degree
41	White		English		$50,000-$74,999					41-50				No						12th grade or less (no diploma)
40	Multiple ethnicity / Other (please specify)	Italian, German,Welsh	English		$75,000-$99,999	0-10	20-Nov			41-50				Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	Master's degree or doctorate
39	White		English		$100,000-$149,999			21-30	31-40	41-50				Yes						
38	White		English		$150,000 or more						51-60	61-70		No						Master's degree or doctorate
37	White		English		$150,000 or more			21-30			51-60			No						Master's degree or doctorate
36	Hispanic/Latino or Spanish Origin		English			0-10			31-40	41-50			71 or older	Yes				College or university		Master's degree or doctorate

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
35	4/17/2023 18:05	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	10 Mbps or less	CenturyLink	40	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
34	4/17/2023 17:58	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 25 Mbps	Infinite Internet	$90	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
33	4/17/2023 17:56	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	10 Mbps or less	Utah Broadband	$70	No	Remote working							
32	4/17/2023 17:54	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	10 Mbps or less	Century link	$49	No			Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
31	4/17/2023 17:43	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	Up to 100 Mbps	CenturyLink	unknown	Yes	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		
30	4/17/2023 17:42	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	I do not know (you can test your internet speed at speedtest.utah.gov)	Century Link	$55.37	No	Remote working				Entertainment/streaming services			
29	4/17/2023 17:40	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	Up to 25 Mbps	Centurylink	55	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
28	4/17/2023 17:39	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	Up to 25 Mbps	Centurylink	$49	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
27	4/17/2023 17:37	BRIGHTON	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL- telephone line)	10 Mbps or less	Century link	50	No					Entertainment/streaming services			
26	4/17/2023 17:36	Brighton	Own	Yes, I have an internet connection at my residence.	Wireless	Up to 25 Mbps	CenturyLink	35	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
35														No, and I am not interested.
34														No, and I am not interested.
33														No, and I am not interested.
32	Program,													Yes, I am aware of the Program, but do not participate in it or am not eligible.
31														No, and I am not interested.
30														No, and I am not interested.
29														No, and I am not interested.
28	Program,													Yes, I am aware of the Program, but do not participate in it or am not eligible.
27														No, and I am not interested.
26														No, and I am not interested.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
35	White		English		$150,000 or more	0-10			31-40	41-50				Yes				College or university		Master's degree or doctorate
34	White		English		$150,000 or more	0-10			31-40					Yes	Elementary school (kindergarten to 6th grade)					Master's degree or doctorate
33	White		English		$150,000 or more								71 or older	No						Master's degree or doctorate
32	White		English		$75,000-$99,999							61-70	71 or older	No						Some college but no degree
31	Hispanic/Latino or Spanish Origin		English		$150,000 or more							61-70		Yes				College or university		Master's degree or doctorate
30	White		English		$150,000 or more							61-70		No						Bachelor's degree
29	White		English		$150,000 or more				31-40					No						Bachelor's degree
28	White		English		$25,000-$49,999							61-70		No						Master's degree or doctorate
27	White		English		$50,000-$74,999				31-40					No						High school diploma or equivalent (GED)
26	White		English		$75,000-$99,999							61-70		No						Master's degree or doctorate

Appendix A. Town of Brighton Resident Survey Responses

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
25	4/17/2023 17:35	Brigton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	not sure, though our HOA	unknown	No	Remote working			Video conferencing/chatting	Entertainment/streaming services	Shopping		news
24	4/17/2023 17:31	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	Century Link	$54	No	Remote working						Shopping	
23	4/17/2023 17:31	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurylink	60	No	Remote working				Entertainment/streaming services	Shopping		
22	4/17/2023 17:30	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Century Link	50	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
21	4/17/2023 17:27	Brighton	Own	No, I don't have an internet connection at my residence.													
20	4/17/2023 17:26	Brighton	Own	Yes, I have an internet connection at my residence.	Fiber optics	Up to 100 Mbps	SenaWave	$68	No					Entertainment/streaming services	Shopping		
19	4/17/2023 17:26	Brighton	Own	Yes, I have an internet connection at my residence.													
18	4/17/2023 17:26	Brighton	Own	Yes, I have an internet connection at my residence.													
17	4/17/2023 17:25	Brighton	Own	No, I don't have an internet connection at my residence.													
16	4/17/2023 17:19	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 25 Mbps	Utah Broadband	$60.00	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
15	4/17/2023 17:18	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 100 Mbps	Satellite TV	Unkinown	Yes		Remote learning	Remote health care/telehealth		Entertainment/streaming services	Shopping		
14	4/17/2023 17:15	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 25 Mbps	Google Fi	45	Yes	Remote working				Entertainment/streaming services	Shopping		

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
25														No, and I am not interested.
24														Yes, I am aware of the Program, but do not participate in it or am not eligible.
23														No, and I am not interested.
22														Yes, I am aware of the Program, but do not participate in it or am not eligible.
21	Initial connection fees are too expensive	Monthly charges are too expensive				I do not need it/am not interested in it						0	None	Yes, I am aware of the Program, but do not participate in it or am not eligible.
20														No, and I am not interested.
19														
18														
17	Initial connection fees are too expensive	Monthly charges are too expensive										10	Make working from a distance possible.	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
16														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
15														No, and I am not interested.
14														No, and I am not interested.

Appendix A. Town of Brighton Resident Survey Responses

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
25	Multiple ethnicity / Other (please specify)	I prefer not to say	English		$150,000 or more					41-50				Yes				College or university		Master's degree or doctorate
24	White		English		$150,000 or more							61-70	71 or older	No						Master's degree or doctorate
23	White		English		$150,000 or more					41-50				Yes	Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)				Master's degree or doctorate
22																				
21	White		English		$150,000 or more								71 or older	No						Master's degree or doctorate
20	White		English		$150,000 or more								71 or older	No						Bachelor's degree
19																				
18																				
17	White		English		$150,000 or more				31-40			61-70		No						Master's degree or doctorate
16	White		English		$100,000-$149,999							61-70		No						Career or technical education certificate
15	White		English		$100,000-$149,999								71 or older	No						Master's degree or doctorate
14	White		English		$150,000 or more		20-Nov				51-60			Yes			High school (9th grade to 12th grade)			Master's degree or doctorate

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
13	4/17/2023 17:09	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line), Century Link	10 Mbps or less	CenturyLink	$150 Month	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services			
12	4/17/2023 17:07	brighton	Own	No, I don't have an internet connection at my residence.													
11	4/17/2023 17:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 100 Mbps	CenturyLink	80	Yes	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
10	4/17/2023 17:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$30	No	Remote working			Video conferencing/chatting	Entertainment/streaming services			
9	4/17/2023 17:07	Brighton	Own	No, I don't have an internet connection at my residence.													
8	4/17/2023 17:07	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurylink	90	Yes								I can't use it for much because it's too slow
7	4/17/2023 17:05	Brighton,	Own	No, I don't have an internet connection at my residence.													
6	4/17/2023 17:03	Brighton	Rent	Yes, I have an internet connection at my residence.	I do not know	Up to 100 Mbps	Century Link	$60 monthly + one time $200 modem/router	No	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services			

Appendix A. Town of Brighton Resident Survey Responses

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
13														No, and I am not interested.
12											they are putting in the fiber this summer	100	house monitoring for security and efficiency. remote work and video conferencing with over seas customers. all media and communication hookups via the internet. no longer have to get a satellite dish	Yes, I am aware of the Program, but do not participate in it or am not eligible.
11														No, and I am not interested.
10														No, and I am not interested.
9	Initial connection fees are too expensive	Monthly charges are too expensive										0	Communication/safety	Yes, I am aware of the Program, but do not participate in it or am not eligible.
8														No, and I am not interested.
7					I do not know how to get internet service						I have internet at my permanent residence but not at my Big Cottonwood Cabin	89	Computer and TV programs would benefit my cabin experience. I currently use DISH Satellite at my cabin.	No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.
6														No, but I would like information to learn if my household qualifies. If this option is selected, please complete the contact form at the end of this survey.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	Which age groups live in your home? Select all that apply.								Do students live at your household?	Which education level? Select all that apply.					What is the highest level of education completed by someone in your household?
						0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older		Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	
13	White		English		$150,000 or more						51-60	61-70		Yes				College or university		Master's degree or doctorate
12	White		English		$150,000 or more						51-60			No						Master's degree or doctorate
11	White		English		$100,000-$149,999	0-10			31-40	41-50				Yes	Elementary school (kindergarten to 6th grade)					Master's degree or doctorate
10	White		English		$150,000 or more		20-Nov				51-60			Yes		Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)			Master's degree or doctorate
9	White		English		$75,000-$99,999							61-70		No						Career or technical education certificate
8	White		English																	
7	White		English		$100,000-$149,999								71 or older	No						Master's degree or doctorate
6	White		English		$50,000-$74,999			21-30						No						Master's degree or doctorate

Response #	Date	City/Town	Do you rent or own this property?	Do you have an internet connection at your residence?	What kind of internet connection do you have? (Select all that apply)	What speed is your internet service (download speed)? (Megabits per second = Mbps)	Which company do you use for internet? (E.g. Xfinity, Google Fiber, Connext, Emery Telecom, CenturyLink, etc.)	What is the monthly charge for your internet service? Write "Unknown" if unknown.	Does your internet bill include other services such as phone, TV, or premium content?	What do you use the internet for? Select all that apply.							
										Remote working	Remote learning	Remote health care/ telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	Other (please specify)
5	4/17/2023 17:03	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	10 Mbps or less	Centurylink	55	No	Remote working				Entertainment/streaming services			
4	4/17/2023 16:59	Brighton	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 100 Mbps	Starlink	$120	No	Remote working		Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming	
3	4/17/2023 16:57	Brighton	Own	Yes, I have an internet connection at my residence.													
2	4/17/2023 16:30	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line), Satellite or mobile	I do not know (you can test your internet speed at speedtest.utah.gov)	Utah Broadband	$60	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping		
1	4/17/2023 11:48	Brighton	Own	Yes, I have an internet connection at my residence.	Cable or digital subscriber line (DSL-telephone line)	Up to 25 Mbps	CenturyLink	$86	Yes	Remote working	Remote learning		Video conferencing/chatting	Entertainment/streaming services	Shopping		

Response #	Why don't you have internet access at your residence? Select all that apply.											How much would you pay for internet per month if it was accessible to you at your residence?	If you are willing, please share how a high-speed internet connection would improve your quality of life.	Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households?
	Initial connection fees are too expensive	Monthly charges are too expensive	I do not have a computer or tablet to use	I do not know how to use a computer or tablet	I do not know how to get internet service	I do not need it/am not interested in it	I have physical limitations	I am worried about privacy and others getting my information	An internet connection isn't available in my area	I access the internet at a public internet source, such as a library or a community center	Other (please specify)			
5														No, and I am not interested.
4														No, and I am not interested.
3														
2														Yes, I am aware of the Program, but do not participate in it or am not eligible.
1														Yes, I am aware of the Program, but do not participate in it or am not eligible.

Response #	What is your race/ethnicity? Select all that apply.	Multiple ethnicity / Other (please specify)	What language is spoken most often in your household?	Other (please specify)	What is your household's gross annual income?	Which age groups live in your home? Select all that apply. 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Do students live at your household?	Which education level? Select all that apply. Elementary school (kindergarten to 6th grade)	Middle school (7th grade to 9th grade)	High school (9th grade to 12th grade)	College or university	Adult education or technical training	What is the highest level of education completed by someone in your household?
5	White		English		$100,000-$149,999					41-50				Yes			High school (9th grade to 12th grade)			Master's degree or doctorate
4	White		English		$150,000 or more					41-50				No						Bachelor's degree
3																				
2	White		English		$100,000-$149,999							61-70		No						Master's degree or doctorate
1	White		English		$100,000-$149,999								71 or older	No						Master's degree or doctorate

Appendix A. Town of Brighton Elected Officials Survey Responses

Response #	Date	Which municipality or county do you represent?	Do you feel knowledgeable about the current state of broadband internet coverage for the city/county you represent?	What tools and/or resources could Connecting Utah provide to help you learn about internet coverage in your area? Select all that apply.					Has the city/county you represent benefited from past efforts to expand internet access?	What were those efforts?	Are you willing to share your story?	Tell us about internet access for the people in your community. Select all that apply.						
				Webinars	Informational guides	Networking/ relationship-building opportunities	One-on-one instruction	Other (please specify)				Some people who want internet access have it.	Some people want internet access but have no internet providers available.	Some people want internet provider options than those that are currently available.	Some people can't afford the internet option(s) available to them.	Some people aren't satisfied with the internet speeds available to them.	Some people do not want the internet.	Other (please specify)
1	2023-01-10 10:50:00	Brighton Ut	No		Informational guides	Networking/relationship-building opportunities			No					Some people want internet provider options than those that are currently available.		Some people aren't satisfied with the internet speeds available to them.		
2	2023-04-17 10:56:46	Brighton, UT	Yes			Networking/relationship building opportunities			No									

Response #	What barriers make it difficult for individuals in your area to access the internet? (e.g., affordability, infrastructure, service providers).	What would make it easier for individuals in your area to access the internet? (e.g., lower costs, subsidizing programs, infrastructure improvements).	Do you feel like your city/county has enough funding to expand broadband coverage to all homes?	Do you know the provider(s) in your area?	Have you met or talked to the provider(s) in your areas?	Is there anything else you'd like to share about internet access in your city/county?	Tell us how your community accesses the internet if devices are not available at their residence. Select all that apply.					What barriers make it difficult for individuals in your city/county to access device(s)? (e.g., affordability, supply issues).	What would make it easier for individuals in your city/county to access to device(s)? (e.g., lower costs, subsidizing programs).	Do you feel like your city/county has enough funding to provide internet-capable devices to homes that cannot afford them?	Do you have anything else to share about devices in your city/county?
							Work	School	Library	Community Center	Other (please specify)				
1	Most internet is DSL. Or satellite	Better infrastructure, more providers who are willing to move into a less populous area	No	Centerlink	Yes	Hope there is interest in internet in our area					None	Not enough providers and quality of service	Subsidized programs	No	
2															

Appendix B: Notes from Open House

The following pages include notes from a community open house held on July 12, 2023 at 6:30PM. The open house was held at the church at the top of Brighton loop as part of the Town of Brighton's local broadband planning outreach.

The Open House for the Town of Brighton was advertised in the Big Cottonwood Canyon Association Newsletter, at the Town Council meeting, and on the Town of Brighton's website.

Brighton's Digital Infrastructure Open House

July 12th, 2023 6:30 PM In-Person Only
@ Brighton Chapel 8171 S Brighton Loop Rd

Attendees: 14 residents and staff attended the open house between 6:30 pm to 8:15 pm. Residents attended from the following neighborhoods: Cardiff, Silver Fork, Brighton Loop, and Forest Glen.

The following comments were collected by staff:
- Brighton loop residents do not all have access to services and some residents in the area think current packages available are too expensive.
- Brighton loop residents would like to be included as a priority area in the plan.
- Some residents want more variety to choose between different service providers especially if the pricing isn't affordable.
- Some residents currently use starlink because others local services are unreliable.
- Residents expressed interest in the Town of Brighton assisting in discussions for new projects between residents and Internet service providers.

Appendix C: Notes from Internet Service Provider Meeting

Date: April 19, 2023

Attendees:
- Lumen – Max Backlund, James Farr
- Syringa – Nick Ainsworth
- Senawave – Ladd Marshall, David Brown, Chris Brown
- Comcast – Joseph Silverweig, Jennifer Somers
- Crown Castle – Scott Harry
- Town of Brighton – Barbara Cameron, Erin O'Kelley
- Horrocks Engineers – Eleise Lowe, Jason Libert, Georgia Tsoutsounis

Meeting Summary:
Senawave has fiber from Solitude to Brighton
Barbara - big electrical transformer by Guardsman Pass

Senawave covers:
Brighton loop
Solitude
Forest Glen
- Barbara confirms - These 3 areas get good service

Utah Broadband - good
Cell service goes down in busy times

Silver fork and Pinetree and Cardiff - Areas needing FTTH the most

Rocky Mountain Power (RMP)
- Will allow conduit installed above UG power if they can be cut at any time
- Underground done up to Cardiff

Senawave - wants to know if BEAD can reimburse for infrastructure built before funds released
James Farr - thinks this can happen
NTIA - built by 2026
Senawave - FS is slow, but not hard to work with, biggest slow down on build out

Barbara – wants incentive for serving Cardiff (and Mt Haven and Mill D) area since it will be less profitable
Ask for waiver for high cost area (to cover more than the 75% funding)

Appendix D: Sample Specifications and Policies

Attachments in this section include:

1. UDOT specifications for fiber conduit

2. UDOT standard drawing for fiber junction box and utility vault

3. "Dura-line Dig Once Best Practices" with state legislation examples

ATMS CONDUIT

PART 1   GENERAL

1.1   SECTION INCLUDES

A.   ATMS conduit for communications and fiber optic cables.

B.   Detectable pull tape, conduit, and all materials, labor, workmanship, equipment, and incidental items required for a complete system of conduit.

1.2   RELATED SECTIONS

A.   Section 02056: Embankment, Borrow, and Backfill

B.   Section 02221: Remove Structures and Obstruction

C.   Section 02705: Pavement Cutting

D.   Section 02741: Hot Mix Asphalt (HMA)

E.   Section 02776: Concrete Sidewalk, Median Filler, and Flatwork

F.   Section 02842: Delineators

G.   Section 03575: Flowable Fill

1.3   REFERENCES

A.   ASTM D 2241: Poly-Vinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series)

B.   ASTM F 2160: Solid Wall High Density Polyethylene (HDPE) Conduit based on Controlled Outside Diameter (OD).

C.   National Electrical Code (NEC)

D.   National Electrical Manufacturers Association (NEMA)

E.   State of Utah Administrative Rules

F.   Underwriters Laboratories (UL)

1.4   DEFINITIONS   Not Used

1.5   SUBMITTALS

    A.   Manufacturer's product data sheets and recommended installation instructions.

    B.   Manufacturer's warranties and parts lists

    C.   Conduit Mandrel Test Form prior to substantial completion.

    D.   Refer to http://www.udot.utah.gov/go/standardsreferences for blank forms for this Section.

PART 2   PRODUCTS

2.1   MATERIALS

    A.   Conduit and fittings for ATMS communication and fiber optic conduit
        1.   Schedule 40 PVC rated at 194 degrees F as specified in NEMA TC-2, NEMA TC-3, ASTM D 2241,
        2.   High Density Polyethylene (HDPE) SDR11 rated complying with ASTM F 2160.
            a.   HDPE conduit with smooth outer wall and ribbed or smooth interior wall.
            b.   Fittings and couplers rated for a minimum of 130 psi.
            c.   Mechanical type couplers when joining HDPE and PVC conduits.
        3.   Microduct
            a.   HDPE microduct with an outside/inside diameter of 0.500/0.394 inch (12.7/10 mm) or 0.630/0.512 inch (16/13 mm) or 0.709/0.551 (18/14 mm), as shown.
            b.   Microduct having a ribbed interior.
            c.   Watertight couplers rated for a minimum of 200 psi.
            d.   Microduct bundle within a single 0.100 inch thick polyethylene oversheath.
            e.   Microduct bundles must contain a factory installed #14 AWG solid, insulated locate wire and a minimum of two rip cords for removal of oversheath.

    B.   Conduit Banks
        1.   New, prefabricated
        2.   ATMS Multi-duct Conduit Types
            a.   1D = four 1.25-inch conduits

  b. 2D = eight 1.25-inch conduits

  c. 4D = sixteen 1.25-inch conduits

 3. Color-code each conduit or cell as follows:

  a. One, two, or three conduits gray

  b. 1D Bank 1 blue, orange, green and brown

  c. 2D Bank 1 blue, orange, green, and brown

      Bank 2   slate, white, red, and black

  d. 4D Bank 1 blue, orange, green, and brown

      Bank 2   slate, white, red, and black

      Bank 3   same as bank 1 with a contrasting stripe

      Bank 4   same as bank 2 with a contrasting stripe

 4. Microduct types:

  a. Individual 0.500/0.394 inch (12.7/10 mm) or 0.630/0.512 inch (16/13 mm) microducts installed loosely within new or existing conduit.

  b. MD2, MD3, MD4 and MD7: microduct bundle containing two, three, four or seven 0.709/0.551 inch (18/14 mm) microducts respectively.

  c. Factory-assembled bundles for bundled applications.

 5. Color-code microducts and oversheaths as follows:

  a. Individual microducts installed loosely within conduit or bundled within oversheath:

    1) blue

    2) orange

    3) green

    4) brown

    5) slate

    6) white

    7) red

    8) black

  b. Oversheaths:

    Bundle #1 blue

    Bundle #2 orange

    Bundle #3 green

    Bundle #4 brown

C. Meet or exceed all of the conduit manufacturer's recommendations for materials used in the installation of conduits including sweeps, adapters, couplings, glue, plugs, and fittings.

 1. Conduit plugs must seal the conduit and allow the secure fastening of detectable pull tape.

D. PVC conduit sections – Nominal 20 ft sections. Couplings and fittings must provide watertight integrity.

E.   Sweeps – factory manufactured sweeps (11¼, 22½, 45, and 90 degree angles) complete with bell and spigot.

F.   Detectable Pull Tape – flat profile, low stretch polyester, detectable, sequential footage marked, 1,200 lb tensile strength pull tape in each conduit.

G.   Backfill
    1.   Flowable Fill – Refer to Section 03575.
    2.   Free Draining Granular Backfill – Refer to Section 02056.
    3.   Sand
        a.   Friable natural river or bank aggregate, free of loam, detrimental, or soluble or organic matter.
        b. $^3/_8$ inch minus, well graded.
    4.   Hand-mix grout
        a.   Minimum strength – 50 psi
        b.   Maximum strength – 150 psi
        c.   Slump – 5 inches to 10 inches

H.   Rigid Metal Conduit (RMC) complying with UL-6. Zinc galvanized exterior coating complying with ANSI C80.1.

I.   Liquidtight Flexible Metal Conduit (LFMC), -30 degrees C to 80 degrees C rated, UL 360 listed.

J.   Liquidtight Flexible Nonmetallic Conduit (LFNC), 80 degrees C dry, 60 degrees C wet rated, sunlight resistant, UL 1660 listed.

PART 3   EXECUTION

3.1   GENERAL

A.   Maximum spacing between junction boxes and vaults
    1.   500 ft for electrical cable.
    2.   1,000 ft for fiber optic cable on tangent surface street installations.
    3.   2,500 ft for fiber optic cable on tangent highway installations.
    4.   Reduce maximum spacing if horizontal or vertical deflection incurred during installation prevents the installation of cable within maximum pulling tension rating of the cable.
    5.   Notify the Engineer if utility avoidance requires junction box and conduit locations differing from requirements for deflection in this Section, article 3.2.

B.   Minimum Cover of Conduit
1.   Minimum cover under pavement is 4ft and minimum cover under sidewalks is 3 ft.
2.   Minimum cover in highway right-of-way, greater than 20 ft from the edge of the pavement is 3 ft.
3.   Minimum cover in highway right-of-way, within 20 ft of the edge of the pavement is 5 ft.
4.   Refer to State of Utah Administrative Rule 930-7

3.2   INSTALLATION

A.   Prevent conduit from deflecting vertically or horizontally along its length by a ratio greater than 10:1, (no more than 4-inch deflection per 40 inch in length) when installing conduit that houses communication cable.

B.   Prevent sum total of the vertical and horizontal conduit deflection or bend between any two junction boxes from exceeding 270 degrees when installing conduit.

C.   Install conduit within 1 ft of existing parallel conduit run if the planned location of conduit is parallel to the existing traffic signal or ATMS conduit.

D.   Obtain approval for field bending of conduit with the Engineer in cases where factory sweeps are not appropriate. Field bending must be performed using a heat box or heat blanket. Torch heating conduit is prohibited. Install all conduit bends to have a radius that is not less than the following:
1.   24 inches within the cabinet and pole foundations
2.   36 inches in all other locations
3.   46 inches for MD7 microduct bundle
4.   40 inches for MD4 microduct bundle
5.   36 inches for MD3 microduct bundle
6.   32 inches for MD2 microduct bundle
7.   12 inches for individual microduct

E.   Install conduits that cross finished curbs and gutters, sidewalks, concrete flatwork, or textured or decorative surfaces by boring, jacking, or drilling. Replace any damaged concrete sections, joint to joint. Refer to Section 02221.

F.   Proof all conduit before installation of cabling and detectable pull tape.
1.   Use a mandrel at least 80 percent of the conduit diameter, at least twice as long as the conduit diameter, and composed of rigid material.
2.   Schedule proofing with the Engineer at least 5 working days in advance of performing the work.

3. Proof all conduit with a Department representative witness present.
4. Complete and submit a completed Conduit Mandrel Test Form for all ATMS conduit.
5. Proof microducts using proofing balls.
6. Proofing balls must maintain a minimum 80 percent fill ratio of inside diameter of the microduct being tested.
7. Proofing must occur after all junction boxes have been installed to final grade, including placement of flowable fill or hand-mix grout at junction box walls, and after all excavation in the immediate proximity of the conduit system has been completed.
   a. Re-proof any conduit segment where excavation has occurred near the conduits following initial proof testing.

G. Provide detectable pull tape in all conduits.
1. Install continuously between junction boxes.
2. Fasten securely to conduit plug and leave 6 ft of pull tape slack inside of the conduit.
3. Do not splice detectable pull tape in conduit.
4. Use flat profile, low stretch polyester, 1,200 lb tensile strength detectable pull tape that is sequential footage marked.
5. Verify that the pull tape is detectable throughout its entire length by performing a continuity test or equivalent verification.
6. Detectable pull tape not required in microducts.

H. Encase open trench conduit in sand backfill covered by flowable fill within existing roadway, proposed roadway and sidewalk pavement areas only.
1. Seal junction box wall around conduits using flowable fill or approved hand-mix grout.
2. Use 6 inches of sand backfill covered with native material in all other areas.
3. Refer to AT Series Standard Drawings.

I. Use rigid metal conduit or schedule 80 PVC conduit for above ground application.
1. Liquidtight flexible metal conduit (LFMC) or liquidtight flexible non-metallic conduit (LFNC) is permitted in lengths not exceeding 6 ft where not subject to physical damage.
2. Apply corrosion protection to any portion of rigid metal conduit buried in the ground or encased in concrete.

J. Use PVC or HDPE conduit for underground application.

K. Warning Tape
1. Install orange warning tape with black legend "Caution - Buried Communication Cable," in all trenches containing multi-duct conduit or conduit containing communication cables.

2. Install red warning tape with black legend "Caution - Buried Electric" in all other trenches.
3. Not required when flowable fill is directly overlaid with asphalt pavement or PCCP.
4. Not required when boring or plowing conduit.

L. Install a bushing or adapter at ends of all conduits that contain a conductor according to the NEC.

M. Furnish and install Utility Marker Posts along the longitudinal conduit running line. Refer to AT Series Standard Drawings and Section 02842.

N. Install a #14 AWG solid, insulated locate wire inside of new or existing conduit with individual microducts.
1. Verify that all locate wires are detectable throughout their entire length by performing a continuity test or equivalent verification.

3.3   TRENCH

A. Paved Asphalt Surface
1. Install T-patch over trenched area according to AT Series Standard Drawings.
2. Cut pavement from roadway surface to roadway base on both sides of trench to provide a clean, straight wall for T-patch before any backhoe use according to Section 02705.
3. Refer to AT Series Standard Drawings for depth of flowable fill under paved surfaces.
4. Evenly apply tack coat on final backfill before installing T-patch.
5. Place restoration patch – match the composition, density, and elevation (±¼ inch), of the existing surface according to Section 02741.
6. Apply a hot-pour rubberized asphalt joint sealant or approved equal after the patch is installed.

B. Sidewalk or Decorative Pavement
1. Use flowable fill to bottom of new pavement or sidewalk.
2. Match existing pavement thickness. New pavement thickness must be 3½ inches minimum and 8 inches maximum.
3. Restore sidewalk or decorative pavement to original condition or better after work is completed. Refer to Section 02776.

C. Unpaved Surface
1. Backfill using native material, if suitable, that matches the composition, density, and elevation (±0.2 inch), of the existing surface according to Section 02056.

2. Dispose of surplus material promptly.
3. Sand Backfill
   a. Use sand backfill in trench sections outside of existing roadway, proposed roadway, and sidewalk pavement areas, including exposed conduit locations when plowing or boring.
   b. Provide 6 inches of sand backfill above conduit in trench.
      1) Backfill trench above sand to finished grade using native material.
         a) Backfill and tamp in 6 inch lifts.
   c. Compaction of sand backfill is not required.

D. Sleeve foreign utilities that cross a trench so they are not encased in flowable fill.

E. Place all conduits in the same trench whenever possible.

F. Flowable Fill or Hand-mix Grout
   1. Install flowable fill or approved hand-mix grout to the wall of junction box to seal conduit entry into junction box.
   2. Clean excess flowable fill or hand-mix grout from the inside of the junction box.

G. Install all conduits so the flowable fill or sand backfill completely encases all exterior surfaces of the conduit.
   1. Separate multi-duct conduits using a commercially available conduit spacer or approved equivalent.
   2. Place spacers no more than 4 ft apart and not more than 2 ft from each coupler.

H. Anchor the conduit in trench at 16 ft intervals to maintain the required conduit depth during flowable fill placement.

I. Minimum separation between all conduits and the wall of the trench is 1½ inches.

3.4 BORE OR PLOW

A. Immediately contain, remove, and properly dispose of all excess drilling fluid.

3.5 USE OF EXISTING OR OCCUPIED CONDUIT

A. Maintain the physical condition and functional integrity of all cabling and wiring in existing or occupied conduit.

B. Cable or wire installation in an existing or occupied conduit.

1. Remove any existing fiber optic cable or copper wire.
2. Test the integrity and clean the conduit by successfully pulling a Department-approved mandrel through the conduit.
3. Re-pull existing and new fiber optic cable or copper wire together.
4. Perform all necessary splices and replace any impacted fiber cable and spider fan-out kits according to Section 13594.

C. Use existing conduit in-situ only if shown and as approved by the Engineer.

D. Intercept individual microducts from existing microduct bundle mid-span and reroute to new junction box location:
   1. Type II-PC junction box
      a. Bury at existing microduct bundle depth.
      b. Notch the 24-inch box walls and install junction box over existing microduct bundle.
      c. Provide 12 inches of free draining granular backfill borrow underneath junction box.
      d. Encase all conduit in flowable fill orhand-mix grout where the conduit enters the junction box.
      e. Place locate ball or disk in junction box.
      f. Ground rod, and grout floor are not required.
   2. Conduit and microduct bundle inside of buried Type II-PC junction box.
      a. Install conduit from buried junction box to new junction box location for rerouting of individual microducts. Provide #14 AWG solid, insulated locate wire inside of new conduit between junction boxes.
      b. Extend conduit and microduct oversheath 6 inches beyond inside wall of the junction box.
      c. Expose microducts by removing no more than 20 inches of oversheath.
      d. Identify and cut only the individual microducts to be rerouted.
      e. Use approved couplers and extend microducts to new junction box using corresponding microduct color.
      f. Splice all locate wires together using an approved waterproof connector.
         1) Verify that the locate wire conductors are not exposed.
   3. New junction box location
      a. Install new junction box within 20 ft of buried junction box or within 20 ft of edge of roadway when existing microduct bundle is underneath roadway, to provide access to locate wire for mapping and locating purposes.

3.6 REPAIR OR RESTORATION

A.   Restore all areas, including landscaping, concrete pavement, asphalt, finished curbs and gutters, box culverts, sewers, underground water mains, sprinkler systems, sidewalks, concrete flatwork, colored, textured, or decorative surfaces damaged during conduit and junction box installation.

B.   Coordinate with local utilities for utility repair.

C.   Notify the Engineer of all necessary repairs.

D.   Replace all damaged facilities in kind.

E.   Buried microduct bundle coupling and repair:
1.   Expose microducts by removing no more than 12 inches of oversheath beyond area to be coupled or repaired.
   a.   Trim microducts to length as necessary to eliminate all bends and deflection.
2.   Use approved couplers.
3.   Splice the locate wires together using an approved waterproof connector.
   a.   Verify that the locate wire conductors are not exposed.
4.   Protect exposed microducts, couplers and locate wire using split duct.
   a.   Seal split duct joints and split duct ends around microduct bundle oversheath using approved waterproof sealing tape or other approved methods prior to backfill.
   b.   Do not use heat-shrink or cold-shrink protection methods.

END OF SECTION

JUNCTION BOX CONDUIT PENETRATION DETAIL

- UNDISTURBED NATIVE MATERIAL
- PAVEMENT
- INSTALL JUNCTION BOX FLUSH WITH GRADE WHEN PLACED IN PAVEMENT
- 12 INCH FREE DRAINING GRANULAR BACKFILL
- LOCATE BALL OR DISK IN ITS BOXES
- 1 INCH DRAINAGE HOLE AT LOW POINT
- 2" PVC TYP
- 6" HDPE TYP
- JUNCTION BOX
- INSTALL CONDUIT END BELL FITTING ON ALL CONDUIT ENDS PRIOR TO PULLING WIRE OR CABLE
- 4" MIN, 6" MAX
- 3" MIN TYP
- INSTALL LEVEL WITH GRADE SEE NOTE 13
- CONCRETE COLLAR
- FINAL GRADE
- FLOWABLE FILL OR APPROVED HAND-MIX GROUT TO EDGE OF TRENCH PER STANDARD SPECIFICATION 13553 AND 1 ½ INCH MIN CLR PER STD DWG AT 6 (TYP)
- 1 INCH GROUTED CONDUIT (TYP)
- EXPOSED
- ALL CONDUIT TO ENTER BOTTOM HALF OF JUNCTION BOX
- CONDUIT
- 1 INCH GROUTED OR PREFABRICATED BOX FLOOR
- 10 FT x ¾ INCH COPPER COATED STEEL GROUND ROD

PLAN VIEW - JUNCTION BOX AND CONCRETE COLLAR

- INSTALL ZINC PLATED ½ INCH Ø COIL BOLT WITH HEX HEAD
- SKID RESISTANT SURFACE
- L
- H
- PULL SLOTS (TYP) 3000 LBS RATING
- CONCRETE COLLAR TO FOLLOW AROUND THE ENTIRE PERIMTER OF BOX (SEE JUNCTION BOX CONCRETE COLLAR DETAIL THIS SHEET)

TABLE OF DIMENSIONS

BOX TYPE	"W" inch	"L" inch	"H" inch	"X" inch	"Y" inch	LOADING
I-PC	13	24	13	10	10	TIER 22
II-PC	24	36	36	10	24	TIER 22
III-PC	30	48	36	10	24	TIER 22

- LENGTH OF COLLAR, SEE NOTE 14
- X
- Y
- CONTROL JOINT - OPTIONAL (TYP @ EACH END)
- INSTALL LIP FLUSH WITH FINAL GRADE IN AREAS SUBJECT TO FOOT TRAFFIC
- JUNCTION BOX
- CONCRETE COLLAR
- INSTALL GROUND ROD IN A WORKABLE LOCATION 8 INCHES FROM ANY CORNER. DO NOT INSTALL GROUND ROD IN THE CENTER ZONE OF BOX

JUNCTION BOX CONCRETE COLLAR DETAIL

- FINAL GRADE
- 6"
- 2"
- 1"
- AA (AE) CONCRETE COLLAR AROUND BOX
- VARIES
- SLOPE TO DRAIN
- JUNCTION BOX WALL
- ½ INCH PREFORMED EXPANSION JOINT FILLER TRIMMED FLUSH WITH BOTH SURFACES
- COVER

NOTES:

1. BOX LOGO OR NAME PLATE. REFER TO STANDARD SPECIFICATION 13554.
2. DO NOT PLACE JUNCTION BOXES IN THE TRAVELED WAY OR ON FREEWAY SHOULDERS.
3. CONCRETE COLLAR WIDTH VARIES WHEN ADJACENT TO ITS CABINETS. REFER TO AT AND SL SERIES STD DWGS.
4. PROVIDE CONCRETE COLLARS EXCEPT WITHIN CONCRETE PAVED AREAS.
5. INSTALL CONDUIT PLUG PER STANDARD SPECIFICATION 13554.
6. ALIGN ITS CONDUIT BY COLOR ON EACH SIDE OF THE JUNCTION BOX.
7. PROVIDE TYPE III-PC JUNCTION BOXES WITH A SPLIT LID.
8. CONFORM TO ANSI/SCTE-77 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY" TIER 22 LOADING FOR ALL JUNCTION BOXES. TIER 22 ID PLATE TO BE VISIBLE ON BOX.
9. EXTEND GROUND ROD A MINIMUM OF 4 INCHES AND A MAXIMUM OF 6 INCHES ABOVE BOTTOM OF JUNCTION BOX.
10. USE INTER SYSTEM GROUNDING BRIDGE CLAMP FOR BONDING TO GROUND ROD. ATTACH NOT MORE THAN 4 WIRES PER CLAMP.
11. DO NOT CUT GROUND RODS.
12. PROVIDE CLEAR SPACE OF AT LEAST 36 INCH FOR PERSONNEL TO PULL LID OFF BOX WITHOUT CONFLICT.
13. PLACE JUNCTION BOXES AND CONCRETE COLLARS LEVEL WITH GRADE ON SLOPES 6:1 OR FLATTER. REFER TO PLANS FOR DETAILS OF JUNCTION BOX PLACEMENTS ON SLOPES STEEPER THAN 6:1. SLOPE CONCRETE COLLAR TO DRAIN AS SHOWN.
14. INSTALL ENTIRE PAD UNIFORMLY TO LONGEST LENGTH WHEN SEVERAL JUNCTION BOXES ARE BEING PLACED ADJACENT TO ONE ANOTHER.

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

STANDARD DRAWING EDITION

2024 Standard Drawing

POLYMER CONCRETE JUNCTION BOX DETAILS

STANDARD DRAWING TITLE

STD. DWG. NO.
AT 7A

NO.	DATE	APPR.	REMARKS
1	12/07/22	MAA	CHANGE ATMS TO ITS
	4/30/20	MAA	ADDED "OPTIONAL" TO CONCRETE COLLAR DETAIL
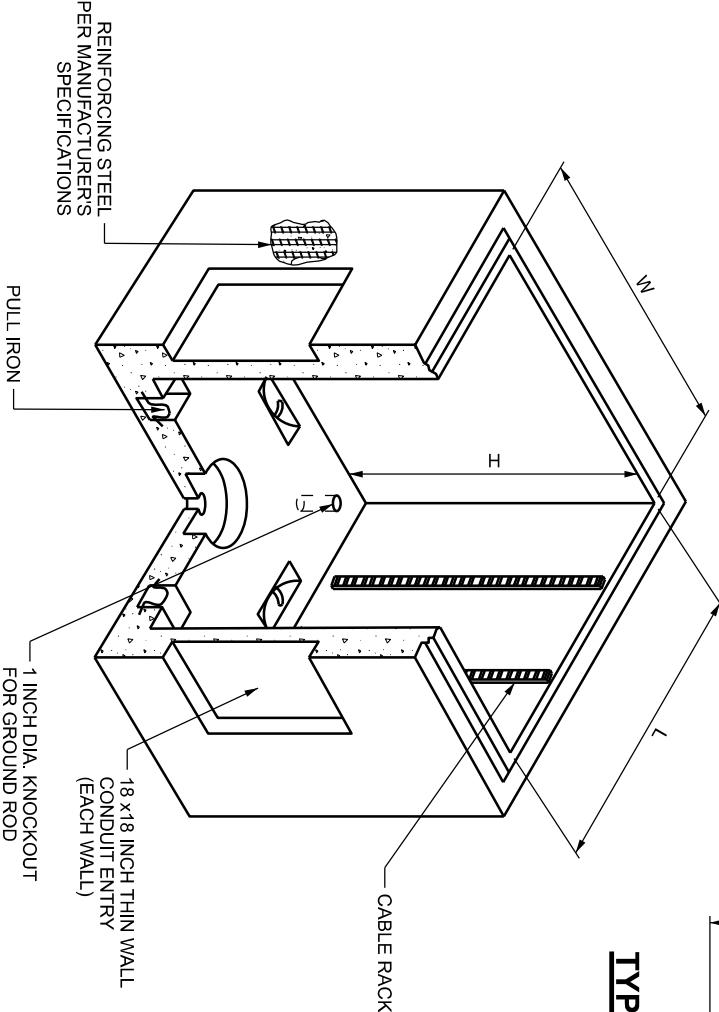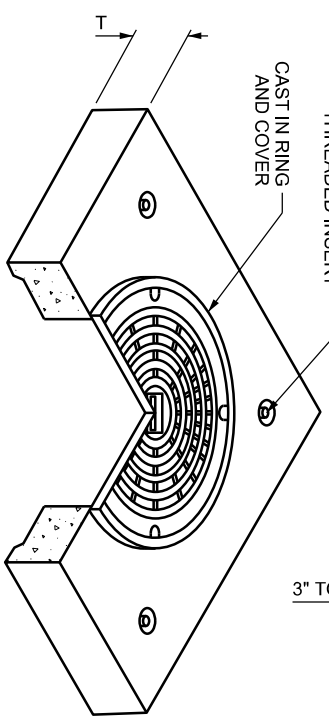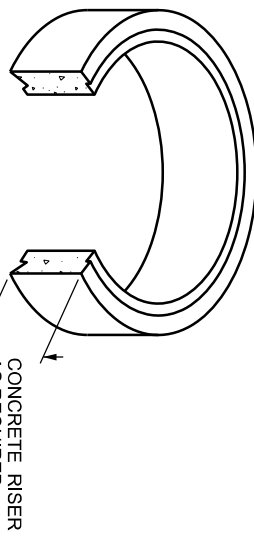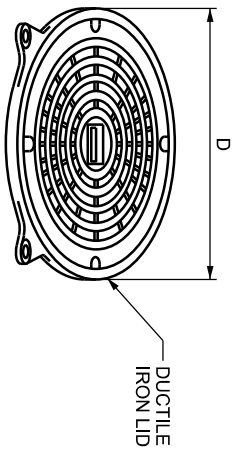
CONCRETE FIBER VAULT WITH MANHOLE LID

REINFORCING STEEL PER MANUFACTURER'S SPECIFICATIONS

PULL IRON

1 INCH DIA. KNOCKOUT FOR GROUND ROD

18 x18 INCH THIN WALL CONDUIT ENTRY (EACH WALL)

CABLE RACK

T

W

H

L

CAST IN RING AND COVER

⅜ INCH DIAMETER THREADED INSERT

CONCRETE RISER AS REQUIRED

3" TO 12"

D

DUCTILE IRON LID

TYPICAL CABLE RACK

3'- 0"

STANCHIONS (TYP)

EXPANSION ANCHORS (TYP)

CONCRETE FIBER VAULT WALL

RACK ARMS (TYP)

9"

3"

14"

20"
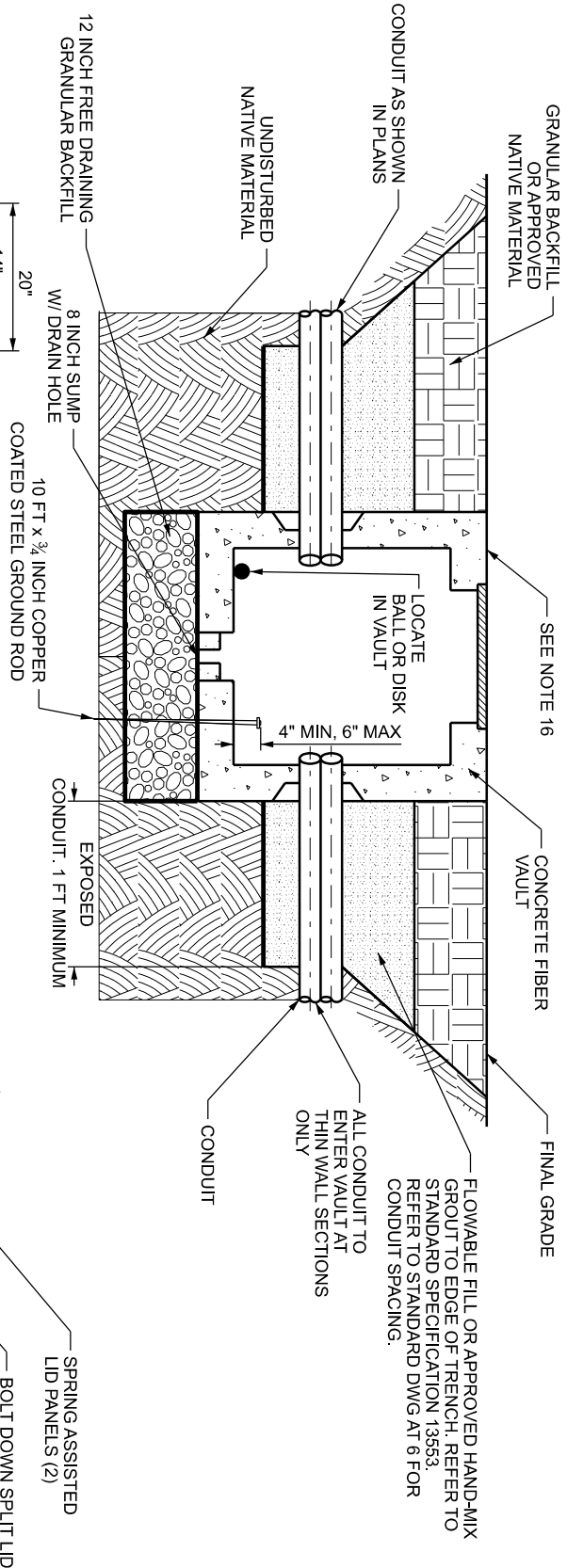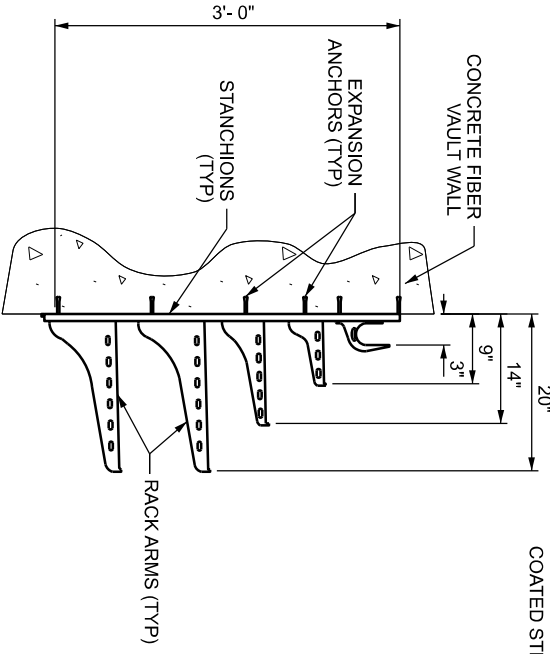
FIBER VAULT CONDUIT PENETRATION DETAIL

GRANULAR BACKFILL OR APPROVED NATIVE MATERIAL

CONDUIT AS SHOWN IN PLANS

12 INCH FREE DRAINING GRANULAR BACKFILL

UNDISTURBED NATIVE MATERIAL

8 INCH SUMP W/ DRAIN HOLE

10 FT x ¾ INCH COPPER COATED STEEL GROUND ROD

LOCATE BALL OR DISK IN VAULT

4" MIN, 6" MAX

EXPOSED CONDUIT, 1 FT MINIMUM

CONDUIT

ALL CONDUIT TO ENTER VAULT AT THIN WALL SECTIONS ONLY

SEE NOTE 16

FLOWABLE FILL OR APPROVED HAND-MIX GROUT TO EDGE OF TRENCH. REFER TO STANDARD SPECIFICATION 13553. REFER TO STANDARD DWG AT 6 FOR CONDUIT SPACING.

FINAL GRADE

CONCRETE FIBER VAULT

METAL LID FOR TYPE IV-CV FIBER VAULT

DROP HANDLE

X

Y

SPRING ASSISTED LID PANELS (2)

BOLT DOWN SPLIT LID. SEE NOTE 6

VAULT DIMENSIONS

VAULT TYPE	"L"	"W"	"H"	"T"	LID	"X"	"Y"	"D"
V-CV	48 INCH	72 INCH	72 INCH	6 MIN INCH	HINGED OR MANHOLE	N/A	N/A	36 INCH
IV-CV	48 INCH	48 INCH	6 MIN INCH	MANHOLE ONLY	24 INCH	36 INCH	36 INCH

NOTES:

1. SUPPLY TYPE IV FIBER VAULT WITH A TAMPERPROOF HINGED METAL LID FOR UNPAVED AREAS, OR A TAMPERPROOF HEAVY DUTY MANHOLE-STYLE LID IN PAVED AREAS. SUPPLY FIBER VAULTS, LIDS, AND COVERS RATED FOR AASHTO LRFD HL-93 LOADING.

2. SUPPLY TYPE V-CV FIBER VAULT WITH A MANHOLE-STYLE LID ONLY.

3. SUPPLY MANHOLE LIDS WITH A HOLE OR SLOT FOR REMOVAL WITH A LEVER OR HOOK. SUPPLY HINGED METAL LIDS WITH DROP HANDLES.

4. SUPPLY VAULTS WITH A PERMANENT INTERNAL LADDER.

5. PROVIDE FIBER VAULT LIDS MARKED, "UDOT FIBER OPTIC" USING MIN 3 INCH HIGH LETTERING WITH ⅛ INCH THICKNESS. FORM LETTERS BY ENGRAVING, CASTING, STAMPING, OR WITH A PRECISE WELD BEAD.

6. PROVIDE HINGED METAL LID WITH A MINIMUM OF ³⁄₃₂ INCH HIGH DIAMOND PATTERN OR SIMILAR SURFACE.

7. PROVIDE FIBER VAULTS WITH A HEAVY-DUTY NONMETALLIC CABLE STORAGE RACK SYSTEM. PROVIDE RACK ARMS AND STANCHIONS CAPABLE OF SUPPORTING A MINIMUM OF 250 LB FOR TYPE IV-CV FIBER VAULT RACKS. INCLUDE A MINIMUM OF 36 INCH RACK STANCHIONS AND 4 RACK ARMS. FOR TYPE V-CV FIBER VAULTS, INCLUDE A MINIMUM OF 45 INCH RACK STANCHIONS AND 5 RACK ARMS.

8. CONDUITS PENETRATE FIBER VAULT AT THIN WALL SECTIONS ONLY. CORE DRILL HOLE IN THIN WALL SECTION TO CONDUIT SIZE PLUS ¼ INCH. DO NOT "KNOCK OUT" THE THIN WALL SECTION.

9. COMPLY WITH OSHA REQUIREMENTS FOR ENCLOSED WORK SPACES.

10. BOND AND GROUND ALL EXPOSED METALLIC COMPONENTS OF THE FIBER VAULT PER NEC 250 IF ARMORED FIBER OPTIC CABLE IS USED.

11. INSTALL CONDUIT PLUGS ACCORDING TO STANDARD SPECIFICATION 13553.

12. ALIGN ARMS CONDUIT BY COLOR ON EACH SIDE OF FIBER VAULT.

13. EXTEND GROUND ROD A MINIMUM OF 4 INCHES AND A MAXIMUM OF 6 INCHES ABOVE BOTTOM OF FIBER VAULT.

14. USE GROUND ROD BRIDGE CLAMP FOR BONDING TO GROUND ROD. ATTACH NOT MORE THAN 4 WIRES PER CLAMP.

15. DO NOT CUT GROUND RODS.

16. INSTALL VAULT PLUMB AND LEVEL. GRADE BACKFILL FLUSH WITH VAULT.

dura·line

Dig Once Best Practices Overview

<u>SECTION 1: GOALS OF THE LEGISLATION</u>

Economic Viability Exists in a Digital Connection
No one can predict the demand for data in the next 10 to 20 years, but we know our lives are going to be even more connected. By consolidating the installation of broadband infrastructure at the time of road construction, communities are positioned to participate in the digital economy in the most cost-effective way for the taxpayers.

Saving Tax-Payers Dollars
The U.S. DOT's Intelligent Transportation Systems Joint Program Office estimates the average cost of deploying fiber-optic cable is about $27,000 per mile. According to the Federal Highway Administration, the Dig Once legislation has the potential to eliminate up to 90 percent of the cost of deployment.

Dig Once U.S. Federal Legislation
In an effort to make high speed broadband more affordable and accessible, the U.S. Federal Government passed "Dig Once" legislation. After a decade of various versions of the concept, the bill received overwhelming bi-partisan support with more than 30 co-sponsors.

Eliminating Duplicate Expenses
Essentially, the legislation provides for the notification of federally funded road construction projects where conduit or fiber could be included at the same time. Digging one time for two or more projects and enabling future upgrades without additional expense brings tremendous added value and efficient use of resources.

Digging Deeper into Saving Taxpayer's Money
The law allows for some flexibility: installation of fiber, conduit, or both fiber and conduit. If fiber is direct buried alone, it will still be a leap forward in streamlining and investing in broadband infrastructure. However, when an upgrade is needed, it eventually means more digging to replace the fiber cable.

The Federal Communications Commission, or FCC, recommended State policies should require contractors to install spare fiber and empty conduit to accommodate "reasonably anticipated" future demand. The use of a conduit network system provides the flexibility of upgrading (adding additional fiber) without the cost of digging. Fiber can be placed by air-jetting into the conduit quickly and easily without the expense and disruption of construction. Burying empty conduits in the ground at the time of road construction allows the potential for expansion when it is necessary and can be immediately revenue-generating by leasing or renting.

SECTION 2: BEST PRACTICES OF DIG ONCE POLICIES

The law allows for some flexibility: installation of fiber, conduit, or both fiber and conduit. The Federal Communications Commission, or FCC, recommended State policies should require contractors to install spare fiber and empty conduit to accommodate "reasonably anticipated" future demand.

Best Practice #1: Education
- The extra effort spent on educating the stakeholders will result in on-going cooperation
- Explain the cost-savings benefits
- Demonstrate the high-speed broadband connectivity economic impact
- Clarify the definition of "reasonably anticipated" future demand in conjunction with the installation of fiber, conduit, or both fiber and conduit
- Describe the ability to upgrade for the future (if conduit is used)

Best Practice #2: Ordinances (see pages 3-9: https://broadbandnow.com/report/dig-once-digital-divide/)
- Use existing laws and practices and integrate ideas into statutes and processes
- Explain expectations for compliance and how to cope with expectations
- Underscore who is responsible in the text of ordinance
- Encourage or require companies to use your conduit
- Maintain public ownership of conduit as much as possible

Best Practice #3: Coordination
- Establish relationships and expectations by keeping track of private projects and streamlining bureaucratic systems
- Create effective coordination committees
- Provide clear explanation of costs
- Line up departments' budgets for potential large projects

Best Practice #4: Installation of Conduit Network Systems (see pages 10-13)
- Create a master plan
- Publish clear and consistent guidelines (with engineering standards)
- Choose the type of conduit that makes sense for your community — plan for the future
- Do not underestimate the added value of MicroTechnology and MicroTrenching *(Note: MicroTrenching is different than NanoTrenching, which puts the conduit only a few inches below the surface and is unproven. MicroTrenching has been around 10+ years and is a proven installation method with the correct reinstatement material.)*
- Document and verify your conduit

NOTE: Incremental funding required to pass 90 percent of U.S. households with high-speed fiber broadband by 2025 is estimated at a cost of $70 billion.* Dig Once has the potential to reduce that expense significantly. *(*Source: Cartesian, FCC Form 477, US Census, American Community Survey, Company Presentations)*

SECTION 3: STATE LEGISLATION EXAMPLES
(SOURCE: https://broadbandnow.com/report/dig-once-digital-divide/)

NORTH CAROLINA
Law(s): Executive Order 91 forming the Task Force on Connecting North Carolina
Date enacted: 2019
Description: The Governor of North Carolina formed the Task Force on Connecting North Carolina in March 2019, aimed at increasing Internet access to North Carolina residents and aligning state agencies policies in order to remove barriers to broadband deployment. It's comprised of officials representing an array of state departments, including the department of transportation (DOT) and the department of information technology (DIT). The governor asked representatives from the DOT and DIT to jointly develop and implement a statewide "Dig Once" policy promoting the installation of broadband conduit or cables during road construction projects by July 1st, 2019.

UTAH
Law(s): R907-64. Longitudinal and Wireless Access to Interstate System Rights-of-Way for Installation of Telecommunication Facilities; Section 72-7-108
Date enacted: 1999
Description: Utah's state government began implementing Dig Once policies ahead of the 2002 Salt Lake City Olympics. The state's DOT has since expanded the policy, requiring the installation of oversized conduit for certain road construction projects, while interested telecom parties can then extend that infrastructure to neighboring communities. The state's DOT owns the conduit and leases it to telecom companies that want to use it. The state's Telecommunications Advisory Council reviews and approves valuations and trades between the state's DOT and telecom companies for access to conduit, and maintains a map of fiber locations.

ARIZONA
Law(s): Arizona REV. STAT. ANN. § 28-7381
Date enacted: 2012
Description: Arizona's Dig Once policies are targeted specifically at expanding broadband access to rural communities. The policy states that during road construction projects along rural highways, the DOT can coordinate with telecom companies to install conduit and it enables the agency to lease the conduit to telecom providers at a cost-based rate.

MINNESOTA
Law(s): 116J.39-116J.40: Coordination of Broadband Infrastructure Development
Date enacted: 2013
Description: Minnesota's state laws encourage the state's Office of Broadband Development to coordinate with the state's DOT for "Dig Once" measures in planning, relocation, installation, or improving broadband conduit within a right-of-way. It enables the Office of Broadband Development to evaluate procedures and criteria for contracts or lease agreements with telecom companies, as well as pricing requirements. It also allows for co-location of fiber and conduit with other utilities in the same trench.

NEVADA

Law(s): SB 53, creating the Nevada Telecommunications Advisory Council

Date enacted: 2017

Description: Nevada state legislature formed the Telecommunications Advisory Council within the state's DOT in 2017, outlining parameters and regulations for the DOT in coordinating with telecom companies for access to rights-of-way for installing telecommunications equipment. The law charges the council with seeking input from telecommunications providers and the public relating to broadband access, providing recommendations to the state DOT on offering access to rights-of-way to telecommunications providers, as well as approving or denying proposed fiber trade agreements between the DOT and a telecom provider. The DOT is also authorized to enter into agreements with telecom companies and charge fees to access to public rights-of-way or receive in-kind compensation.

MARYLAND

Law(s): SB 717 –Connecting Rural Maryland Act of 2017, creating the Task Force on Rural Internet, Broadband, Wireless, and Cellular Service; HB 961-Rural Broadband Communication Services

Date enacted: 2017-present

Description: Maryland's DOT coordinates with telecom providers and local utilities for installing conduit. The Connecting Rural Maryland Act created the Task Force on Rural Internet, Broadband, Wireless and Cellular Service, which was charged with facilitating cooperation between telecom providers to reduce redundancy, save money, and ensure that the all fiber assets are being used efficiently. The task force focused on facilitating cooperation between electric cooperatives and telecom companies. The task force's last report recommended the state include fiber optic cable as part of the state's definition of telecommunications equipment, and that it allow utilities to lease excess fiber and/or pole attachment rights for telecommunications, including broadband, without obtaining a separate easement, in order to promote broadband access in rural parts of the state. It has requested that the state's legislature draft authority for electric cooperatives to coordinate with telecom providers in laying fiber. That bill was expected to be introduced in 2019. HB 961, meanwhile, specifies that nonprofit telecommunications services providers in rural and underserved areas of the State must be allowed to use the right-of-way or easement of specified State agencies for the installation of broadband communication infrastructure without being charged to do so.

GEORGIA

Law(s): SB 402 — Achieving Connectivity Everywhere (ACE) Act

Date enacted: 2018

Description: Georgia state legislature passed the ACE bill in 2018, which enables the state DOT to develop and implement a long-term policy allowing public rights-of-way to be used for the deployment of broadband services and other "emerging communication technologies" either by the state or private providers. It also requires local governments' comprehensive plans to include elements to facilitate the deployment of broadband services, and it amends the OneGeorgia Authority Act to include broadband services. Finally, the bill authorizes the Georgia Technology Authority to establish policies and programs necessary to coordinate

statewide efforts to promote broadband deployments between state agencies, local governments and industry representatives.

WEST VIRGINIA
Law(s): HB 4447, creating new codes §17 – 2 E- 1-E-9
Date enacted: 2018
Description: West Virginia's state government has developed a uniform system for conduit installation for telecom companies that are applying to install telecom infrastructure. Telecom companies must enter into an agreement with the state's Division of Highways for installing conduit in public rights-of-way; companies must also notify the West Virginia Broadband Enhancement Council and all other carriers on record within the state of their installation permit. Other telecom companies that are interested in installing their own fiber have 30 days to notify the applicant of interest in sharing the trench. The telecom company is also required to run an advertisement in the relevant media for two weeks advertising the project to allow other carriers the opportunity to respond. The law also allows the Division of Highways to charge fees for access to public rights-of-way, or accept in-kind compensation from sources such as conduit, dark fiber, access points, other telecom equipment or services, or even bandwidth.

MAINE
Law(s): Chapter 344, Sec. 1. 35-A MRSA §2503, sub-§2
Date enacted: 2018
Description: Maine's law requires any public entity involved in a construction project to install broadband conduit and authorizes that entity to lease the conduit to telecom companies for installing broadband and/or wireless facilities for the purpose of providing service.
The law states that telecom companies proposing broadband deployments must notify the ConnectME Authority with the location and description of the proposed facility and that the Authority must then disseminate that information to all other telecom companies or other entities that may be interested in installing broadband at the same time. The Authority is also tasked with maintaining a map of broadband conduit installations through the state.

ILLINOIS
Law(s): 605 ILCS 5/9-131) Sec. 9-131.
Date enacted: 2009
Description: Illinois state law requires the state DOT and the Department of Central Management Services (DCMS) to collaborate in installing fiber network conduit, where it does not already exist, in every new state-funded construction project that opens trenches along state-owned roadways. Either department is authorized to allow a third-party company to manage the leasing of the conduit to telecom companies, as long as the state can receive market-based pricing for the lease. The state's DOT also coordinates with the Illinois Broadband Deployment Council to compile Dig Once best practices and draft ordinances for county and city agencies within the state.

CALIFORNIA

Law(s): Section 14051 of the Government Code
Date enacted: 2016
Description: California requires the state DOT to notify telecom companies of state-led highway construction projects through its website to enable companies to collaborate with the state on installing conduit in public rights-of-way during each project.

LOMA LINDA, CA
Law: Ord. 629 §1
Date enacted: 2004
Description: The city of Loma Linda requires all new construction to connect to the city's existing fiber network through ordinances laid out in their Loma Linda Connected Community Program. Residential and commercial builders in Loma Linda are required to include broadband-capable internal wiring and fiber-optic interfaces in new structures. Loma Linda was one of the first communities in the US to adopt a comprehensive future-facing dig once construction policy, and one of the only ones to extend the ordinance to building wiring specifications.

BRENTWOOD, CA
Law: Ordinance No. 609
Date enacted: 1999
Description: Brentwood began implementing Dig Once policies 20 years ago. The city requires developers to design and install two advanced technology system conduits dedicated to the city within public rights-of-way during new construction and to each lot line within the development. It goes on to require developers to install a fiber optic system in one of the two conduits designed to serve the development by either the city itself or a licensed franchisee. The second conduit must remain empty and is reserved for future use by other franchisees. Over the last 20 years, the city now has 150 miles of conduit passing over 8,000 homes. ISP Sonic.net has relied heavily on the conduit to provide broadband service to residents.

SANDY, OR
Law: Development code 17.84.60
Description: The city of Sandy requires private developers to install conduit when disturbing existing roads or building new ones and offers maps of existing installations so that developers can be strategic in how they install conduit. The city has added broadband fiber to the list of municipal infrastructures (such as water, sewer, power lines and mailboxes) that all new developments must include.

BOSTON, MA
Date enacted: 1998; expansion in 1994
Description: Boston is possibly the very first city to implement a Dig Once policy, back in 1988. Initially, the city required all construction projects that involved excavators in a public right-of-way to install conduit and the city then leased that conduit to telecom companies through a one-time fee plus a $5 per foot annual charge. However, the city found its offering wasn't attractive enough to telecom companies, who had begun building their own conduit along parallel streets. The city has since revised its laws to require telecom companies to lease space from the installed conduit before being allowed to install their own conduit, thereby encouraging companies to make use of what's already been installed. In 1994, Boston implemented a policy that required all telecom companies to install conduits in the same trench at the same time, on a shared-cost basis. This policy requires a lead company to

coordinate with other telecom entities in drafting engineering plans and estimating costs for the trenching and conduit installation.

BERKELEY, CA
Law: Ord. 7083-NS § 4 (part) Excavations for video and telecommunications systems
Date enacted: 2009
Description: Berkeley has implemented a suite of policies and procedures outlining best practices for telecom companies in order to minimize the inconveniences of installation, maintenance, and removal of telecom facilities in public rights-of-way. The city requires existing facilities be moved underground alongside new facilities when feasible, and that telecom companies coordinate construction projects with utilities installing infrastructure in public rights-of-way. Telecom companies must also alert the city to any excess or surplus conduit to be installed, and that new facilities be installed within existing facilities where there is sufficient excess capacity.

BELLEVUE, WA
Description: The city of Bellevue doesn't have a formal Dig Once policy in place, but the city has set Dig Once conditions within some of its development projects in the past. The city asks excavator projects include installing conduit along roads when feasible, as well as during street lighting and traffic signal upgrades. It also requires transportation projects that interrupt public sidewalks to include installed conduit.

GONZALES, CA
Law: "Dig Once" Policy for Public Works Projects in Gonzales
Date enacted: 2016
Description: Gonzales city government has implemented a Dig Once policy for public works projects that requires the city to install conduit during projects such as construction and maintenance of utility infrastructure or public roadways, or during excavations for installing communications, in public rights-of-way. The conduit is owned by the city.

ARLINGTON COUNTY, VA
Description: Arlington County does not have a specific Dig Once policy, but the county has reached "Dig Once" agreements with utility providers in the past. The county entered into one such agreement with electric utility Dominion Virginia Power. The utility needed to install underground conduit along a congested urban public right-of-way. The county required the utility to install fiber in parallel conduit for the county's use. The county is in the midst of installing a fiber network and is building extra capacity for use at a later date.

SAN FRANCISCO, CA
Law: Ordinance 220-14
Date enacted: 2014
Description: San Francisco laws requires any government-led construction project involving a public right-of-way to include improvements to communications infrastructure when feasible. It also requires a telecom company applying to install communications infrastructure to notify the city's Department of Technology so the department can participate in installing conduit at

the same time. The law encourages the department to participate to create a more efficient delivery of broadband services to the public and for the city's needs.

MONTEREY, CA
Law: MBEP/CCBC Shadow Conduit Specifications version 1.0
Date enacted: 2016
Description: The city of Monterey and the Central Coast Broadband Consortium (CCBC) have developed a set of conduit specifications and guidelines for reducing redundancy in installation. Its recommendations range from the conduit size and number of conduits to install, whether future conduit installation would be problematic or impossible, and whether any partners or customers will make immediate use of it. However, the specifications leave out guidance on when conduit installation is required and who should be required to install it.

SANTA CRUZ, CA
Law: Telecommunications Improvement Ordinance
Date enacted: 2014
Description: The city of Santa Cruz, also part of the Central Coast Broadband Consortium (CCBC), adopted the Santa Cruz county's ordinance in 2014, which in turn, was based on the city of San Francisco's Dig One policy. It requires that any entity proposing construction projects in public rights-of-way for utility improvements also install conduit or other telecommunications equipment when practical and feasible. City staff will work with contractors to identify the most cost-effective approach to installing conduit to meet the city requirements and will notify and coordinate with other telecom companies to join the project.

SAN BENITO COUNTY, CA
Law: Multi-use streets policy
Date enacted: 2015
Description: San Benito County, part of the CCBC, implemented a Dig Once practice as part of its multi-use streets policy. It requires county roadway construction projects to include installation of underground utility conduit. The county, which is part of a municipal broadband network, can then use the conduit to expand the network. The county may also utilize the CCBC's shadow conduit policy, which recommends trenching digging projects include a 60-day window so other telecom or utility providers who may be interested in installing conduit at the same time may be notified. The county encourages local jurisdictions to adopt similar policies.

CHICAGO, IL
Description: The City of Chicago has created a specific office that handles coordinating construction projects across agencies and companies to minimize disruptions to the public. The Project Coordination Office, within the city's DOT, was formed in 2012 at the direction of Mayor Rahm Emanuel to coordinate projects within public rights-of-way between different service providers and utilities. In 2013, the mayor expanded the scope of the office to include telecommunications. The office has helped the city save an estimated $150 million in construction costs since 2012.

CELINA, TX
Law: Subdivision Ordinance; Division 4. Design Standards; Section 10.03.126: Improvements; Subsection 10.03.126(i)
Date enacted: 2017
Description: The city of Celina has adopted a conduit ordinance that requires any city-led or developer-led construction project that includes underground excavation to install conduit and fiber-optic cable at the same time to accommodate future telecommunications uses. Private developers must pay for the conduit installation, which then becomes the property of the city. The city also requires that telecom companies looking to install fiber make use of the city's fiber assets when available first and pay fees to the city for access to the infrastructure.

MOUNT VERNON, WA
Law: Municipal code 12.20.015 Construction standards for the regulation of use of public rights-of-way and public property.
Date enacted: 1999
Description: Mount Vernon requires private developers to install conduit when engaging in construction projects that either disturb existing roads or create new roads. The city maintains maps of conduit installations so developers can strategically place the conduit.

EL DORADO COUNTY, CA
Law: Broadband Infrastructure Installation Policy
Date enacted: 2018
Description: El Dorado County adopted a conduit installation requirement for capital improvement projects. The policy requires construction projects from the county's Department of Transportation, the Facilities Division and the Parks, Trails and Rivers Division to include installing conduit when digging trenches or excavating underground as part of the construction.

HUMBOLDT COUNTY, CA
Law: General Plan
Date enacted: 2017
Description: Humboldt county's 2017 updated general plan includes provisions to expand broadband access that include implementing Dig Once policies. The plan recommends that new residential and commercial development projects include requiring developers to install conduit within joint utility trenches for future telecommunications use. It also recommends flexibility in conduit placement requirements in order to allow for retrofitting of communications systems.

POULSBO, WA
Law: 12.02.010 Construction and development standards
Date enacted: 2003
Description: Poulsbo requires any new public street construction, by either the city or a private developer, to include the installation of conduit that can accommodate two telecom companies' fiber infrastructures. The law requires that the conduit be dedicated to the city upon completion and any telecom company looking to deploy infrastructure must first lease conduit space from the city if available.

SECTION 5: CONDUIT NETWORK SYSTEMS

A well-engineered plan will ensure the application can achieve benefits well in excess of the costs of the plan and the conduit network system deployment. Generally, the actual cost of the conduit network systems is only approximately three percent of the overall project costs. Conduit is widely used in most industries, accommodating simpler initial installations and providing a Dig Once permanent pathway.

It is common for cables to be buried in ducts to provide further protection, allowing for simple repair, and potentially providing upgrade paths. In some circumstances, ducts are only used for sections of deployment (e.g. under roads or rivers) where excavation would pose a difficulty, but increasingly ducts are being used for the entire route. This is possible because conduits can provide several benefits without a significant project cost impact.

Brief History of Conduit Network Systems

In the early to mid-1980s, tremendous growth occurred in the deployment of fiber optic cables, linking major metropolitan areas. Fiber optic cables were quickly becoming the technology of choice for streaming huge amounts of voice, video, and data. These cables were installed in very long lengths, up to 30,000 feet, with the goal of using as few splice points as possible to minimize signal attenuation. Because of the more fragile qualities of these long, thin strings of glass, individually no thicker than a strand of human hair, they needed more protection and different handling procedures than traditional jacketed metallic cables. There was an immediate need for a conduit system that offers improved installation efficiencies and cable protection.

Existing conduit network systems typically were 3.5 inches to 6 inches in diameter to accommodate the very large diameter of copper cables that filled the duct banks. As copper cables were being replaced with fiber optic cables, which are much smaller in diameter, smaller high-density polyethylene (HDPE) conduits ranging from 1 inch to 1.25 inches were pulled into the vacated conduit creating multiple pathways to be used for initial and future fiber optic cable placement and for redundancies if a cable got damaged.

This new method of deployment using MicroDucts in existing pathways was called "innerducts" and is still used today. Additionally, now conduit suppliers offer bundled MicroDucts under one oversheath for ease of placement and to maximize fiber count in limited underground and aerial spaces. Multiple variations of standard HDPE conduit and bundled HDPE MicroDucts are available. The installation methods and tools are the same for both.

In addition to traditional trenching, over the years newer installation methods also evolved to minimize the above and below ground surface damage, restoration requirements, and disruption to traffic: plowing, horizontal directional drilling (HDD), and MicroTrenching.

In 1999, new technology was introduced to help solve the issue of overcrowded right-of-ways. Using the same installation methods and tools as traditional HDPE standard conduit, bundled MicroDucts under one oversheath maximized the fiber count in the same space. As technology advances, fiber optic cables are higher capacity in a smaller size, called MicroCables, and conduits are following in size, called MicroDucts. Multiple configurations allow for easy connection to existing networks and efficient transition to current technology.

All conduit is not created equal, and the type of conduit can determine which type of fiber cable you need. Conduit has an inner diameter (ID) and an outer diameter (OD); the standard is to refer to the outer diameter when describing the conduit. A common engineering practice is to not fill each conduit subduct more than about 65 percent full of fiber cables. This space is necessary to air-jet, or pull, the fiber through the conduit without damaging the fiber.

As fiber technology continues to evolve, the fiber cable diameter will continue to get smaller. Microfiber cables can fit many strands of fiber in small diameter conduit. MicroTechnology continues to improve. For decades, conduit has been the preferred manner of installing fiber cable underground and now even in aerial applications.

Installation Advantages
It is easier to install, as it can be put in section-by-section between access points, with the fiber cable later air-assisted and pushed or pulled in as a continuous run.

It is also easier to handle unexpected changes in the route, such as having to go around an obstacle, as compared to directly placing fiber cable.

The continuous run of fiber cable can help reduce the cost of splice points and improve the fiber loss budget and performance for the total system.

The conduit itself can be locatable, which allows the fiber cable to be constructed with only non-conductive dielectric materials which can allow easier access to the fibers.

Protection of the Fiber
The conduit provides mechanical protection of the fiber cable, both during installation of the fiber cable and over the entire life of the fiber cable.

Typically, direct buried fiber cables require additional design enhancements to withstand environmental conditions, whereas the conduit can provide that environmental, tensile and crush protection itself. This enables the fiber density to increase significantly for a given outer diameter cable.

Permanent Pathways

Conduit provides for an always-present pathway for upgrades and changes whenever needed. For example:

1. Remove and change out a fiber cable that is damaged
2. Swap out with improved technology
3. Use the additional empty conduits for increasing capacity
4. Re-route the conduit pathway if there is a change in route

The Dig Once legislation stresses the importance of burying conduit once, with the possibility to add new cables, upgrade existing ones, and increasing capacity. By planning for the future by installing extra permanent pathways, the networks are able to adapt to changes more quickly.

Communication Needs

Communication needs could be for telecommunications, cameras, data transfer, security and many others.

Revenue Opportunity

There is a financial opportunity that network and right-of-way owners are realizing and planning whereby empty pathways can be used, to grant access to difficult right-of-ways or be leased to carriers.

By installing multiple MicroDucts, take full advantage of the new high-density MicroCables that fiber cable providers are shrinking and improving year over year.

It is important to realize that there are different types of conduits suited for different purposes:

- In a more traditional system, 1, 2, or 3 standard conduits could be installed together. However, the outside diameter of these conventional ducts is often quite large compared to the smaller outer diameter of MicroDucts now available. While these large dimensions, perhaps 1.5 inches or 2 inches in diameter, are still used in the industry, they were developed at a time when fiber cables were of much larger diameter with lower fiber density. Since typically only one cable is placed per duct, they actually limit the number of fiber cables that can be placed in a right-of-way.

- Smaller diameter MicroDucts are designed to take advantage of the advances the higher fiber density MicroCables that have much smaller outer diameter. Amazingly, there are 288 and 432 fiber cable diameters on the market on the order of 8 to 10mm, so by sizing the MicroDucts for better space utilization, you can achieve much greater overall fiber density in any right-of-way space.

SECTION 6: ADDED VALUE OF FIBER OPTIC SENSING OPPORTUNITIES

Distributed Acoustic Sensing in Conduit

Optical fiber sensing (FOS) interrogator companies have been installing commercial sensing system in conduit of many years. Information from several market leading companies has indicated that as approximately 50 percent of sensing systems are comprised of fiber cables installed within conduit pathways. The reasons for doing this included conduit pathways provide tremendous added protection, easier installation, flexibility for changes, repairs, and technology upgrades, as well as added capacity for additional use and monetization. When it comes to distributed acoustic sensing, however, an additional reason is that commercially sensitive systems work extremely well in conduit. FOS use is increasing in many vertical markets, with new applications and use cases growing with experience. The following presents an overview of common applications and finding relative to sensing using the advantages of conduit.

Predominant Vertical Markets

- The Security and Asset Integrity Market
- The Pipeline Market
- Emerging Smart City applications

Monitor Assets

- Manual excavation (perimeter security)
- People walking
- Traffic flow
- Leak prevention (oil and gas line)

Research Shows

- Standard telecom-grade fiber is well suited for DAS installations
- Cable design specifically engineered for FOS purposes does impact DAS performance
- For current commercial quality Fiber Optic Sensing systems, there is a negligible difference between performance of a cable in a duct and a cable not in a duct. The protection and advantage the conduit offers far outweighs any difference in signal sensitivity in most all commercial cases.
- The cable to conduit fill-ratio should be considered when selecting a conduit and cable mix, in that an overly large conduit with too much air gap may impact performance. The conduit can be sized for both easily installation through jetting or pulling into the conduit, with sensing consideration also accommodated.
- Typical cable Installed in conduit: Gel-filled, loose tube, unarmored

About Dura-Line

At Dura-Line we aspire to a more connected world, because we believe every company, every community, every person deserves the chance to advance their lives through better access to high-speed broadband. Strengthening our fiber optic network and conduit system infrastructure is critical to supporting the next wave of digitization. And, Dura-Line is at the forefront of the industry creating strategic solutions that solve the issue of the unpredictable needs of tomorrow's fiber cable requirements.

As a TL 9000 and ISO 9001 rated manufacturer, Dura-Line takes pride in our state-of-the-art quality products and being recognized a key partner with all of the major telecommunications companies across the world. In one year, Dura-Line produced over 1.4 billion feet of digital network infrastructure. Through our innovative product solutions and unparalleled customer insight, we are the ones who enable the physical build-out of this new technology realm that impacts education, healthcare, agriculture, energy, transportation, industry, and more.

SILICORE™

Several advanced manufacturing techniques set Dura-line apart as an industry-leader, including low friction SILICORE™ permanently lubricated lining. SILICORE™ is proven to reduce installation time, thus reducing installation costs.

Advantages of Dura-Line's FuturePath (multi-bundled MicroDuct conduit)

Dura-Line manufactures FuturePath, which are smaller MicroDucts are packaged together under one sheath. There are combinations of FuturePath all the way from 2-MicroDucts, under a single sheath to 24-MicroDucts under a single sheath. Other configurations have mixed sizes of MicroDucts and standard conduit to accommodate both smaller and larger diameter cables.

Dura-Line's FuturePath HDPE Product Line is Sustainable

- Supports Dig Once initiatives
- Saves space in overcrowded right-of-ways
- Requires fewer and smaller handholes
- Reduces manpower and machine power for installation
- Reduces fuel consumption, gas emissions, and lower material handling requirements
- Lessens soil displacement Environmental Benefits of HDPE
- Non-leaching
- Flexible, non-rusting materials minimizes leaks common in corroded steel pathways
- Resin and pipe have a superior resistance to failure, corrosion, tuberculation, deposits, and rapid crack propagation (RCP)
- Modern manufacturing methods allow for hundreds, or even thousands, of feet of continuous extrusion, which results in fewer joints
- High performance in extreme temperatures, which greatly reduces compromised pathways Reduced transportation, handling, and installation due to quick installation with less heavy machinery which reduces fuel and labor usage as well as ground disturbance when compared with installation of steel counterparts

- Joints typically use a mechanical coupler, rather than a glue-based solvent which gives off noxious fumes
- Fewer and smaller handholes required
- Low lifecycle costs
- Useful life of HDPE is estimated at 50+ years
- Studies have shown that HDPE can withstand scratching and gouging up to 10-20 percent with no detrimental effects to the long-term performance of the pipe
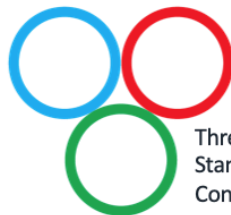- Versatility of design allows for multiple applications in several industries

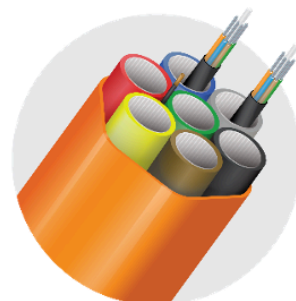**Standard Conduit with a single fiber cable**

Single Standard Conduit

Two Standard Conduit

Three Standard Conduit

MicroDucts or FuturePath with high-density fiber cables

2 Way

3 Way

4 Way

7 Way

8 Way