UTAH BROADBAND CENTER
CONNECTING UTAH

SAN JUAN COUNTY
LOCAL BROADBAND PLAN

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EXECUTIVE SUMMARY

VISION	San Juan County is committed to assisting in the efforts of broadband connectivity through the implementation of broadband infrastructure that will allow for the expansion of quality, affordable, and reliable high-speed internet to connect the diverse communities in southeastern Utah. High-speed internet is essential for community-building, economic development, health, and education.

KEY BARRIERS	**Geography**	**Cost**	**Land Use and Permitting**	**Limited Provider Options**
	San Juan County is the largest county by area in Utah and has dispersed populations in remote locations with majority of these populations being Native American.	A lack of middle mile infrastructure makes installing fiber-to-the-home cost-prohibitive. The current options for high-speed internet have been expensive for initial startup and monthly subscription costs.	Much of San Juan County is managed by the federal government, which adds complexity to the permitting process.	Households in San Juan County are limited in their options for high-speed internet.

COVERED POPULATIONS	Individuals who reside in a rural area amongst the Navajo and Ute Nations	Individuals who are members of a racial or ethnic minority group	Aging	Veterans	Individuals with disabilities and low technical aptitude

GOALS	Extend and improve broadband access and infrastructure.	Reach target populations through partnerships.	Increase high-speed internet adoption, affordability and internet aptitude.

KEY STRATEGIES	Collaborate in planning and coordination	Engage stakeholders	Utilize data	Maximize existing infrastructure to reduce overall implementation costs for last-mile connectivity
	Adapt to changes	Manage and utilize funding opportunities	Raise public awareness and community buy-in	Assist in developing digital education resources for the public such as digital literacy courses and cyber safety courses.

1 OVERVIEW OF THE LOCAL BROADBAND PLAN

1.1 VISION

San Juan County is committed to assisting in the efforts of broadband connectivity through the implementation of broadband infrastructure that will allow for the expansion of quality, affordable, and reliable high-speed internet to connect the diverse communities in southeastern Utah. High-speed internet is essential for community-building, economic development, health, and education.

This vision includes broadband infrastructure that is affordable, accessible, modern, and scalable throughout San Juan County, providing the communities with equitable opportunities to participate in the current digital world to promote social and economic growth. A collaborative effort among San Juan County, internet service providers (ISPs), and other private and public stakeholders, along with having clear goals and objectives, will be imperative to make this vision a reality.

1.2 GOALS AND OBJECTIVES

By pursuing the goals and objectives in this Local Broadband Plan, San Juan County aims to bridge the digital divide, empower individuals with internet access, and ensure that everyone can benefit from the opportunities and advantages offered by the digital world.

1.2.1 Goal 1: Extend and Improve Broadband Access and Infrastructure

San Juan County will ensure that all households and businesses have access to quality, affordable, and reliable high-speed internet that delivers minimum speeds of 100 Mbps download and 20 Mbps upload (100/20 Mbps) by 2029. These speeds represent the federal definition of “served.” All networks should be scalable to meet future demands. To accomplish this goal, San Juan County will:

- Expand high-speed internet access to all unserved and underserved areas of San Juan County.
- Explore alternative technologies as a solution to high-speed internet access in the remote and rural areas of San Juan County.
- Support and implement initiatives to launch a public Wi-Fi network at key community locations to enable easy and free access to the internet.

1.2.2 Goal 2: Reach Target Populations through Partnerships

San Juan County, in tandem with the Tribal Nations of San Juan County, will actively seek and engage with partners to expand broadband infrastructure by:

- Utilizing established partnerships with local chapters, Tribal officials, and Tribal entities to understand connectivity needs and raise awareness of the expansion of high-speed internet in San Juan County.
- Collaborating with agencies, Tribal Nations, community organizations, and ISPs to expand the reach of broadband infrastructure to unserved and underserved areas.
- Assisting and supporting broadband deployment initiatives in a way that honors and respects Tribal sovereignty by collaborating with Tribal officials and entities.

1.2.3 Goal 3: Increase High-Speed Internet Adoption and Affordability

Residents and businesses in San Juan County should have the opportunity to adopt affordable high-speed internet service at home and at work. To achieve this, San Juan County will:

- Collaborate with ISPs to expand the range of affordable plan options tailored to the needs of low-income individuals and families.
- Support Tribal Nations in developing affordability strategies for Tribal communities.
- Prioritize broadband expansion to areas of high poverty to reduce the broadband gap and provide equitable access to underserved populations.

2 BACKGROUND

On November 15, 2021, the Infrastructure Investment and Jobs Act (IIJA) was signed into law. This Act included a $65 billion investment in high-speed broadband internet infrastructure and efforts to close the digital divide to ensure that all Americans have access to reliable and affordable high-speed internet.

Included in the IIJA was the Broadband Equity, Access, and Deployment (BEAD) Program. The BEAD Program provides $42.45 billion to expand high-speed internet access by funding planning, infrastructure deployment, and adoption programs throughout the United States.

Through this funding, the Utah Broadband Center (UBC) launched a grant program that will consist of two phases, with funding in each phase. The first phase is planning and the second is implementation. The State of Utah was awarded $5 million to support both the creation of a statewide Digital Connectivity Plan and provide funding for local communities to create local broadband plans.

The UBC awarded San Juan County $50,000 to create a plan for broadband infrastructure deployment in the region. San Juan County's broadband plan will be used to create a baseline for San Juan County which will be integrated into the overall statewide Digital Connectivity Plan. The Digital Connectivity Plan will be used to establish Utah's broadband priorities over the coming years.

The local planning grant from the UBC was awarded on April 3, 2023, and the project kick-off meeting with the consultant team, Horrocks, began on April 17, 2023. The initial draft of this plan will be submitted on June 1, 2023, to the UBC, and the final plan to be incorporated in the statewide planning efforts will be submitted on August 1, 2023.

2.1 SCOPE OF BROADBAND PLAN

San Juan County lies in the Southeast corner of Utah, with Navajo and Ute Mountain Ute White Mesa Community Tribal Lands comprised in the southern portion of the State. Figure 1 shows the location boundaries of San Juan County and the boundaries of the tribal areas within the county.

A summary of the demographics of the area is outlined in Table 1 and in Table 2. Demographics for Tribal Chapters in San Juan County below. These statistics reflect the most updated data from the United States Census 2020 for the State of Utah[1]. Figure 1.Location Boundaries for San Juan County shows the location boundaries for San Juan County.

[1] United States Census Bureau. (2020). Decennial Census (P2 Hispanic or Latino, and not Hispanic or Latino by race).
https://data.census.gov/table?q=San+Juan+County+utah+race&tid=DECENNIALPL2020.P2

Table 1. Demographic Information for Municipalities in San Juan County

	MONUMENT VALLEY	MONTICELLO	BLUFF	BLANDING	MONTEZUMA CREEK
Total Population	731	2,237	124	3,343	303
Median Household Income	$14,624	$25,708	$26,916	$21,094	$18,081
Bachelor's Degree or Higher	9.2%	25.3%	71.3%	32.8%	13.8%
Poverty	46.9%	4.2%	N/A	19%	31%
Median Age	29.5	36.3	68.1	26.9	37.6
Land Area in Square Miles	29	3.4	36.5	13.2	12
White	**9.7%**	**83.1%**	**61.3%**	**57.7%**	**1.7%**
Hispanic/Latino	**0.8%**	**9.8%**	**0%**	**13.3%**	**2%**
American Indian and Alaska Native	**89.5%**	**5.3%**	**38.7%**	**20.9%**	**87.5%**
All Others	**0.0%**	**1.8%**	**0%**	**8.1%**	**91.2%**

Table 2. Demographics for Tribal Chapters in San Juan County

	ANETH	TEEC NOS POS	RED MESA	MEXICAN WATER	DENNEHOTSO	OLJATO	NAVAJO MOUNTAIN	UTE MOUNTAIN UTE WHITE MESA
Total Population	1,978	1,455	978	824	1,518	2,314	847	178
Median Household Income	$43,011	$39,500	$28,631	$41,000	$25,625	$19,336	$19,698	Unavailable
Bachelor's Degree or Higher	10.7%	4.3%	8%	3.6%	4.4%	4.5%	5.7%	0.0%
Poverty	25.9%	34.2%	34.2%	28.9%	35%	39.5%	64%	40.4%
Median Age	32.7	26	29.9	31	34.5	35.6	44.7	34.3
Land Area in Square Miles	273	295.8	331.6	321.5	590.1	875.4	544	15.5
RACE & ETHNICITY								

White	1.3%	0.0%	0.4%	0.1%	0.0%	3.3%	0.0%	1.4%
Hispanic/Latino	1.1%	0.8%	0.7%	3.6%	3.1%	0.3%	5.3%	0.6%
American Indian and Alaska Native	96.3%	98.7%	98.8%	92%	96.9%	96.4	69.5%	94.6%
All Others	1.3%	0.0%	0.1%	4.3%	0.0%	0.0%	25.2%	3.4%

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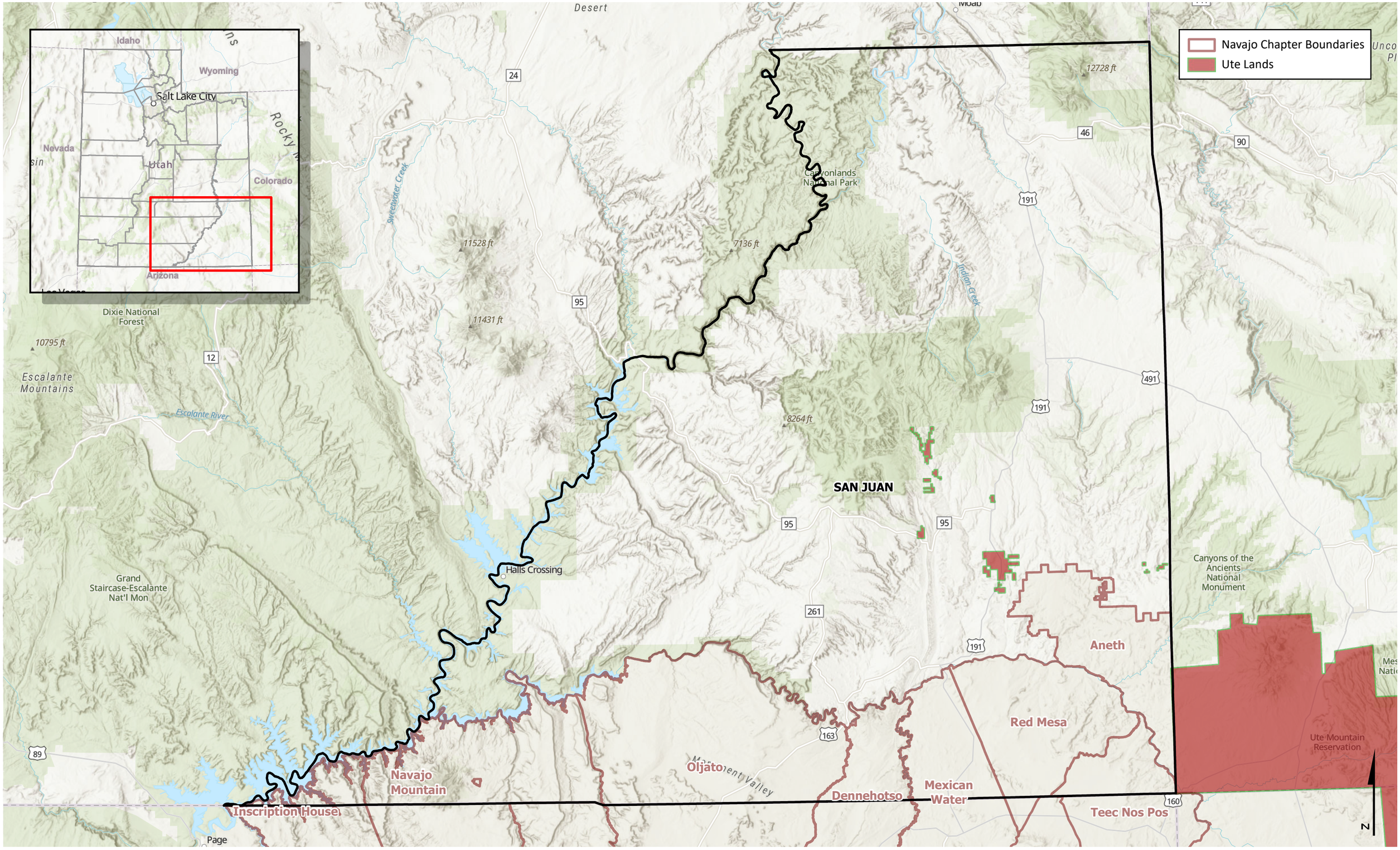

Figure 1: San Juan County Boundaries

2.2 WHAT IS BROADBAND?

Broadband is a dedicated reliable 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).[2]

The BEAD Program defines households with less than 25/3 Mbps as unserved locations and those with less than 100/20 Mbps as underserved locations.[3] Community anchor institutions with less than 1/1 gigabits per second (Gbps) speeds are also considered underserved, as defined by Section 60102 of the IIJA, which also sets forth the BEAD program[4].

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. In Figure 2, the blue lines connecting the city to the hubs represent middle mile infrastructure, and the orange lines connecting the hubs to the residential houses represent final mile (or last mile) infrastructure.

[2] FCC. (2015). Broadband Progress Report. https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2015-broadband-progress-report

[3] NTIA. Notice of Funding Opportunity - Broadband Equity, Access, and Deployment (BEAD) Program. Section I. Program Definitions, C. Definitions. Pages 16-17. https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf

[4] 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

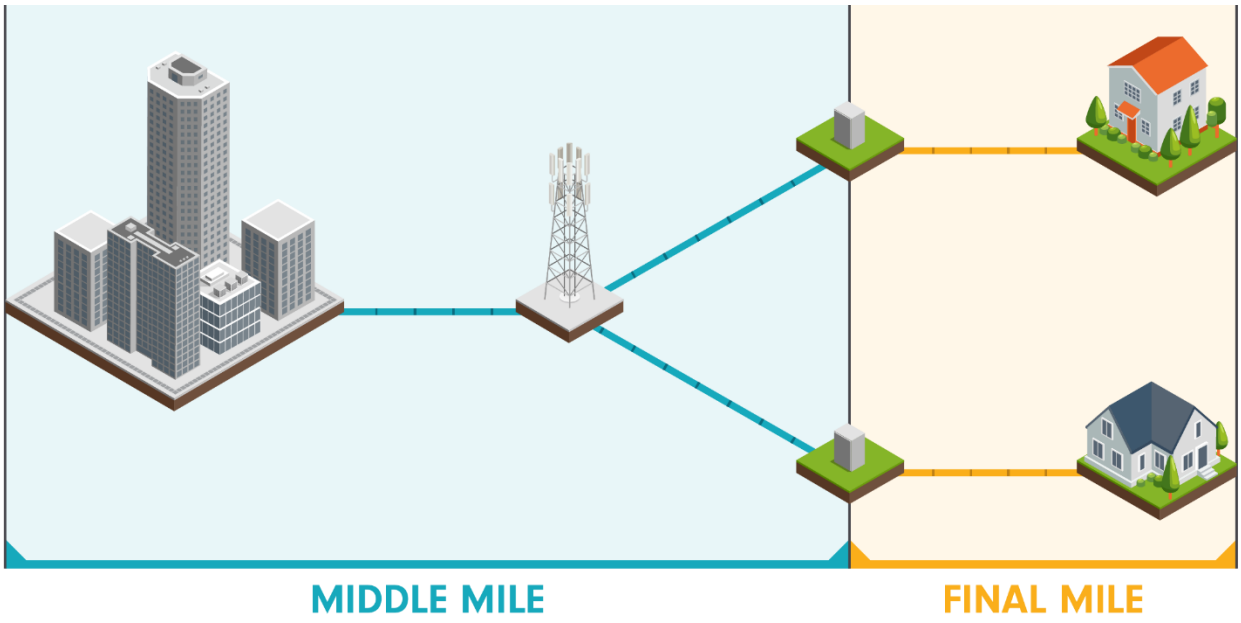

Figure 2. Middle Mile and Final Mile Infrastructure

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.

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. 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.[5] 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

[5] 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

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[6] conducted in April 2021 found that 90% of adults surveyed considered internet "essential or important for them personally during the [COVID-19] pandemic."[7] 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. San Juan County is home to Ute and Navajo Tribal Lands, and high-speed broadband internet helps connect the communities within those lands. In today's world, broadband can grow both San Juan County's and the Native Tribes' economic outlook.

While high-speed broadband internet is benefitting many regions across the globe, it is important to ensure that San Juan County does not get left behind and is inclusive of all communities within. There is a growing digital divide where those that do not have access to the internet do not learn the digital skills necessary for high-paying jobs, have less access to educational opportunities, and is pushing them further into poverty. Conversely, increasing high-speed broadband internet access increases education and 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. San Juan County School District is currently utilizing a hybrid online learning system that allows for students to continue engaging in their education when in-person opportunities are not available. San Juan County School District understands that broadband plays a pivotal role in ensuring children, especially Native American children have equitable access to diverse curriculum and many other valuable educational resources that are available online. Children without access to a broadband internet connection may be left out critical opportunities that allow them connect with educators and peers globally, as well as other higher education opportunities.

[6] https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/
[7] https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/

Broadband access can be a lifeline for Tribal populations within San Juan County seeking to access online health care services. Providing broadband access addresses the longstanding healthcare disparities they have faced historically. By providing reliable high-speed internet connections, broadband empowers these communities to overcome geographical barriers and access quality medical resources, consultations, and information from the comfort of their homes or local clinics. Online health care services can significantly improve healthcare outcomes by offering timely diagnosis, treatment, and preventive measures. For remote and underserved Tribal communities, broadband-enabled telemedicine opens doors to specialist consultations, second opinions, and chronic disease management, which would otherwise be challenging to obtain due to limited healthcare facilities. Telehealth provides healthcare options to those who may lack transportation or have mobility issues. Due to the remote locations of Tribal lands throughout San Juan County, many will forego medical care that is often located miles from their home. Some of the benefits of telehealth include decreased health care costs, access to specialists not available locally, travel time reductions, and reducing the risk of exposing others to viral infections. High-speed internet has proven to be a critical tool in ensuring Tribal populations receive equitable and comprehensive access to essential health care services, ultimately promoting better health and wellness within their communities.

During the COVID pandemic, the Navajo Nation and Ute Tribes people witnessed a loss of jobs and economic opportunities as potential clients no longer travelled to their area to purchase their artisan goods such as Navajo blankets, jewelry, baskets, paintings, pottery and clothing. High-speed broadband internet affords these artisans an opportunity to reach out to the world to sell their goods rather than wait for the world to come to them.

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 San Juan County. This planning team included the following individuals and/or organizations:

- San Juan County
  - Mack McDonald, Chief Administrative Officer
  - Elaine Gizler, Director of Economic Development and Visitor Services
- Horrocks
  - Eleise Lowe, Project Manager
  - Jill Hagen, Technical Analysis
  - Francine Pacheco, Public Engagement
  - Katie Williams, Public Engagement
  - Thaddeus Yazzie, Tribal Liaison

The activities performed included:

- **Public Outreach:** San Juan County conducted targeted public outreach to gather feedback from residents starting in April 2023 through May 2023.The purpose of this outreach was to learn and understand regional broadband needs and to identify gaps in broadband availability, accessibility, and affordability for residents. Public outreach was conducted for both the Utah Internet Speed Test and the San Juan Broadband Survey with the use of a shareable outreach package that included the following:
  - A location-specific landing page was created and linked on all collateral created to capture public feedback and encourage involvement in the development of the Local Broadband Plan. The landing page received 21 visits from April to May 2023.
  - Various forms of collateral were created and distributed to stakeholders and the public within San Juan County. The outreach team utilized collateral items to communicate with the public and spread awareness and involvement in the planning process. The following lists the outreach materials created:

- Written and visual content package for the San Juan Broadband Survey and Utah Internet Speed Test
- Tribal Affordable Connectivity Program (ACP) flyer

Collateral materials can be found in Appendix F.

- **Public Surveys:** The outreach team created the San Juan County Broadband Survey to gather more qualitative data from the public about their experience with internet connectivity. 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.

  The outreach team encountered significant challenges in obtaining survey results from Tribal populations due to lack of broadband/cell service and general remote location of Tribal areas. Lack of internet and cell service in these remote areas hindered survey efforts from Tribal leaders and community members. In total, three survey responses were collected. Even traditional methods like sending surveys by mail were burdensome, as the tribes' distant location meant a time-consuming and costly drive out of town to check and return the surveys. These combined challenges made it exceedingly difficult to gather the necessary data from the Tribal populations, highlighting the urgent need for improved broadband infrastructure and to ensure their inclusion and ability to participate in today's evolving society that is now dependent on technological advancements.

- **Stakeholder Meetings:** The UBC, as part of the statewide planning effort, conducted stakeholder workshops in each of the 29 counties in Utah. Participants of these workshops included community advocates, educators, public and elected officials, and industry leaders. During these meetings, participants engaged in in-depth discussion relating to broadband. Topics included education, economic impact, affordability, availability, barriers, and opportunities to expand access to high-speed internet.

  The workshop for San Juan County was held on December 6, 2022, at the Monticello Hideout Building. Ten individuals participated, representing groups including San Juan County administration, economic development and planning, San Juan School District, Blanding City, Monticello City, and Southeastern Utah Association of Local Governments (SEUALG).

  Workshop conversations were centered around the following topics:

  - Current broadband/connectivity status (providers, affordability, barriers/challenges, devices, permitting processes)
  - Education needs
  - Priority areas of needed coverage and key areas for development

- Future benefits
- Anchor institutions
- Enhancing digital literacy
- Accessing digital literacy resources
- Translation needs
- Media relations

- **Internet Speed Tests:** Stakeholder participation in the Utah Internet Speed Test, sponsored by the UBC, helped the team gather real-time internet upload and download speeds in the San Juan County area. The outreach team advertised the Utah Internet Speed Test through flyers, social media, website, and newsletter content to notify the public of San Juan's planning effort.

  As of July 5, 2023, there were 129 Speed Tests completed in San Juan County. See **Section 3.5.1** for more detailed Internet Speed Test results and information.

- **Tribal Consultation:** San Juan County is home to two Tribal Nations, the Navajo Nation that expand across the borders of Colorado, New Mexico and Arizona, and the Ute Mountain Ute Tribe.
  - Navajo Nation
    - Aneth Chapter
    - Mexican Water Chapter
    - Red Mesa Chapter
    - Dennehotso Chapter
    - Navajo Mountain Chapter
    - Oljato Chapter
    - Teec Nos Pos Chapter
  - San Juan Southern Paiute band residing within the Navajo Nation
  - Ute Mountain Ute Tribe
    - White Mesa Community

  Navajo Chapter Consultations
  On March 8, 2023, a meeting was held with 32 representatives from the Navajo Utah Commission to discuss current connectivity status and challenges, barriers, and benefits

to broadband expansion and best practices for communication within the Navajo Nation. Participants included representatives from education, health care and chapter leadership.

The group made recommendations for consideration during broadband planning, including but not limited to:

- Use clear, easy-to-understand language to describe the need for broadband connectivity, why it matters, and how to get involved
- Share maps and data between state entities and Tribal entities
- Increase education and outreach around the Affordable Connectivity Program (ACP)
- Invite policy makers, ISP's, government officials, and any other organization implementing broadband expansion on-site to experience connectivity challenges firsthand before providing solutions
- Collaborate with Arizona Broadband Center where there are overlapping Chapters
- Prioritize connectivity for first responders
- Work with Chapters to understand sacred areas that may be unmarked

In May 2023, site visits were conducted to Red Mesa, Mexican Water, Aneth, and Teec Nos Pos Chapters to assess broadband needs and to identify priorities for infrastructure expansion. Detailed feedback from each Chapter is included below.

Red Mesa Chapter

- Very limited access to high-speed internet for Chapter. The Chapter would like to see access for all residents within the Chapter.
- Right-of-way (ROW) has been established, but only for hospital and school connectivity.
- Satellite is inconsistent and there are no cell phone towers or landlines.
- Satellite is available; however, it is not an affordable option for community members. Pricing ranges from $120 - $200 a month. The internet most residents use is provided from Starlink (~$120/month with unlimited data usage) and HughesNet (~$200/month with limited data usage) via satellite. Both requiring an upfront hardware fee averaging $499.
- School has been prioritized for sufficient access.
- Currently, the Navajo Tribal Utility Authority (NTUA) has a project in progress that involves constructing a fiber optic line west from Shiprock, New Mexico, along US 160. It was questioned who is paying for the installation of this line and how it can be used to serve the Utah side of these Chapters in addition to the Arizona side that it is presumed the proposed fiber optic line is serving.
- Majority of the population residing in these Chapters have limited access to high-speed internet, and the Chapters feel that they are somewhat of an afterthought in regards to program funding from the Navajo Nation since they are in Utah.

- Currently, Red Mesa Chapter is in the process of developing a resolution to bring broadband internet service to the Utah side.
- With the funding the Chapters received through the American Rescue Plan Act (ARPA), broadband was not a priority as the Chapters had other priorities.
- Another concern is that NTUA is the only utility company serving the Navajo Nation.
- Permits to install utility lines is the biggest hurdle for Chapters and NTUA. NTUA relies on Chapters to conduct preliminary clearances, and Chapters rely on NTUA for design and construction. One of the many obstacles obtaining permits is conflicting grazing permits or ROW.

Mexican Water Chapter

- Applied for seed money for broadband; a portion has been built but lines were never activated by NTUA.
- Download speed is good, but upload speed is insufficient.
- Reached out to donors and received assistance from entities and individuals.
- Public health and telemedicine are high priorities.
- Permitting is the biggest hurdle here, not funding.
- Gates Foundation donated 12 computers to Mexican Water Chapter house; however, the cost of maintaining software exceeds chapter budget and renders computers unusable.
- Mexican Water has been working on getting broadband internet for the Chapter for the past 10 years and have been working with Rocky Mountain Power, Emery Telcom, and NTUA. They were able to get ~76 Starlink Kits, are currently looking for grants, and have GIS mapping for their Chapter.

Aneth Chapter

- Very limited internet service.
- No cell phone service.
- Members have expressed concern over limitations in providers and types of service available.
- Chapter was recently awarded funding to connect anchor institutions (including the Aneth Chapter House).
- Collaboration is best done in-person due to lack of connectivity or service and geographic isolation.
- Montezuma Creek may have fiber optic lines, and if so, Aneth is hoping to make a connection in Montezuma Creek for either middle or last mile.
- Chapter is serviced by NTUA wireless, but no reliable, consistent connection is made, if they can make a connection.

Teec Nos Pos Chapter

- Chapter House has DSL with limited service; recent speed test during meeting indicated speeds of 15.23/1.5.

- Schools have small towers, and others may use hot spots (unconfirmed).
- The largest hurdle is ROW acquisition from Navajo Nation (process can be political and hinder expediency of improvements necessary to improve digital access).
- Chapter President reiterated the Chapter needs faster internet as they currently experience frequent drops in connection and slow download speeds.
- The Utah Navajo Health System (UNHS) and Utah Education and Telehealth Network (UETN) provided internet services, but schools are the priority, leaving out the rest of the Tribal members and residents.
- Most residents use Frontier and HughesNet, but Frontier has since moved out of Teec Nos Pos.
- The Teec Nos Pos Community Land Use Plan designates the northwest quadrant of the US 64/US 160 intersection as an economic development zone with hopes of prioritizing broadband infrastructure development.
- The Chapter is currently in the process of getting a community library and a fiber optic line, but progress has been delayed due to ROW challenges.
- NTUA has plans for broadband in the Chapter, but Tribal leaders and members have not been granted access to the plans.

San Juan Southern Paiute Tribe Consultation

On January 31, 2023, a meeting was held with representatives from the San Juan Southern Paiute Tribe to discuss current connectivity status and challenges in the North and South areas, barriers, and benefits to broadband expansion and best practices for communication to members. Starlink is the current provider in the area, but service and speed are often unreliable. To date, fiber infrastructure has been installed in Monument Valley and into the area to service schools. However, Navajo Mountain High School remains unconnected and is a high priority for the Tribe. A recommendation was made for a satellite office with privacy and good connectivity for Tribe members. Information about the BEAD effort was also presented to the Tribal Council on February 3, 2023.

Ute Mountain Ute Tribe – White Mesa Community Consultation

On March 6, 2023, a meeting was held with representatives from the Ute Mountain Ute Tribe to discuss current connectivity status and challenges, barriers, and benefits to broadband expansion and best practices for communication to members. Currently, household connectivity is lacking, and community resource centers like the senior center, recreation center, admin center, and education center experience unreliable service. There are 274 people in the community, with many school age children. Online schooling was difficult during the pandemic, with long waiting lists to access mobile hotspots from the library in Blanding. Recommendations included:

- Explore digital access funding and partnerships with Utah State University.
- Work with Utah Navajo Health Systems (telehealth would be a benefit to Members who are currently traveling far distances for care).
- Utilize marquee and flyers to communicate with members.

- Provide dedicated community computers for member use.

- **Meeting With Internet Service Providers (ISPs):** Meetings were conducted with identified ISPs discuss ISP expansion plans throughout the county to assess their readiness to apply for federal BEAD deployment grant funding for various cities in need. Focus areas included service requirements and ISPs' capacity to deliver reliable broadband connectivity. The approach involved comprehensive measures such as analyzing data from the FCC and the Utah Broadband Maps published by the Utah Geospatial Resource Center (UGRC) as well as conducting surveys and meetings with local officials. ISPs' active involvement in the ACP was confirmed, verifying their commitment to expanding broadband access in unserved and underserved regions. The unique geography and characteristics of each major city were considered when evaluating infrastructure needs and associated costs to establish realistic project timelines and budgets. In addition to providing valuable insights into ISP capabilities and commitment to expanding broadband access, meeting with the respective ISPs provided crucial information for formulating effective plans to deliver internet connectivity to unserved and underserved communities. Notes from the meetings are in the appendix of this document.

- **Geographic Information System (GIS) Mapping:** To visualize and analyze broadband coverage, gaps, and infrastructure locations in San Juan County, GIS mapping technology was utilized. This mapping approach provided valuable insights into the current state of broadband connectivity, identifying areas of need, and assisting in the planning of future expansion.

3.2 EXISTING RESOURCES

Existing programs include all the programs and activities that San Juan County currently performs or has performed in the past. See Table 3. Current Broadband-Related Resources for current broadband-related resources. Figure 3 shows areas that have recently received funding for broadband-related grants.

Table 3. Current Broadband-Related Resources

ACTIVITY/PROGRAM NAME	DESCRIPTION	INTENDED OUTCOME(S)
Local Broadband Plan	This plan will be used to create a baseline for San Juan County which will be integrated into the overall statewide Digital Connectivity Plan which will be used to establish Utah's broadband infrastructure priorities over the coming years	Aid Cities and Counties to identify needs and gaps in local broadband infrastructure, then strategize and implement the plan funded.
Digital Equity Act	Three programs to bring affordable, high-speed internet to all communities: State Planning Program, State Capacity Program, and Competitive Program.	The State planning Program is a grant for the state to develop digital equity plans. The State Capacity Program is a grant for the state to support digital equity projects and the implementation of digital equity plans. The Competitive Program consists of 1.25 billion dispersed annually over five years through NTIA for digital equity projects open to several types of entities.
CDBG Annual Action Plan for Southeastern Utah (2023-2024).	The Southeastern Utah Association of Local Governments CDBG Program allocates HUD-sponsored federal funds to aid communities in Carbon, Emery, Grand, and San Juan counties with housing and community development projects.	Grants may be used to purchase, construct, or rehabilitate affordable housing; construct public infrastructure such as culinary water systems, roads, waterway systems; or purchase property or replacements for nonprofit service organizations. Projects must primarily benefit low- to moderate-income populations.
Utah Education Program	This is a state-funded program that provides high-speed broadband connectivity to schools and educational institutions across the state, including the San Juan County Region. Schools participating in the E-rate program are listed in section 3.4.3 of this plan.	Provide access to educational resources, online learning tools, and distance education programs.

ACTIVITY/PROGRAM NAME	DESCRIPTION	INTENDED OUTCOME(S)
Permanent Community Impact Fund Board (CIB) Regional Planning Program	The core mission of the Utah CIB is to mitigate socio-economic impacts resulting from natural resource development on federal lands.	Provide technical assistance to communities to meet their planning goals. Create capital improvements list for each county. Assist communities in preparing grant applications for planning and capital improvements needs to the CIB.
Utah Local Broadband Plan	This plan aims to assess the current broadband infrastructure needs for the San Juan County region and proposed an implementation plan for broadband infrastructure.	Develop broadband investment and deployment strategies for unserved and underserved areas. Leverage all federal/state funding to achieve the community's broadband needed infrastructure deployment. Promote economic growth due to a more reliable and affordable broadband access.
Navajo Tribal Utility Authority (NTUA) Broadband Initiatives	NTUA has grown into the largest multi-utility enterprise owned and operated by an American Indian tribe. As a not-for-profit enterprise of the Navajo Nation, NTUA provides electric, water, wastewater, natural gas, solar energy, and communications services.	NTUA Broadband initiatives from CARES act funds as well as the American Rescue Plan Act 2021 (ARPA) are being actively utilized and distributed in order to identify and construct utility projects to serve the Navajo people.
Navajo and Ute Tribal Nations	Both tribal nations have received federal broadband ARPA funding that is also available through the tribal system.	A strong effort from the United States to the American Indian Tribes to improve and increase connectivity in tribal territories creates additional opportunities for funding resources to aid in capacity efforts.

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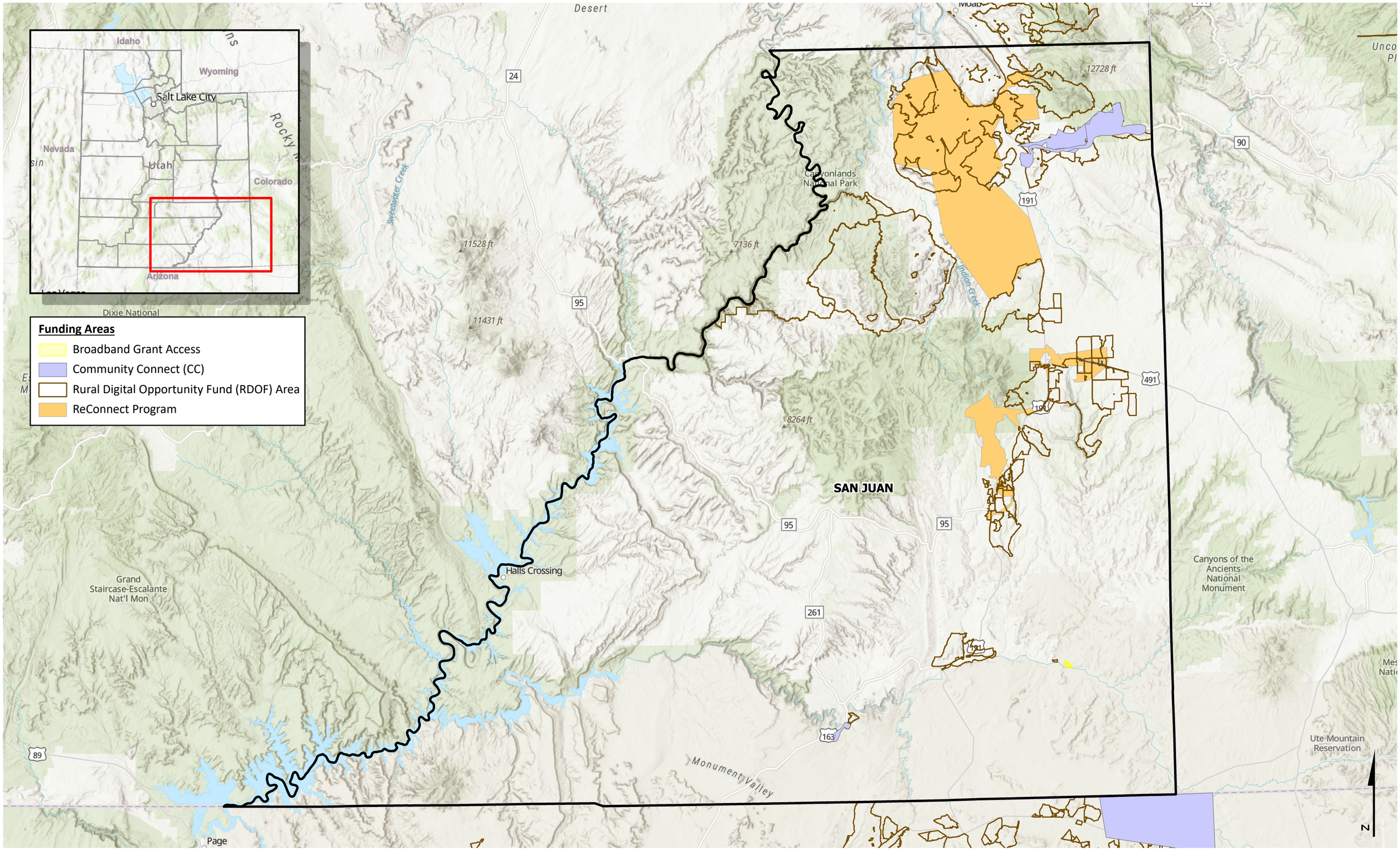

Horrocks.

Figure 3: Funding Areas and FCC Service Locations in the San Juan County

0 10 20 Miles

3.3 PARTNERSHIPS

This section identifies existing and potential partners and community anchor institutions that San Juan County 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 ISPs. Table 4 Local Community Partners and Community Anchor Institutions and Table 5 Statewide Partners includes information about local and statewide partners.

Table 4 Local Community Partners and Community Anchor Institutions

COMMUNITY PARTNER/ ANCHOR INSTITUTION	DESCRIPTION OF CURRENT OR PLANNED ROLE IN BROADBAND DEPLOYMENT AND ADOPTION
San Juan County Libraries	San Juan County has libraries in Blanding, Bluff, La Sal, Montezuma Creek, and Monticello. Each of these have public internet and computer accessibility for patron use. Included in the libraries are the offering of MiFi packs that connect to wireless 4G internet that patrons can check out and take home with them for a limited time.
Utah Council on Aging	The Utah Council on Aging sponsors and manages UtahAging.org as a virtual resource center that provides activities and resources for seniors.
San Juan County Senior Centers	Many seniors throughout the state perform genealogical research utilizing the internet and computers found in Senior Centers. Educational resources on how to access this resource will need to be deployed to assist in connectivity for elders. This partnership is crucial for community members to help seniors connect with telehealth services, family and friends, and other online services critical to their health they may not have access due to mobility issues. There are four senior centers in San Juan County located in Blanding, Bluff, La Sal, and Monticello.
Navajo Nation	Utah is home to the Dennehotso, Oljato, Aneth, Red Mesa, Mexican Water, Teec Nos Pos, and Navajo Mountain Chapters.
Navajo Northern Agency Council	The Navajo Northern Agency Council includes representation from the
Navajo Tribal Utility Authority (NTUA)	The NTUA is the utility agency of the Navajo Nation. NTUA provides electric, water, wastewater, natural gas, solar energy, and communications services to Tribal members.

COMMUNITY PARTNER/ ANCHOR INSTITUTION	DESCRIPTION OF CURRENT OR PLANNED ROLE IN BROADBAND DEPLOYMENT AND ADOPTION
Navajo Nation Telecommunication and Utilities (NNTU)	The NNTU telecommunication section is responsible for voice and data services for the Navajo Nation and Chapters. Data service providers include Frontier, CenturyLink, Sacred Wind Communications, Table Top Telephone Company, Hopi Telecommunications, and Western New Mexico Communications.
Ute Mountain Ute Tribe White Mesa Community	The White Mesa Community is part of the larger Ute Mountain Ute Tribe. The White Mesa Administration provides support to members in areas of employment, education, and basic social services. The White Mesa Community has a senior, recreation, and education center.
Utah State University – Blanding Campus	The Blanding Campus of Utah State University (USU) offers a number of degrees and technical certificates. Utah State University has made available to students a number of technological resources. Additionally, online courses are available to all USU students.
Utah State University - Rural Online Initiative	The Rural Online Initiative provides specialized remote work training and programming aimed at employees in rural communities.
Utah State University - San Juan County Extension	Utah State University (USU) Extension has an office in every county in Utah. USU Extension in San Juan County supports the Small Business Development Center.
Utah's Small Business Development Center (SBDC)	The SBDC provides business consultations and trainings to nurture and grow small businesses. There is a SBDC campus in Blanding, Utah, which offers a community incubator and coworking space.
San Juan County School District	The San Juan County School District covers 13, K-12 schools in San Juan County. The School District offers digital learning days on Fridays where students can opt to do schooling from home. School district provides students with devices and hotspots, if needed.
Southeastern Utah Association of Local Government (SEUALG)	The SEUALG assists and supports local officials in southeastern Utah to implement economic development programs, educate low-income individuals and seniors, and educate individuals for economic stability. SEUALG is completing a local broadband plan that will support and compliment the goals and objectives outlined in this plan.
Internet Service Providers (ISPs)	The following providers offer wired, fixed wireless, and/or mobile wireless service in San Juan County: AT&T, Verizon, T-Mobile, River Canyon Wireless, Frontier Communications, and Emery Telcom.

Table 5 Statewide 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 San Juan County are described in Section 3.4.1. San Juan County's soft assets are described in Sections 3.4.2 and 3.4.3, below.

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 broadband speeds to the end-user, a robust network must be in place.

General Service Areas

Figure 4 and Figure 5 below depict the wireline and fixed wireless broadband currently available in San Juan County, Utah. ISPs are required to submit their corresponding service areas twice a year through FCC the Broadband Data Collection (formerly submitted through Form 477)[8]. ISPs are now required to submit service areas through the FCC webpage[9]. 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,[10] provide specific upload and download speed

[8] www.fcc.gov/BroadbandData
[9] Federal Communications Commission. December 2022. Information for Filers. https://www.fcc.gov/BroadbandData/filers
[10] UGRC. Utah Residential Broadband Map. https://broadband.ugrc.utah.gov/

information as well as fixed and mobile wireless data. Figure 4 shows service areas considered "served" which have at least 100/20 Mbps speeds. Figure 5 shows service areas considered "underserved" which have at least 25/3 Mbps but less than 100/20 Mbps service. "Underserved" (areas with speeds below 100/20 Mbps) and "unserved" (areas with speeds below 25/3 Mbps) will be further discussed in the needs and gaps analysis in Section 3.5.

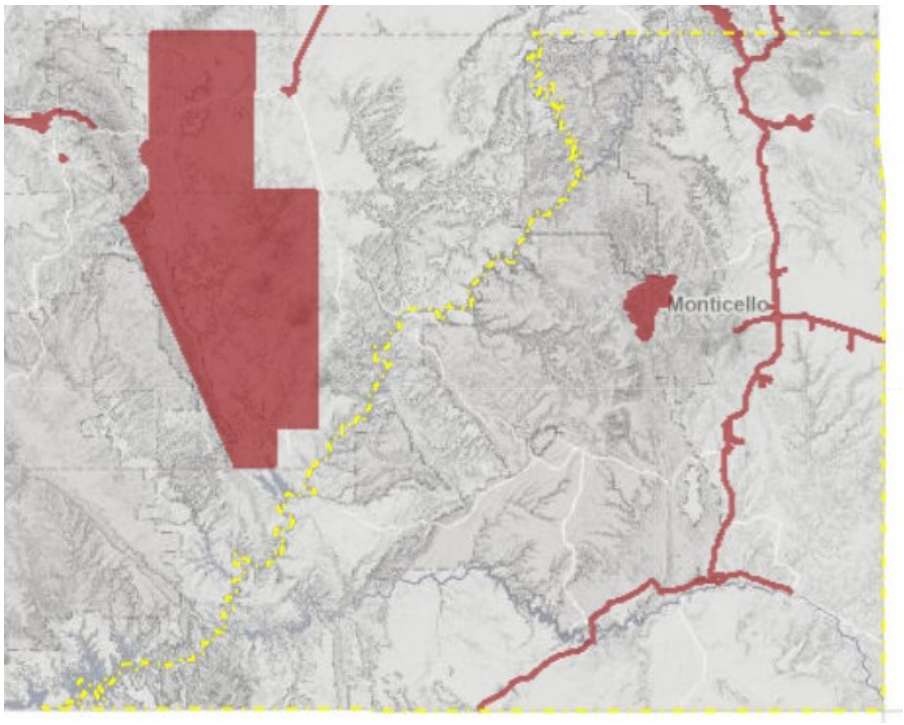

Figure 4. Broadband Coverage Area in San Juan County with 100/20 Mbps Minimum Speeds (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

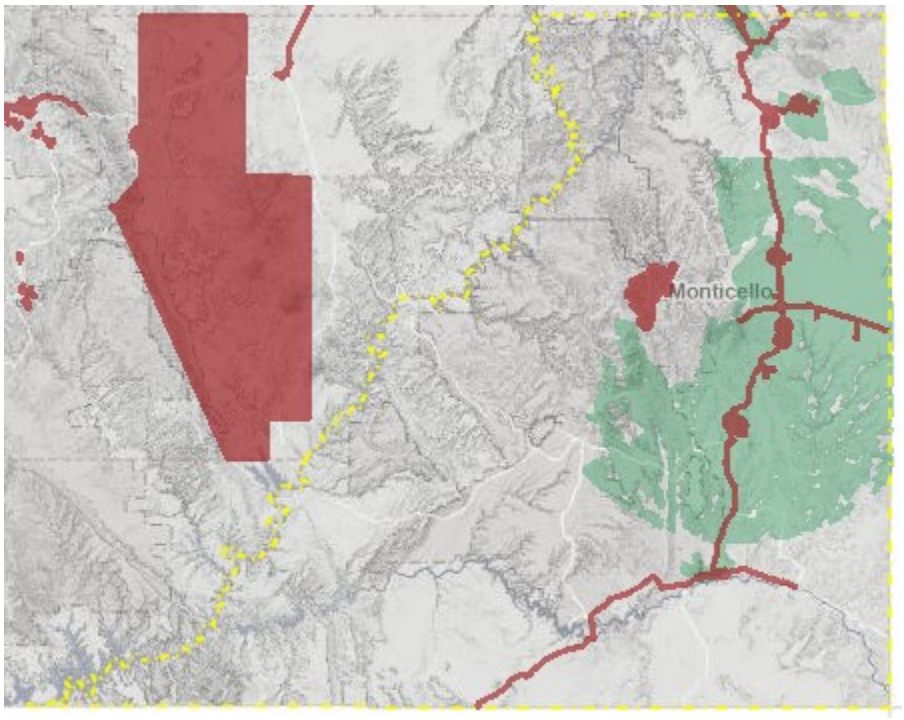

Figure 5. Broadband Coverage Area in San Juan County with 25/3 Mbps Minimum Speeds (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

Table 6. Technology Available to Region's Population summarizes the availability of different internet technologies for the population of San Juan County, 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.[11]

Table 6. Technology Available to Region's Population

CITY	FIBER	CABLE/DSL	LICENSED WIRELESS	UNLICENSED WIRELESS
Monticello	61.6%	100%	0.0%	100%
Bluff	98.4%	98.4%	0.0%	98.4%
Blanding	63.6%	100%	0.0%	100%
Aneth Chapter	2.9%	37.2%	0.0%	6.9%
Dennehotso Chapter	0.0%	0.0%	0.0%	0.0%

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

Inscription House Chapter	N/A	N/A	N/A	N/A
Mexican Water Chapter	0.0%	0.0%	0.0%	0.0%
Navajo Mountain Chapter	0.0%	0.0%	0.0%	0.0%
Oljato Chapter	1.3%	39.5%	0.0%	0.0%
Red Mesa Chapter	0.0%	26.8%	0.0%	0.0%
Teec Nos Pos Chapter	0.0%	0.0%	0.0%	0.0%
White Mesa Utes	2.0%	0.0%	0.0%	0.0%

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 Utah Residential Broadband Map[12], a state GIS map from the Governor's Office of Economic Opportunity.

Wired and fixed wireless ISPs currently serving San Juan County are:

- Emery Telcom
- Frontier Communications
- River Canyon Wireless
- Starlink
- Comcast

Figure 6, Figure 7, and Figure 8 show the current coverage areas of each of the available ISPs in San Juan County. 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.

Figure 9, Figure 10, Figure 11, and Figure 12 show detailed mapping sent from Emery Telcom. These maps show both their existing infrastructure and their planned fiber deployment projects through 2027. Figure 10 is an overview of the entire county, while Figures 11-13 are zoomed in maps.

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

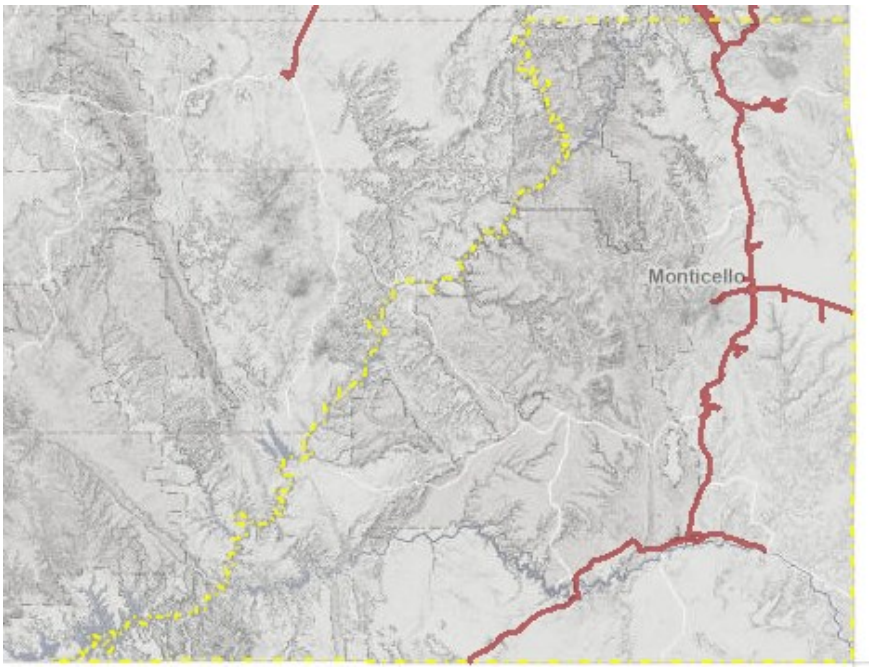

Figure 6. Emery Telcom Coverage Area in San Juan County with Any Speed (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

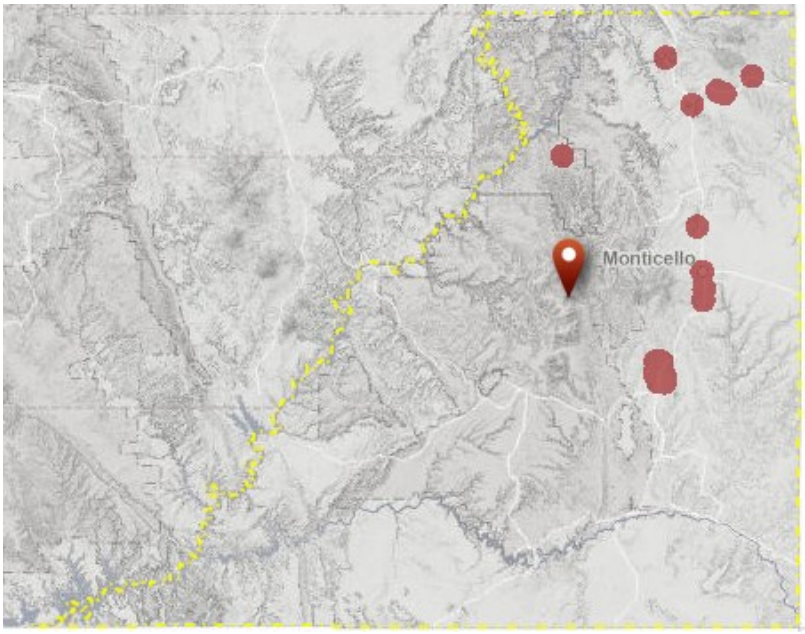

Figure 7. Frontier Communications Coverage Area in San Juan County with Any Speed (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

Figure 8. River Canyon Wireless Coverage Area in San Juan County with Any Speed (Red Areas are Wired Service, Green Areas are Fixed Wireless Service)

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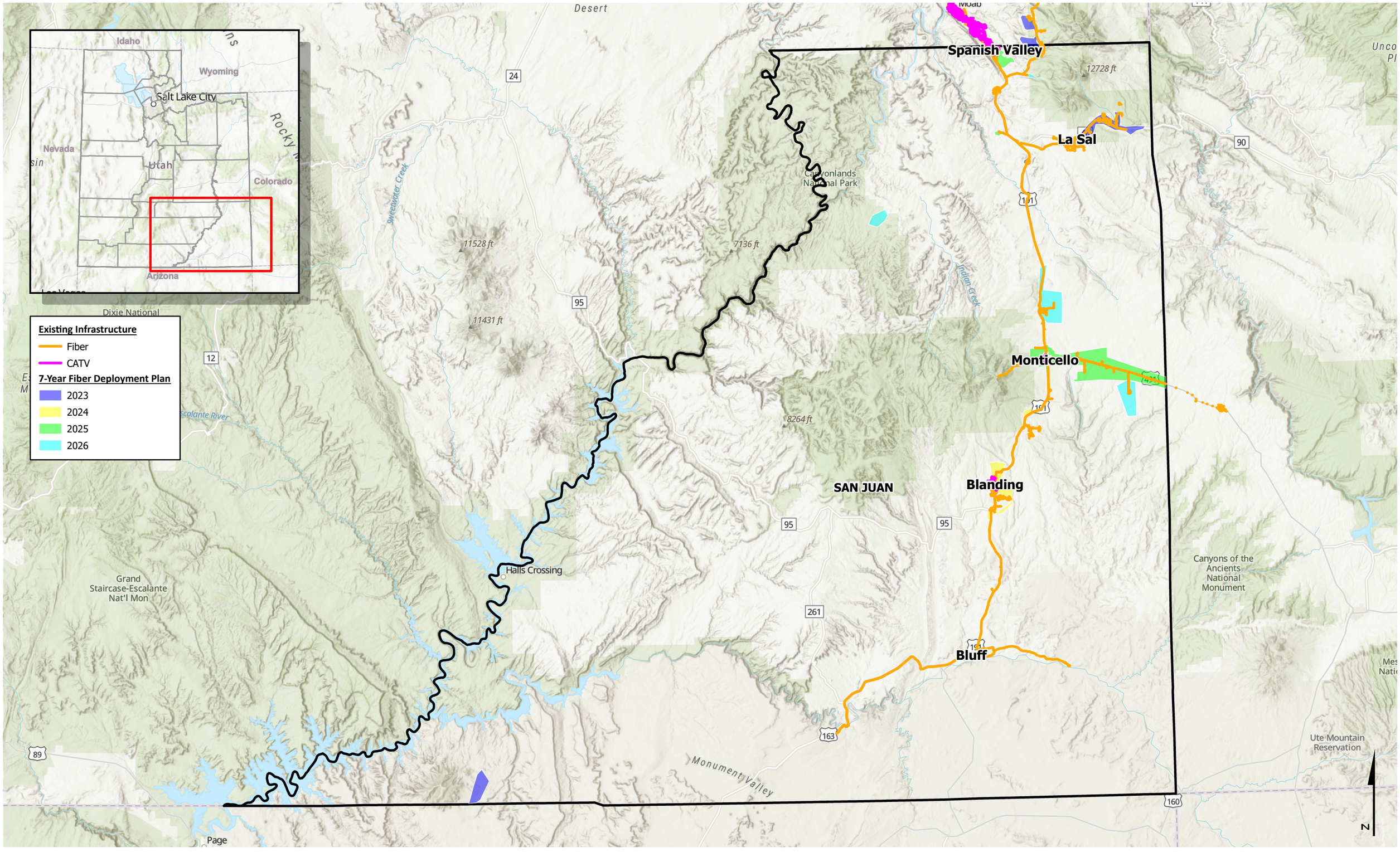

Figure 9. Emery Telcom 7-Year Fiber Deployment in San Juan County

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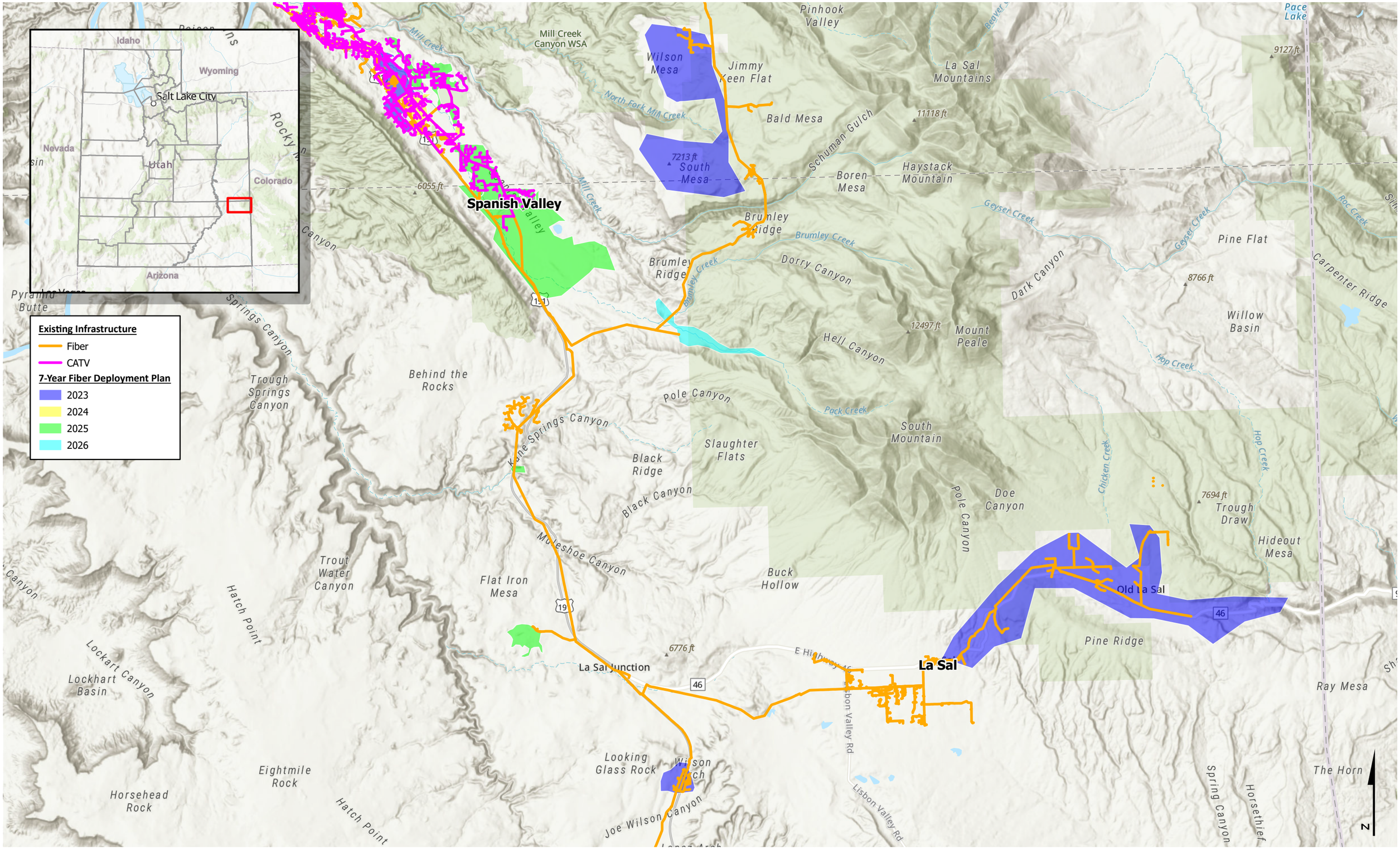

Figure 10. Emery Telcom 7-Year Fiber Deployment in the La Sal/Spanish Valley Region of San Juan County

0 1.5 3 Miles

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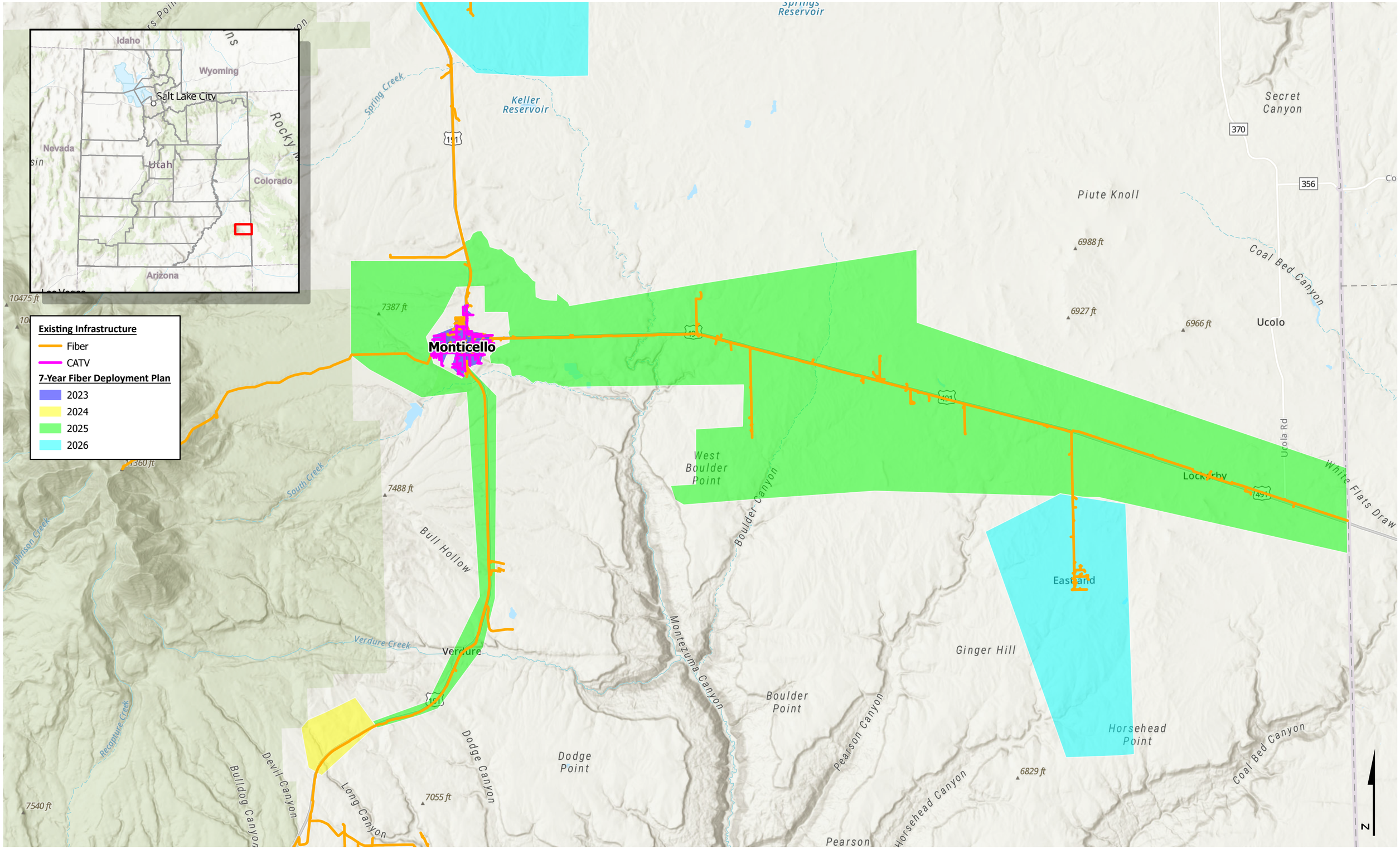

Figure 11. Emery Telcom 7-Year Fiber Deployment in the Monticello Region of San Juan County

0 1 2 Miles

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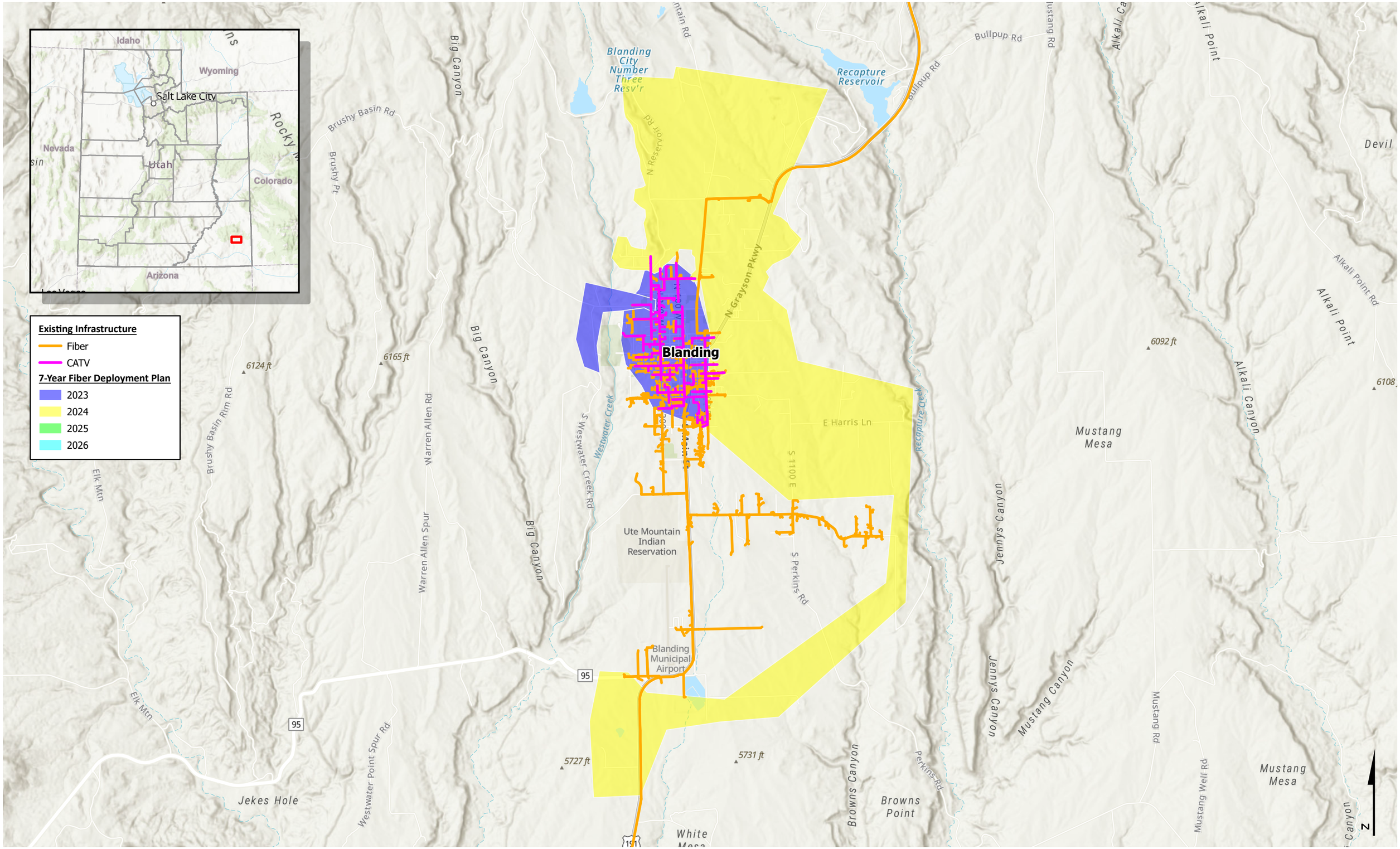

Horrocks.

Figure 12. Emery Telcom 7-Year Fiber Deployment in the Blanding Region of San Juan County

0 0.8 1.6 Miles

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 13 shows the location of wireless cell towers within San Juan County.

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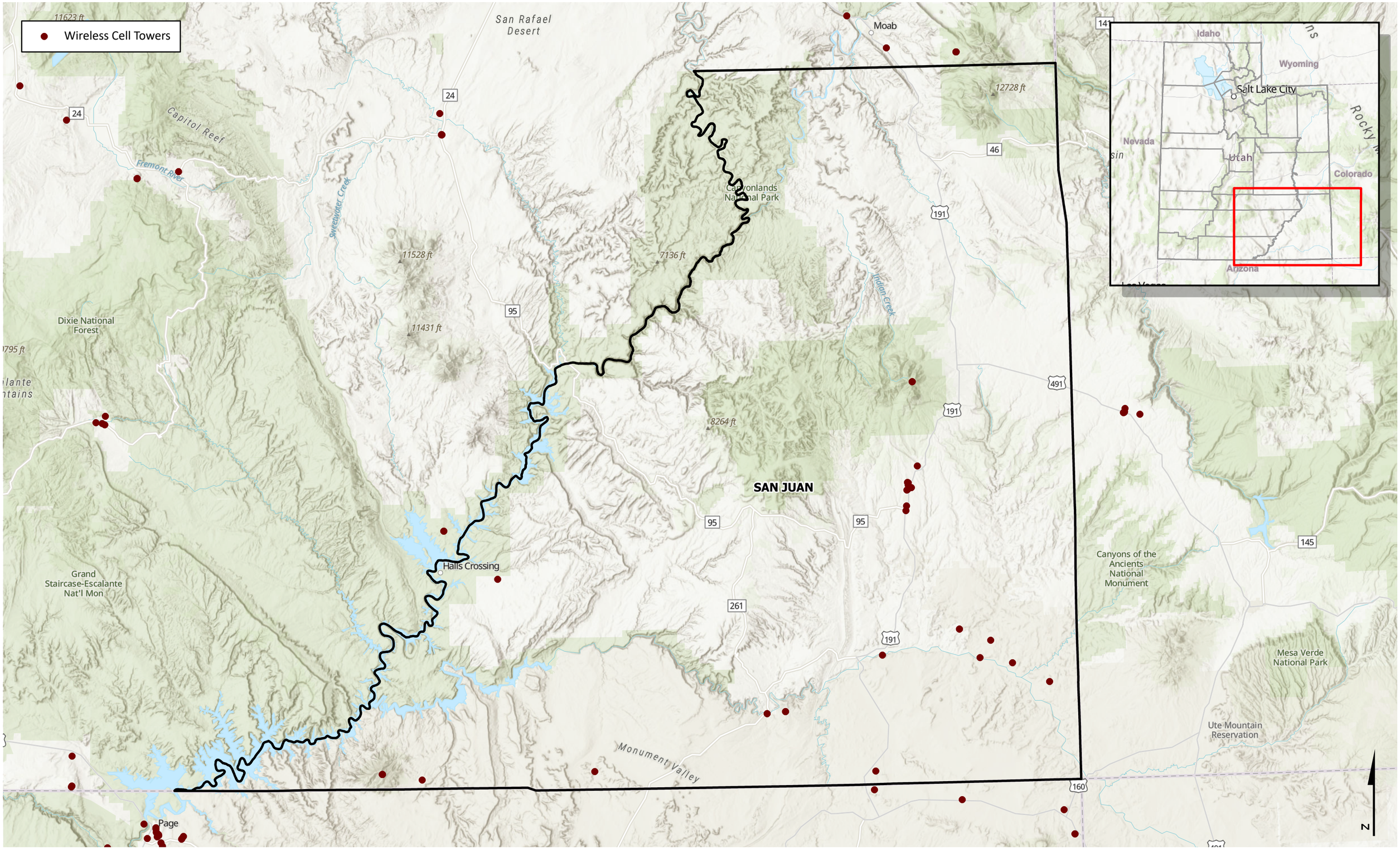

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Figure 13: Wireless Cell Towers in San Juan County

0 10 20 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 14 shows UDOT fiber network infrastructure in the region of San Juan County, along with FCC unserved and underserved locations. The significance of these unserved locations will be discussed in Section 3.4.1.

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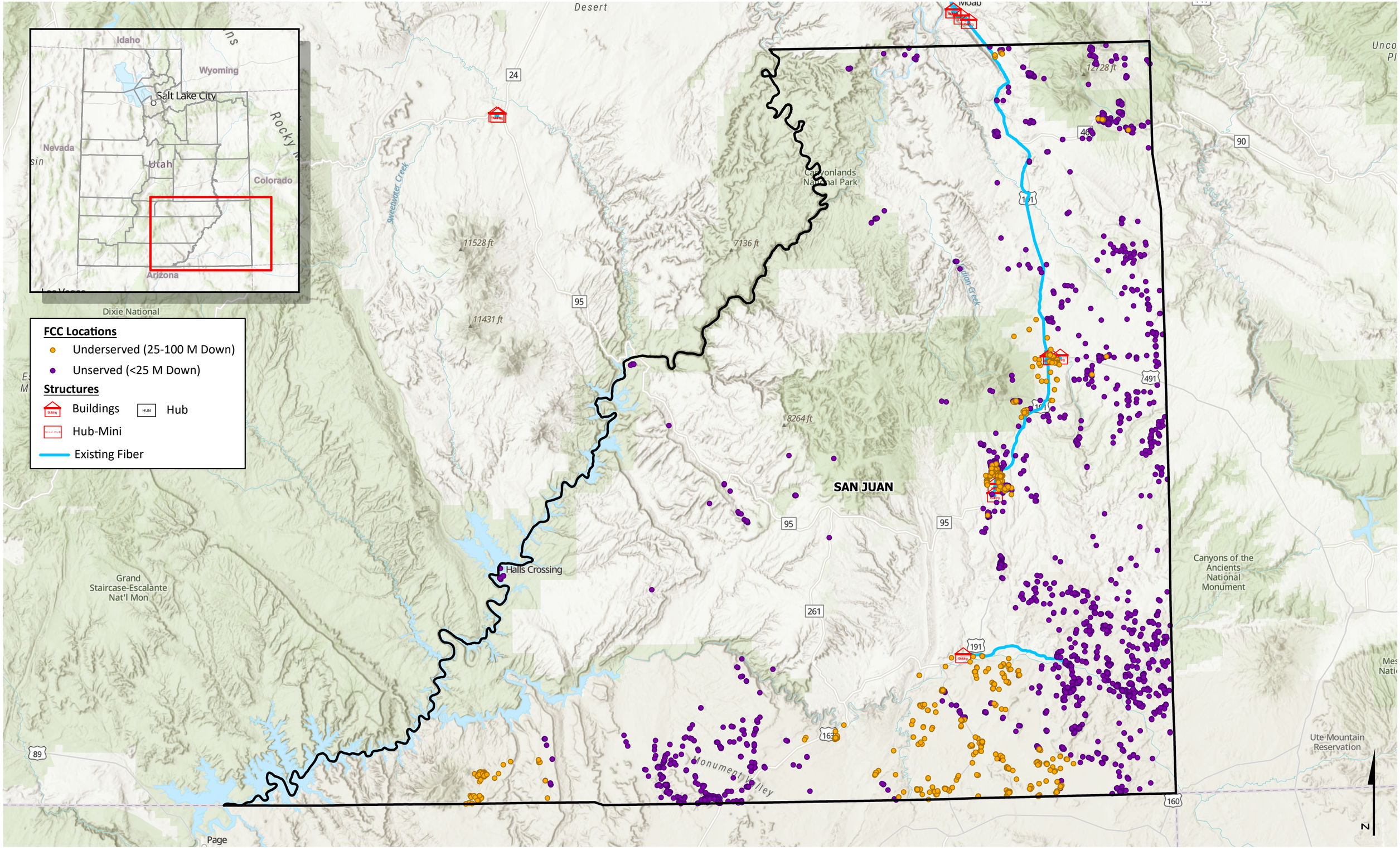

Figure 14: UDOT Fiber Network in San Juan County

0 10 20 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 (unserved, underserved, and underrepresented communities). In San Juan County, ensuring digital access and digital equity for all residents is a critical part of building a thriving and inclusive community.

Public Wi-Fi Networks

Utah Communities Connect (UCC) developed an interactive map detailing public Wi-Fi locations in Utah as a response to the access needs brought on by the COVID-19 pandemic. This map documents Wi-Fi access points throughout Utah. In San Juan County, there are 7 Wi-Fi access points documented including 4 libraries and 3 schools.

Figure 15 details public Wi-Fi access points in San Juan County. These access points are throughout the county at locations such as rest areas, visitor centers, ports of entry, UDOT maintenance stations, national parks, recreation facilities, and other state and municipal buildings in the area. As these Wi-Fi networks are typically fed through fiber optics, the speeds are very high (at least 100/20 Mbps) and the networks provide significant bandwidth and can serve multiple users.

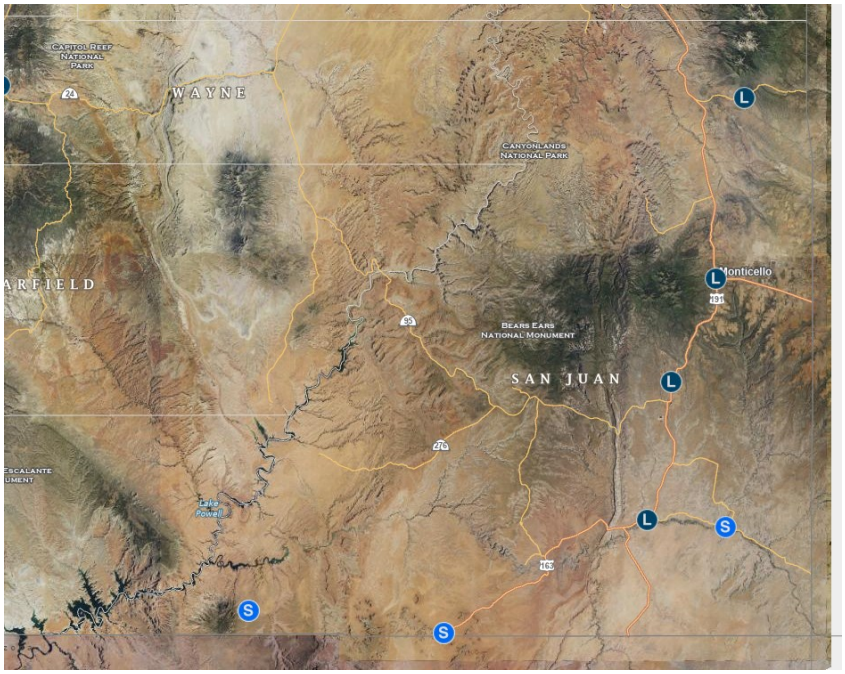

Figure 15. Utah Communities Connect (UCC) Wi-Fi Locations in San Juan County

Additionally, most state-owned buildings have a free, open public Wi-Fi network. This network is provided by Utah Department of Technology Services (DTS) and is an encrypted network that can be accessed by the general public. These buildings include any state administrative or department offices where State of Utah employees are working.

Wi-Fi Hotspot Loan Programs

The State Library Division has a program that provides free wireless hotspot devices to the public. Residents can check out a hotspot device to be able to connect online remotely at zero cost. These devices are available at most state- or municipality-owned libraries across the state including County libraries in San Juan County. San Juan County has libraries in Blanding, Bluff, La Sal, Montezuma Creek and Monticello.

Library Wi-Fi

The Utah State Library Division oversees and works with all public libraries within the state to ensure Wi-Fi is available to the public. All State, County, and City libraries offer public Wi-Fi connectivity. The speed of each Wi-Fi network depends on the location, but most libraries are connected with fiber optics, meaning the Wi-Fi supports robust connection speeds. San Juan County has libraries in Blanding, Bluff, La Sal, Montezuma Creek and Monticello. Utah Education Network (UEN) has been a great resource of providing grant funding for fiber connectivity to Libraries throughout San Juan County in assisting with public access to the internet.

Mobile Wireless Access

Mobile wireless carriers provide strong coverage areas across San Juan County. According to the data provided by the major mobile wireless carriers, there are only a few pockets where mobile wireless service is not available.[13] The areas that are not covered include locations that are extremely remote, or where the terrain is such that the wireless signal is impeded. Mobile wireless providers currently serving San Juan County include Verizon, AT&T, and T-Mobile. For those locations that are covered by mobile wireless, the majority of the service that is offered supports the “served” threshold of 100/20 Mbps broadband speeds. See Figure 16 for a mobile wireless coverage map of at least 100/20 Mbps speeds (data provided to the Utah Geospatial Resource Center).

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

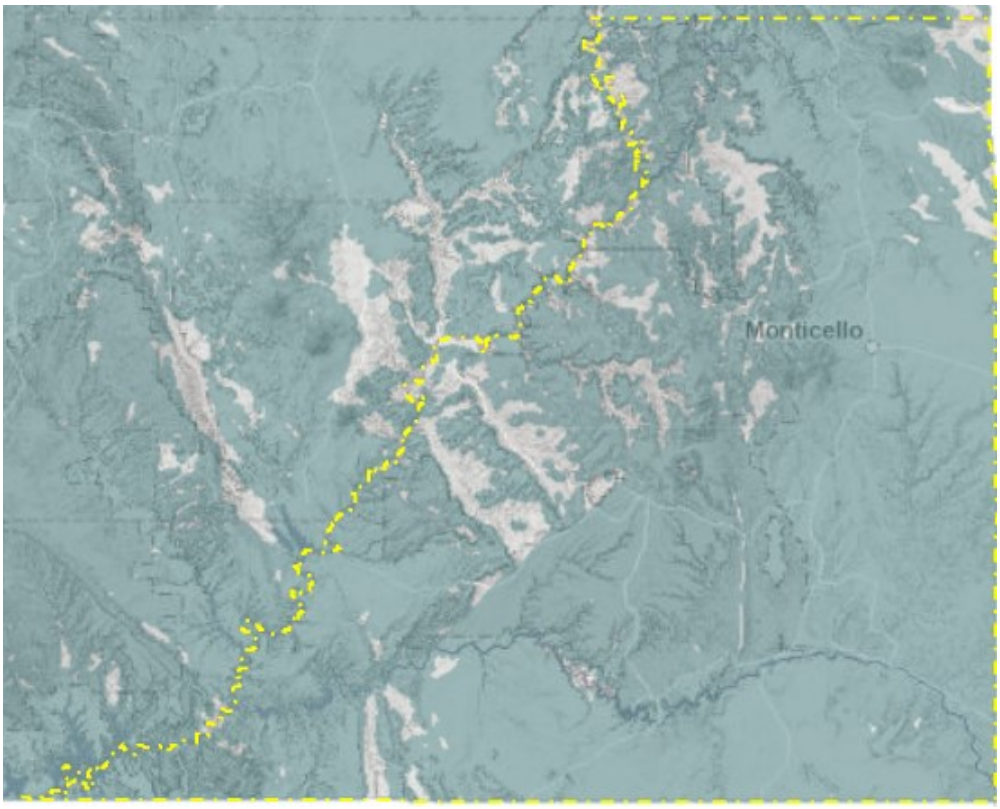

Figure 16. Mobile Wireless Coverage Area in San Juan County (100/20 Mbps Minimum Speeds)

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 San Juan County, the economic affordability of broadband varies depending on a variety of factors, including the availability of affordable broadband service plans 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 affordability of broadband in San Juan County is essential for ensuring that all residents have access to the digital resources and opportunities they need to thrive.

Table 7 Providers and Prices in San Juan County outlines the providers available in the area, as well as their respective costs, available speeds, and participation in the Affordable Connectivity Program. Participation in the ACP program is a requirement for ISPs to be awarded federal BEAD implementation funding.

Table 7 Providers and Prices in San Juan County

PROVIDER	PRICE	DESCRIPTION OF SERVICE TIER, ADVERTISED SPEEDS, AND AFFORDABILITY	PARTICIPATES IN THE AFFORDABLE CONNECTIVITY PROGRAM?
River Canyon Wireless	$99.99	25Mbps/10Mbps	Yes
Frontier	$62.00	25Mbps	Yes
Emery	$49.95/mo $59.95/mo $59.95/mo $69.95/mo $79.95/mo	25Mbps/5Mbps - 1TB Usage 100Mbps/20Mbps - Unlimited Usage 100Mbps/100Mbps - 250 GB Usage 1 Gbps/1Gbps - 1TB Usage 1Gbps/1Gbps - Unlimited Usage	Yes
Comcast	$34/mo - $289/mo	10Mbps-1Gbps	Yes
Starlink (Satellite)	$120	Unlimited Data	No
HughesNet (Satellite)	$200	Unlimited Data	No

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, and the Utah Universal Service Fund.

Affordable Connectivity Program (ACP)
The most impactful affordability asset currently available to residents of San Juan County 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.

Lifeline
Lifeline 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. As of January 2023, The Universal Service Administrative Company provides the following participation metrics for San Juan County and the state of Utah (see Table 8 Lifeline Subscriber Data for San Juan County and the State of Utah)[14].

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

Table 8 Lifeline Subscriber Data for San Juan County and the State of Utah

LIFELINE SUBSCRIBERS	NUMBER
Subscriber Count in San Juan County (January 2023)	1,291
Eligible Households for the State of Utah	219,359
Estimated 2023 Lifeline Participation Rate for the State of Utah	11%

E-Rate

The Schools and Libraries Universal Service Support Program, commonly known as the E-rate program, helps schools and libraries to 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.[15]

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.

The schools utilizing E-rate in San Juan County are San Juan County Head Start Center, Albert R Lyman Middle School, Blanding Elementary School, Canyonlands Youth, San Juan High School, Bluff Elementary School, Montezuma Creek Elementary, Whitehorse High School, Monticello Elementary School, Monticello High School, La Sal Elementary, Tse'Bii'Nidzisgai Elementary School, Monument Valley High School, and Navajo Mountain High School.

Utah Universal Service Fund

The Utah Universal Service Fund (UUSF) 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, funding from UUSF is used to support programs that advance and maintain telecommunication networks and services in rural areas.[16] This program provides rural telecommunication providers a rate-of-return to advance the operation and maintenance of rural networks.

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

[16] 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?

3.5 NEEDS AND GAPS ASSESSMENT

To ensure that all residents of San Juan County 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.

A survey completed for the 2018 San Juan County General Plan asked residents which utility structures and services were in most need of improvement.[17] Residents ranked culinary water highest with 35.4% of responses, followed by high-speed internet at 24.8%.

A recent internet survey was created and made available to collect additional data from community and Tribal members to fully understand their digital needs. Due to the lack of internet and cell service in the area, a limited number of surveys were collected, underscoring the critical need to close the digital gap. The absence of connectivity prevents community members, Tribal members, Tribal officials, and residents of San Juan County from accessing online resources, and in this instance prevents them from providing feedback or engaging with the planning process.

The lack of connectivity highlights the urgency of addressing infrastructure needs and closing the digital divide to ensure all individuals have equal opportunities to contribute their perspectives, lived experiences, and engage in critical improvements to community infrastructure.

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 San Juan County has access to dependable and reasonably priced broadband connectivity.

During site visits conducted as part of the planning process, it was found that the majority of members of the Navajo Nation Chapters within Utah have limited access to no access to high-speed internet. The Red Mesa Chapter is in the process of passing a resolution to bring high-speed internet service to the Chapter communities located in San Juan County.

Most anchor institutions in the tribal lands of San Juan County lack connection, and if internet is available, it is spotty, unreliable, too expensive to connect to, or they have yet to receive Tribal permission to connect to the fiber infrastructure. The Ute Mountain Ute Tribe in White Mesa stated that even though fiber is available at the Chapter house, it frequently crashes and then

[17] San Juan County. (2018). General Plan Update. https://sanjuancounty.org/sites/default/files/fileattachments/planning/page/3441/sj_general_plan_2018_final.pdf

members must rely on mobile service for connectivity. This is not ideal as mobile service is also highly unreliable. Chapter members said that if one cable line goes down in their area, every cell provider loses service, and all communication is unavailable. This has happened twice with outages lasting up to 24 hours each time.

The primary metric by which broadband availability is evaluated is what speeds are available to residents and businesses throughout San Juan County. 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 17 below shows the unserved areas where there is no wired or fixed wireless service above 25/3 Mbps.

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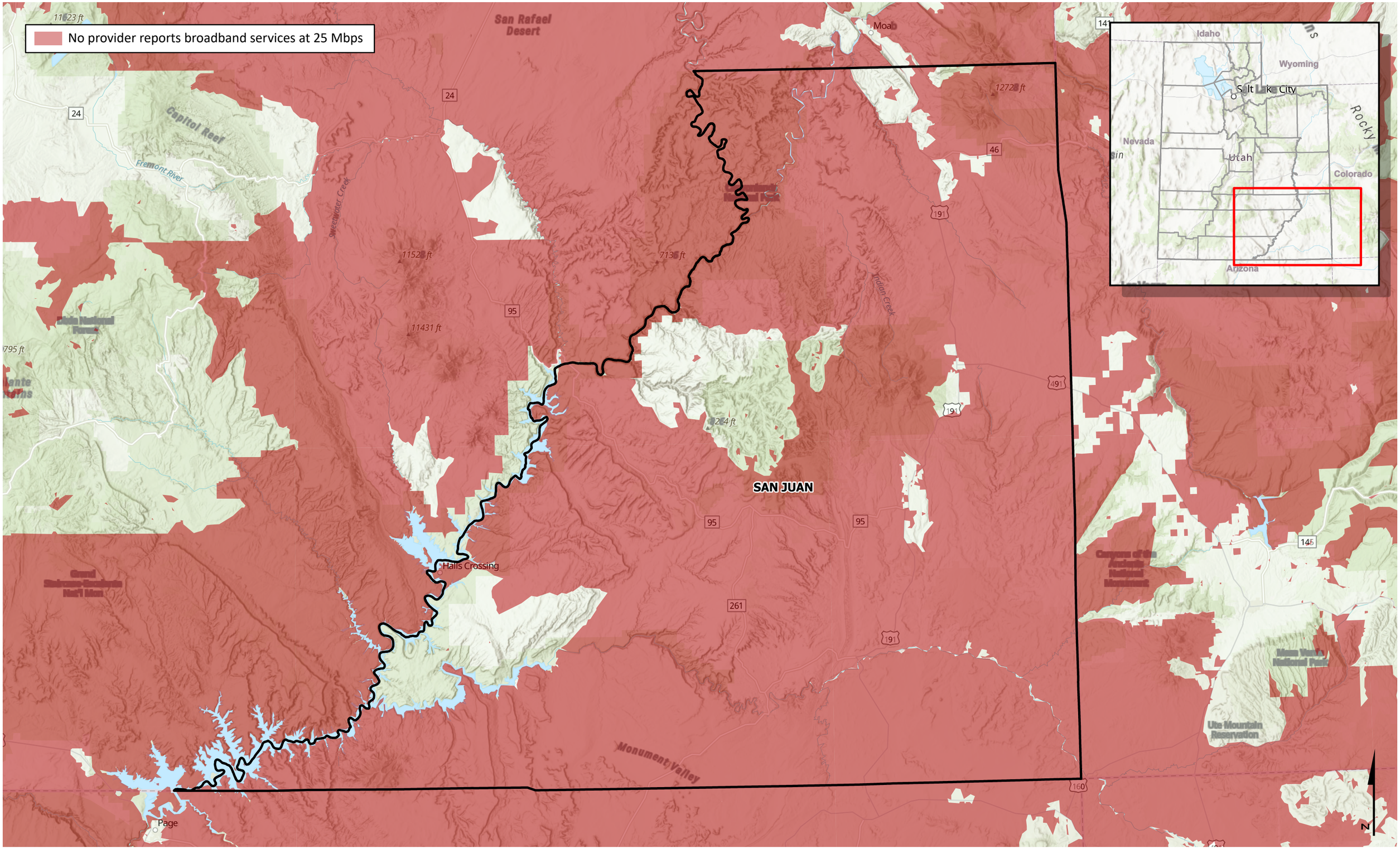

Figure 17: Areas with No Services at 25 Mbps San Juan County

0 10 20 Miles

FCC Service Locations

The FCC has created a map that shows the service availability at each broadband serviceable location.[18] Residences and businesses that are classified as unserved or underserved will qualify for BEAD funding. By analyzing the FCC service locations data, gaps in broadband coverage are identified, allowing for prioritization of efforts to provide high-speed internet to unserved and underserved communities in San Juan County. Figure 18 shows all FCC service locations and their designations. Figure 19 shows only the unserved and underserved FCC. Areas that have already won funding are also located on the map in Figure 19 to show which locations have plans to be serviced.

[18] FCC. National Broadband Map. https://broadbandmap.fcc.gov/home

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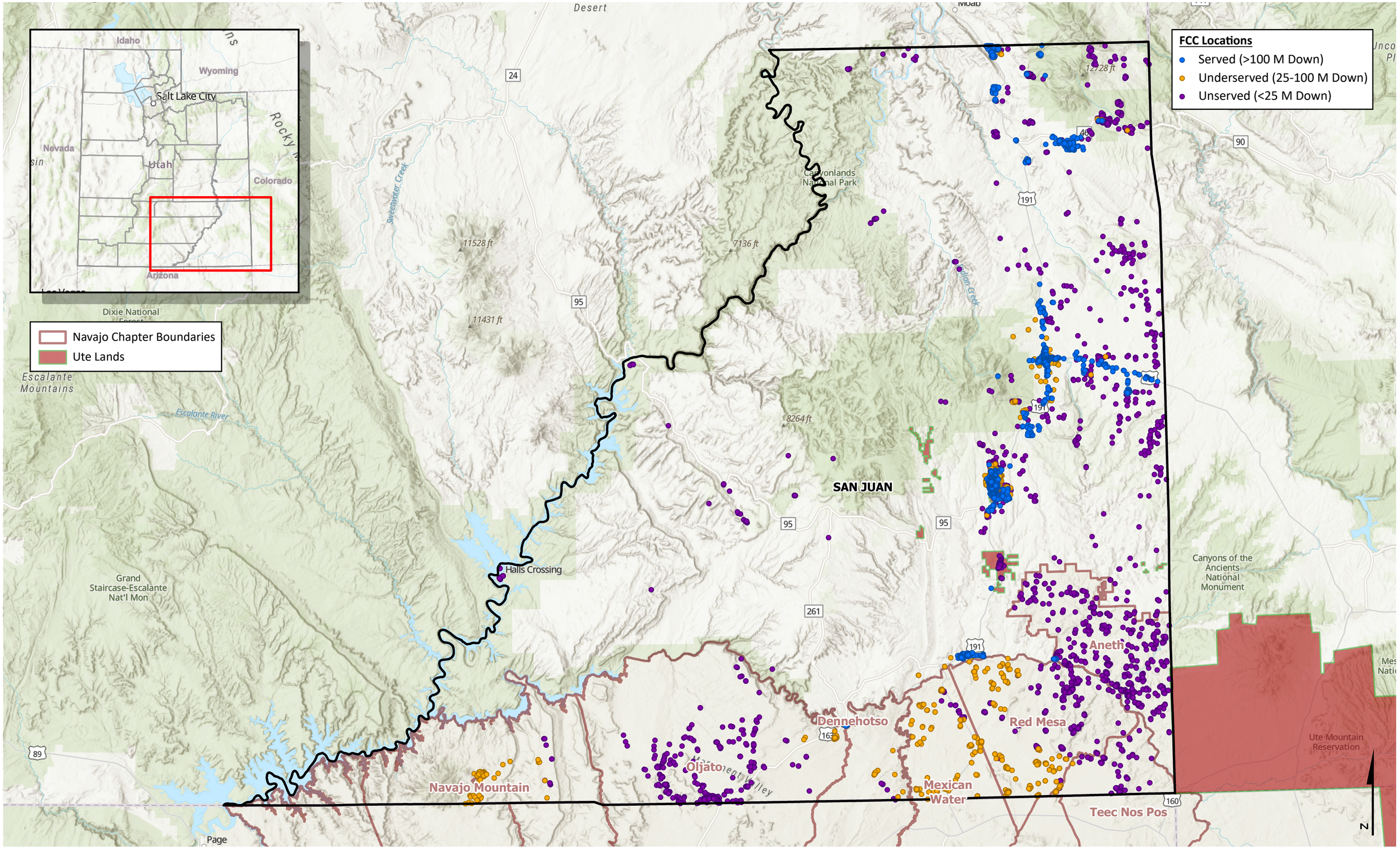

Figure 18: FCC Service Locations in San Juan County

0 10 20 Miles

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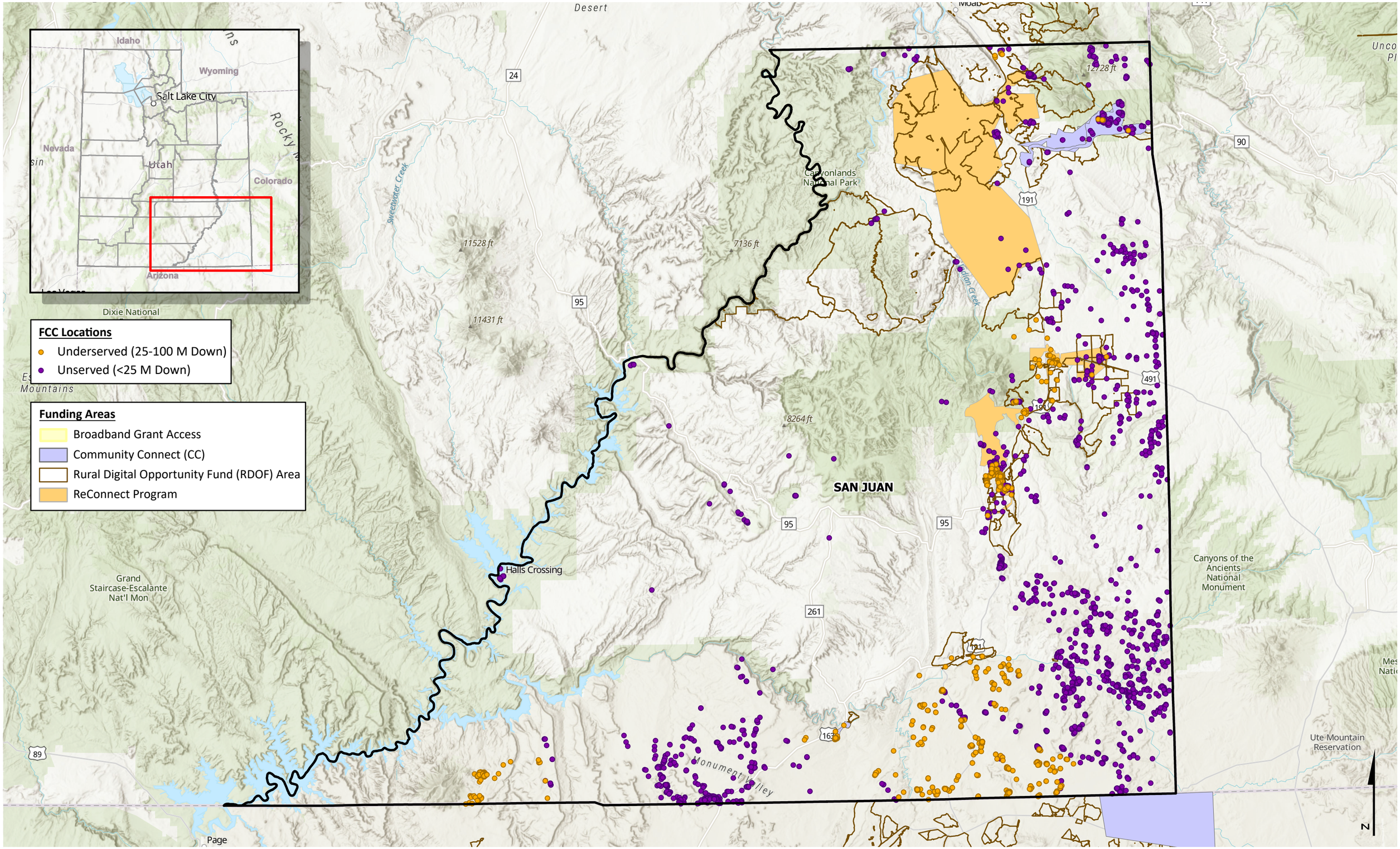

Horrocks.

Figure 19: FCC Underserved/Unserved Service Locations and Funding Areas in the San Juan County

Table 9 Broadband Speeds Available summarizes the availability of different technologies to the communities of San Juan County, 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.[19] ISPs are now required to submit service areas through the FCC webpage[20].

Table 9 Broadband Speeds Available

COUNTY OR MAJOR CITY	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	%	
County							
San Juan County	2301	37.3%	778	12.6%	3092	50.1%	6171
Major City							
Blanding	0	0.0%	1	0.1%	1165	99.9%	1166
Bluff	0	0.0%	6	2.7%	215	97.3%	221
Monticello	0	0.0%	28	3.4%	796	96.6%	824

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

[20] Federal Communications Commission. December 2022. Information for Filers. https://www.fcc.gov/BroadbandData/filers

Internet Speed Test

In order to correctly gauge accuracy of FCC broadband data and ISP coverage areas, San Juan County and the State of Utah held a speed test campaign[21] 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 additional 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, do 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 has been incorrectly installed, which would be a digital access issue. The speed test cannot show if these other factors are happening, so it is best used to assess general trends.

Table 10 shows the results of the speed test. Out of the total 203 tests taken, 61% (124) of the locations classify as unserved (download speeds below 25 Mbps). Figure 20 shows the locations and results of the speed tests in the full San Juan County while Figure 21 discloses the results specifically within Tribal Lands of San Juan County. Figure 22 shows the speed tests locations along with the FCC unserved and underserved locations. The speed test data underscores what is shown by the FCC published broadband data. Vast areas of San Juan County, especially rural areas, are struggling to obtain serviceable speeds.

Table 10. Speed Test Results

DOWNLOAD SPEED	NUMBER OF TESTS (SAN JUAN COUNTY)	NUMBER OF TESTS (TRIBAL LANDS)
No Service	7	1
Below 10 Mbps	88	9
Below 25 Mbps	29	1
Below 500 Mbps	70	5
Above 500 Mbps	9	0
Total Locations	203	16

[21] https://business.utah.gov/broadband/speed-test/

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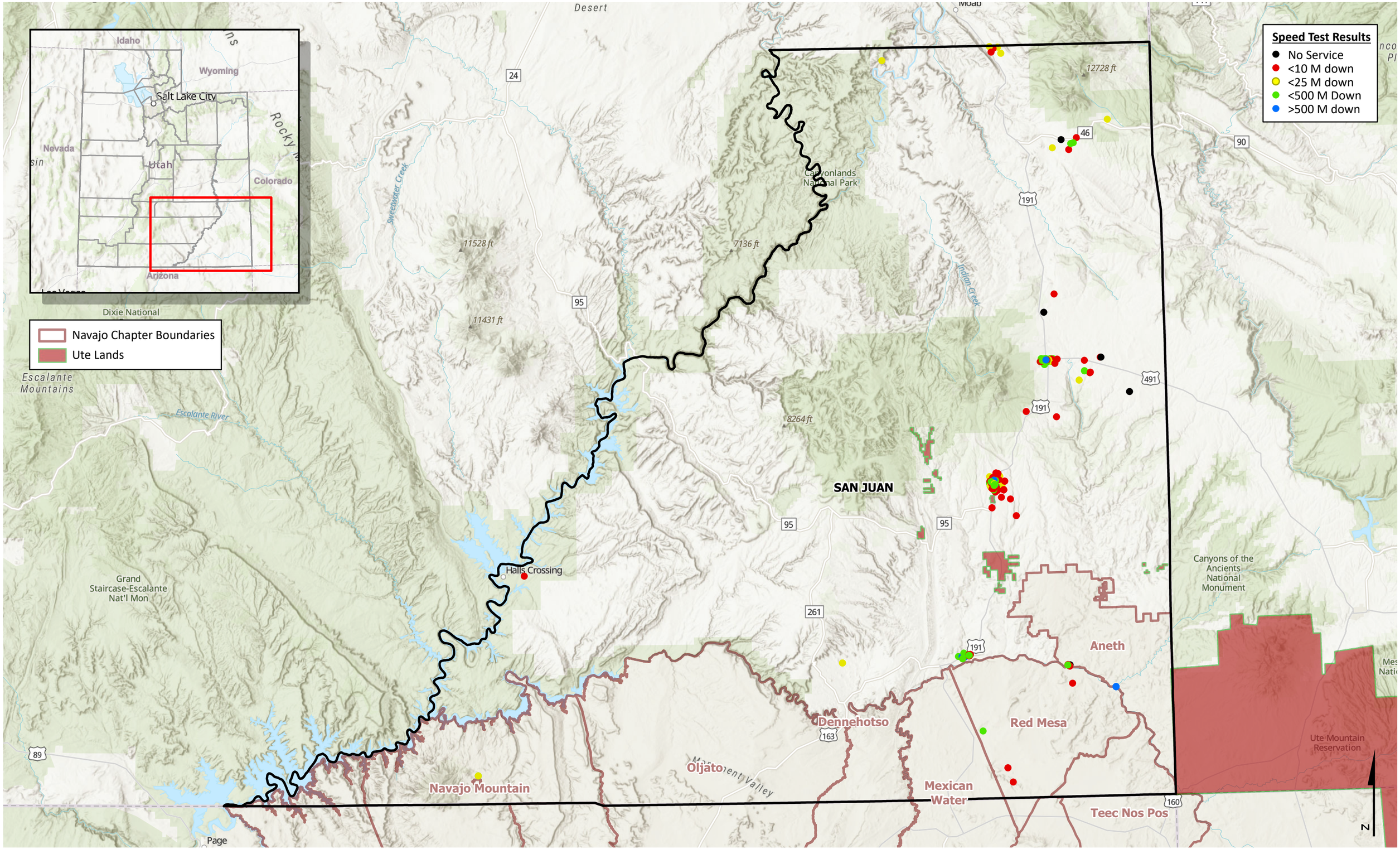

Figure 20: Speed Test Results for San Juan County

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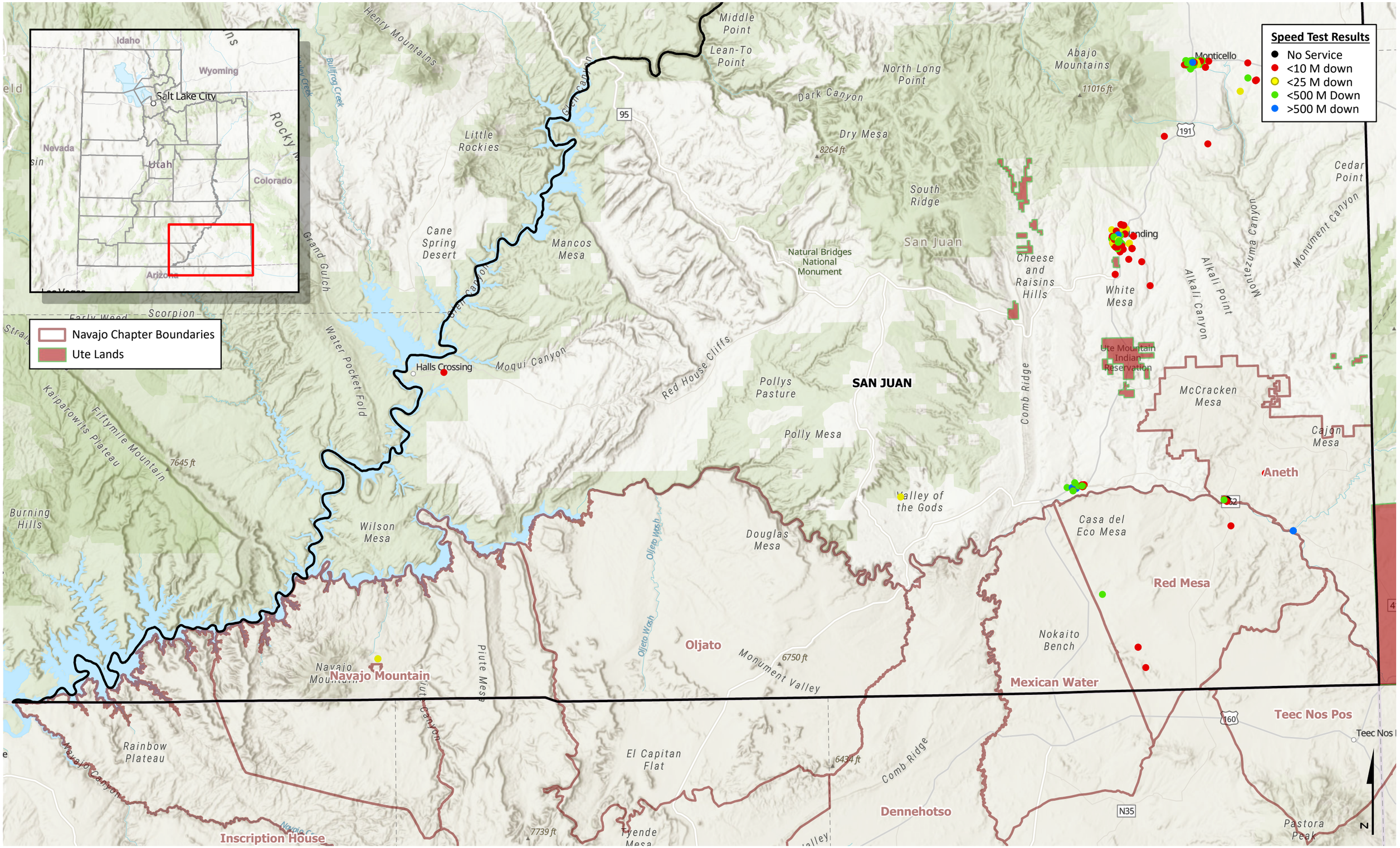

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Figure 21: Speed Test Results for Tribal Lands in San Juan County

0 7 14 Miles

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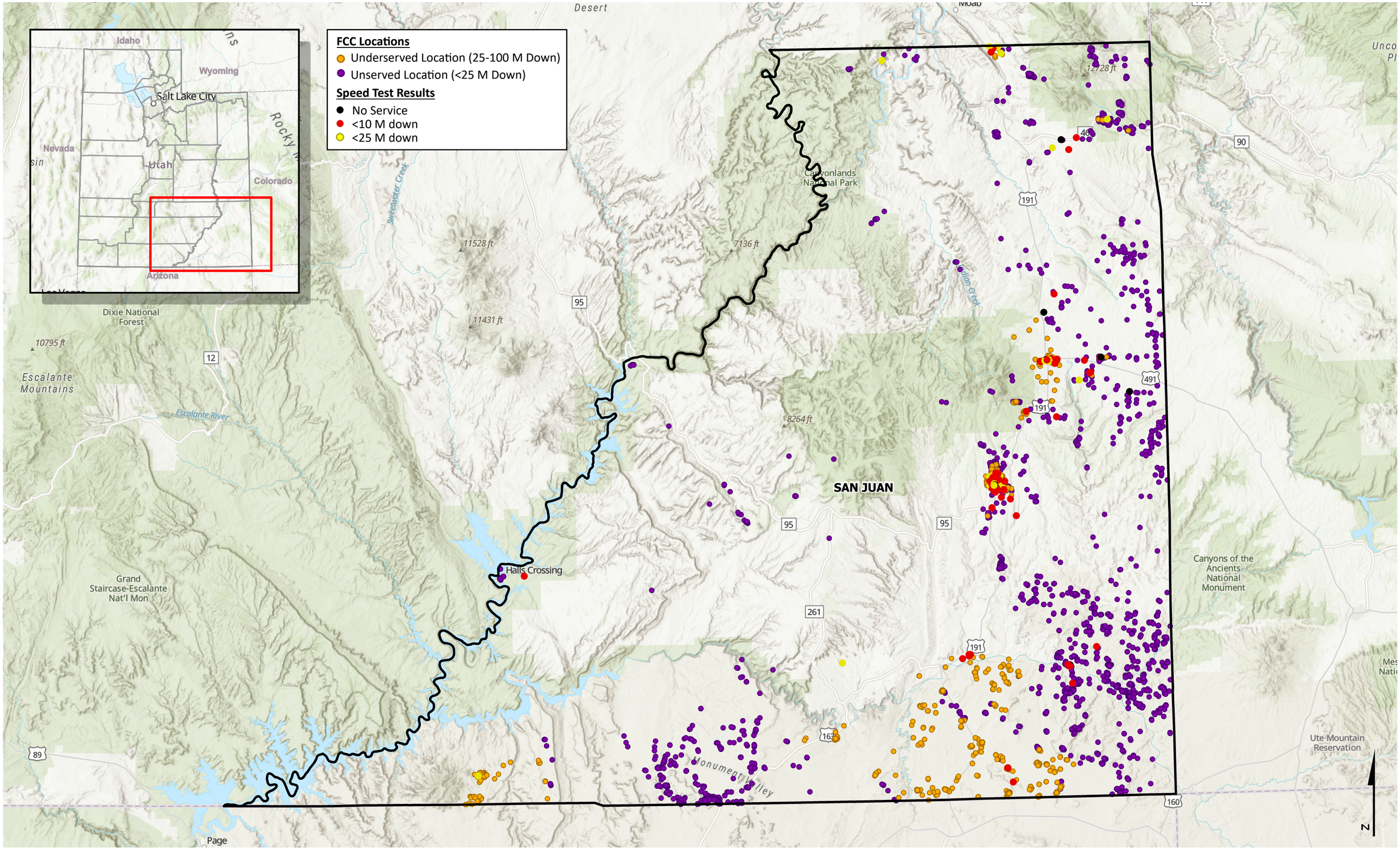

Horrocks.

Figure 22: Unserved Speed Test Results and Underserved/Unserved FCC Locations in San Juan County

0 10 20 Miles

Middle Mile

The UDOT fiber network is the primary statewide fiber network. State highways that do not yet have UDOT fiber in them often do not have any fiber in them due to their remote locations.

On the UDOT fiber map, sections of highway are marked if they are a priority area UDOT wishes to run fiber through or if they are segments of road that have projects or funding for deploying fiber in the near future. Figure 23 shows the current UDOT fiber network along with future needs projects and FCC unserved and underserved locations. UDOT infrastructure needs in San Juan County are most needed along US 491, US 191, and US 261.

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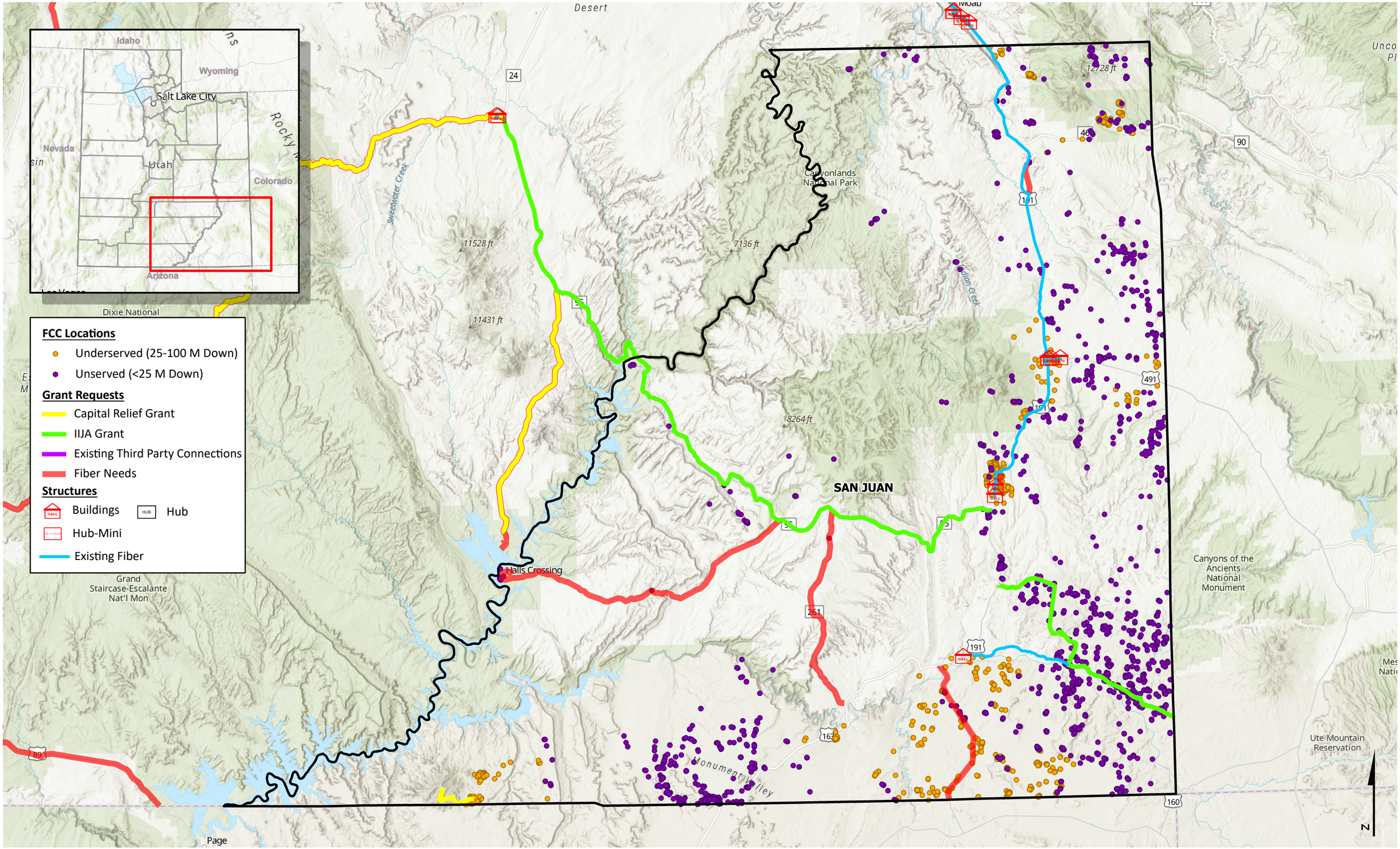

Figure 23: UDOT Fiber Network with Fiber Needs and Grant Requests in San Juan County

0 10 20 Miles

Projected Growth in San Juan County

Figure 24 shows the 10-year growth estimates from the U.S. Census, known as Traffic Analysis Zones (TAZ)[22]. While most of the population is expected to remain stagnant, metropolitan areas of San Juan County can expect to see some growth. A large portion of Navajo and Ute lands, as are also expected to see some growth. This underscores the importance of developing broadband infrastructure as demand will continue to rise, the need for high-speed accessible internet will increase.

[22] Traffic Analysis Zones. July 2023. https://www.arcgis.com/home/item.html?id=81adbf0ae9eb47a89a9e0cf569010e16

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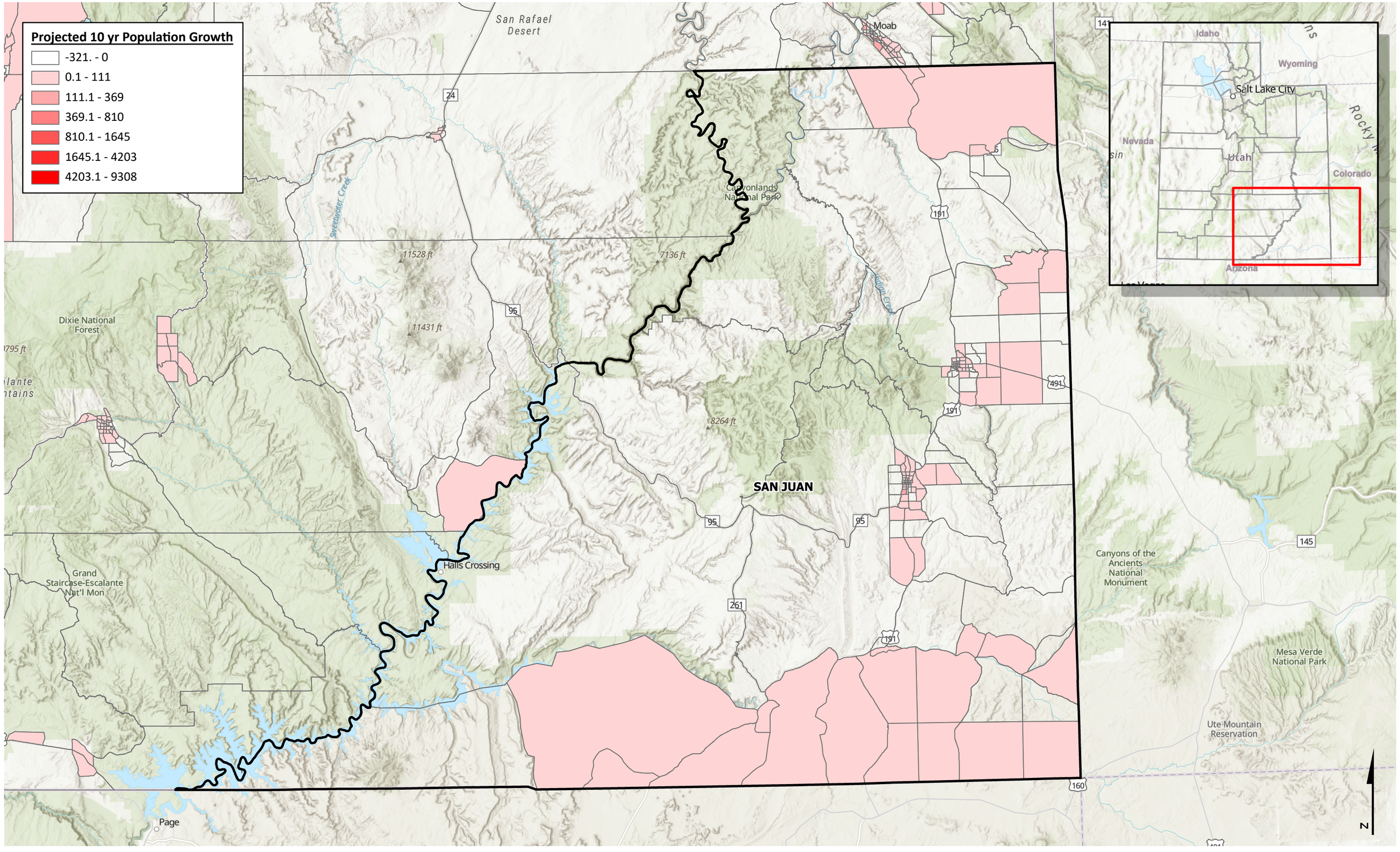

Figure 24: Projected 10 Year Population Growth of San Juan County

0 10 20 Miles

3.5.2 Digital Access

There are many barriers to digital access in San Juan County 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 with lack of 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 county.

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 within San Juan County are outlined below. In addition to margin of error estimates, categories are not mutually exclusive; as such, percentages do not total 100.

Covered Populations include:[23]

- Veterans
  - 5.2%
- Individuals who are members of racial or ethnic minority groups
  - 56.6% (includes all individuals who are non-white)
- Individuals who live in low-income households
  - 21.2% (persons in poverty)
- Individuals with disabilities
  - 19.8% (under the age of 65)
- Aging individuals
  - 14.4% (65 and above)
- Incarcerated individuals
  - 0.09%
- Individuals with a language barrier
  - 22.8%
- Individuals who primarily reside in a rural area
  - 100%
- Members of Navajo Nation by Chapter (48.5%)
  - Aneth
    - 1,978
  - Teec Nos Pos
    - 1,455
  - Red Mesa
    - 978

[23] U.S. Census Bureau. (2021). U.S. Census Bureau QuickFacts: San Juan County, Utah. https://www.census.gov/quickfacts/fact/table/sanjuancountyutah

    - Mexican Water
        - 824
    - Dennehotso
        - 1,518
    - Oljato
        - 2,314
    - Navajo Mountain
        - 847
    - Inscription House
        - 962
- Members of the Ute Mountain Ute Tribe- White Mesa Community
    - 380
- Members of the San Juan Southern Paiute Tribe
    - ~300

Internet Subscriber Rates

San Juan County 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, 59.6% of households in San Juan County had a broadband internet subscription. Table 11. Internet Subscriber Rates lists the internet subscription rate within San Juan County.[24] Figure 25 shows the areas within San Juan County where at least 25% of households have no internet access.

Table 11. Internet Subscriber Rates

CITY/TOWN	TOTAL HOUSEHOLDS	HOUSEHOLDS WITHOUT AN INTERNET SUBSCRIPTION	% WITHOUT AN INTERNET SUBSCRIPTION
San Juan County	4,438	1795	40.4%

[24] 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+utah&tid=ACSST5Y2021.S2801&moe=false

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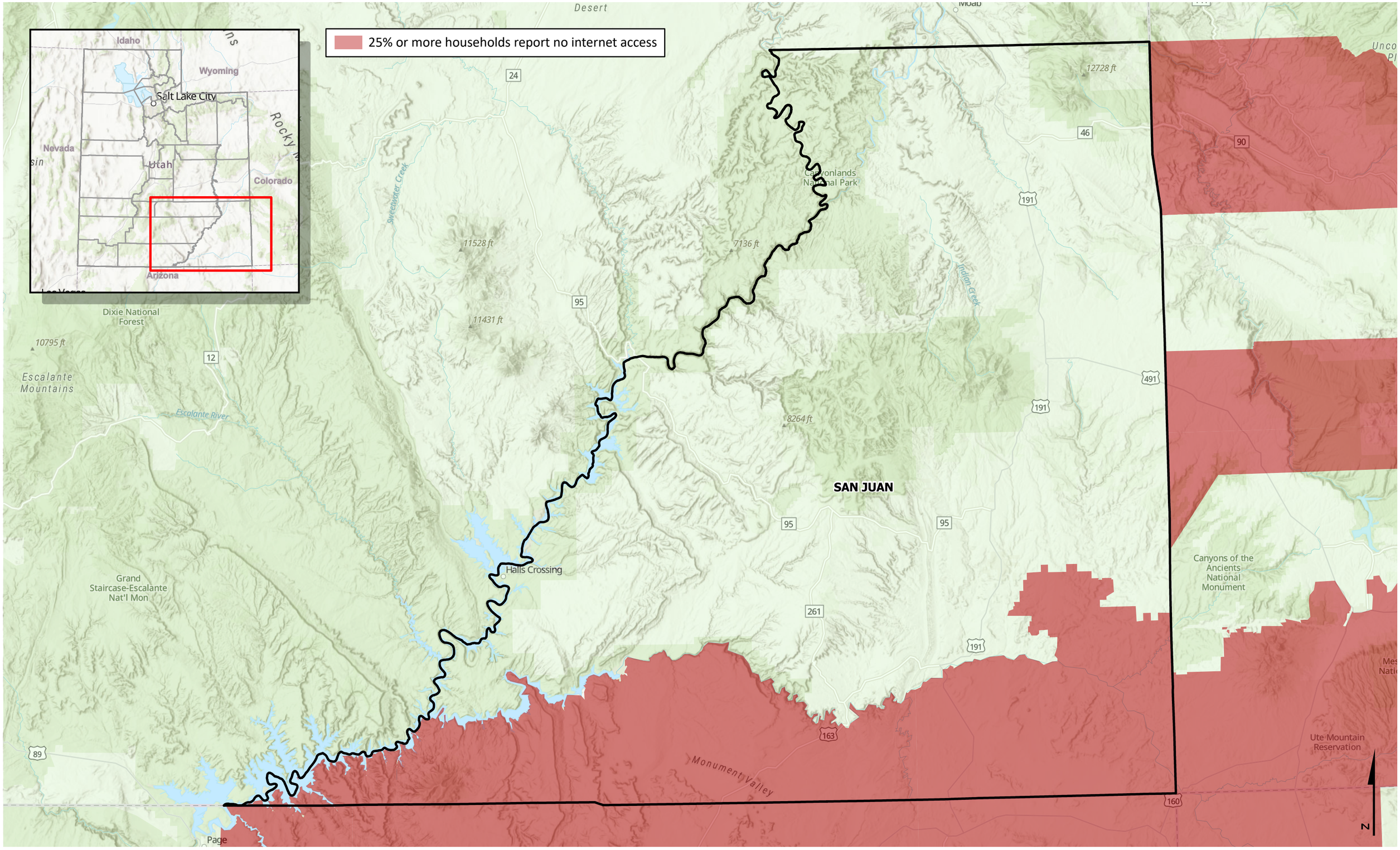

Figure 25. Areas Where More than 25% of Households Report No Internet Access in San Juan County

0 10 20 Miles

3.5.3 Broadband Affordability

It was mentioned during site visits and stakeholder interviews that most internet service is provided via satellite from Starlink or HughesNet. Startup costs for equipment for Starlink range in price from $599 up to $2,500, with monthly costs at $120. HughesNet is another satellite provider available in the area with plans ranging in price from $49 to $200 per month. San Juan County has high poverty rates, so these costs are unattainable for many. Furthermore, satellite providers do not qualify for ACP funding. Figure 27 shows where FCC unserved and underserved locations fall in relation to areas where 20% or more of households fall below the Federal Poverty Line[25]. Figure 28 shows unemployment rates throughout San Juan County[26].

Below in Figure 26 are the details of the reasons provided by respondents of the Utah Speed Test, explaining why they lacked service at their households. Eighty-five percent of respondents stated that the lack of availability is the most common barrier.

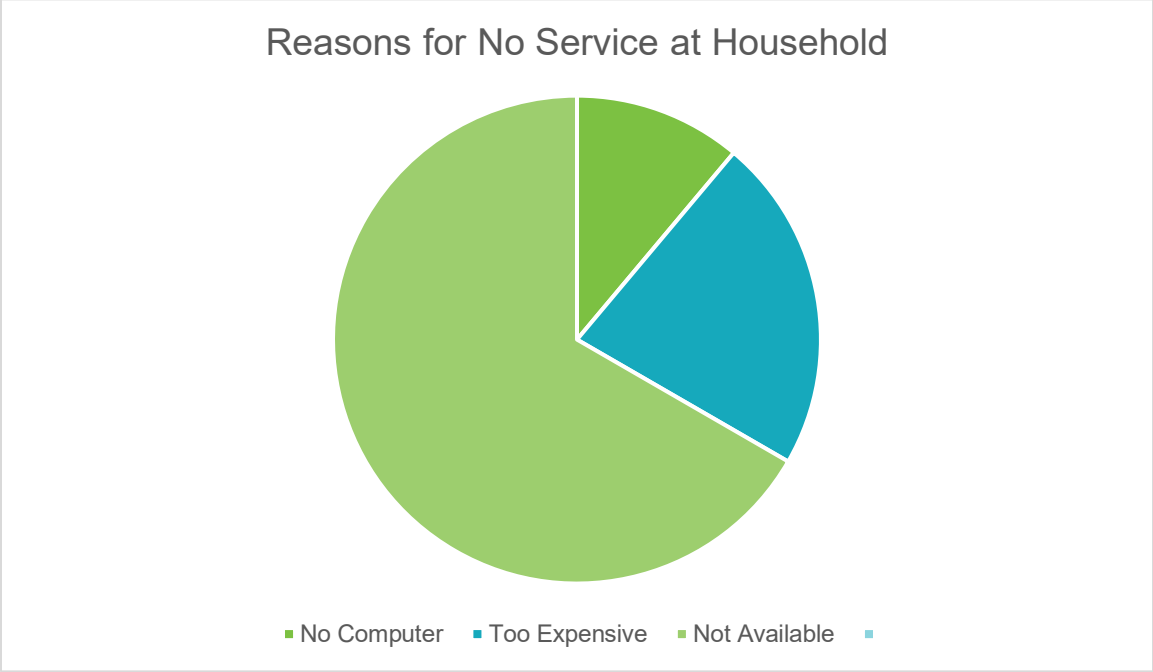

Figure 26 Reasons for No Household Internet

[25] US Census Bureau. 2021. American Community Survey (S1701) Poverty Status (ACS 5-Year Estimates). https://data.census.gov/table?q=San+Juan+County,+Utah+poverty&tid=ACSST5Y2021.S1701&moe=false.

[26] US Census Bureau. 2021. American Community Survey (S2301) Employment Status (ACS 5-Year Estimates). https://data.census.gov/table?q=San+Juan+County,+Utah+unemployment&tid=ACSST5Y2021.S2301&moe=false.

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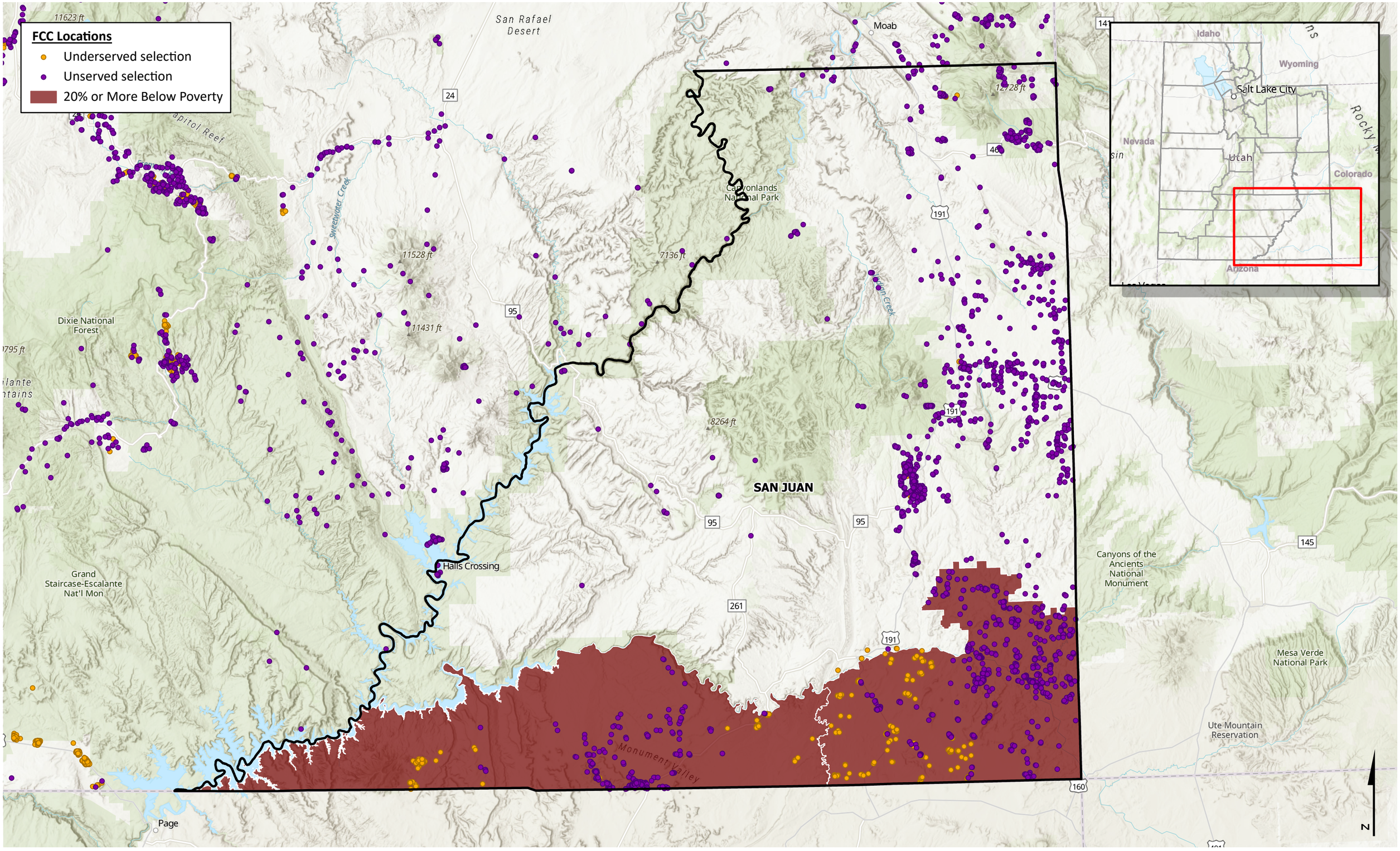

Figure 27: Poverty and Unserved/Underserved Locations in San Juan County

0 10 20 Miles

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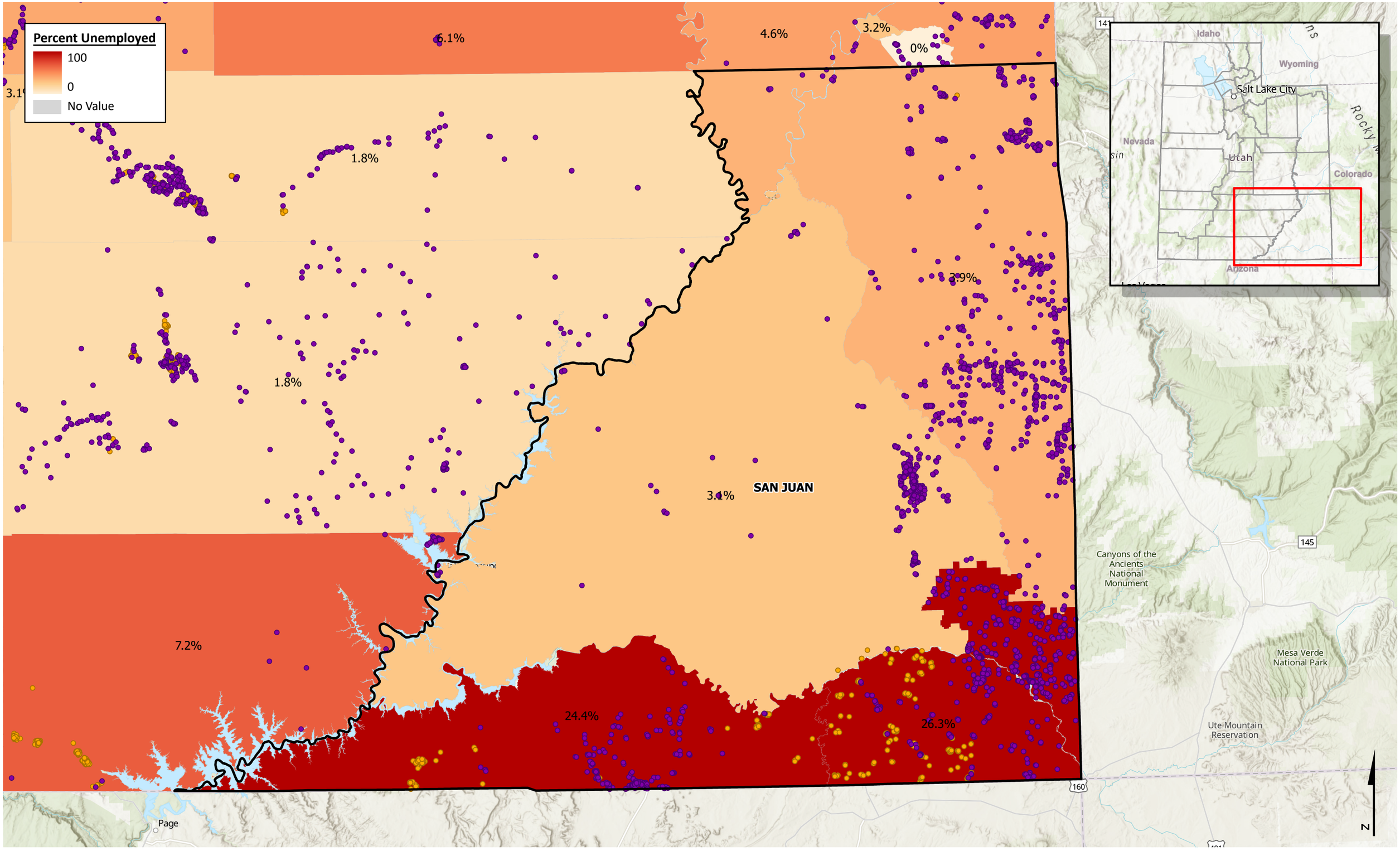

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Figure 28: Unemployment % by Census Tract in San Juan County

4 OBSTACLES OR BARRIERS

A concern of the Navajo Chapters in San Juan County is that the NTUA is the only utility company serving the Navajo Nation. This makes permitting and installation difficult. NTUA relies on the Chapters to conduct the preliminary clearances and rely on NTUA for design and construction. Additionally, there are cultural considerations such as burial sites, sacred sites, and endangered plants that need to be accounted for in design and permitting and can slow the approval process. Due to historical mistrust, these sites are not marked on maps or made available to the public.

Additionally, the remoteness of many of the communities in San Juan County acts as a barrier to coordination and communication. Members of the Navajo Nation stated a need for easy-to-understand messaging that will explain the technical details of broadband expansion and benefits to the community. Due to a lack of understanding, misinformation about high-speed internet expansion is common. Any initiatives need to communicate the benefits, impacts, and needs in plain, easy-to-understand language.

The Ute Mountain Ute Tribe in White Mesa, Utah, emphasized the need to expand internet connectivity to benefit students and enhance education. The Chapter has explored a community Wi-Fi program, but the infrastructure currently available will not support the bandwidth needed.

Workshops and site visits in San Juan County raised awareness to the need for funding to staff IT positions that could assist with technical assistance and cybersecurity measures. The area simply does not possess the workforce and economy to support this role on-site. Chapter and tribal leadership are being left to make decisions and asked questions that they really do not know how to answer or understand what they are being asked yet are left to make critical decisions for their communities without a full grasp of what it means.

The elderly and aging population in San Juan County are hesitant to adopt and utilize high-speed internet. Many have the belief that they have lived their lives without internet access and do not see a need to use it now. Outreach specific to this audience is needed to make them aware of the benefits, educate them on digital skills, and overcome the hesitation to adopt.

The lack of connectivity in San Juan County has huge implications for emergency response. Often due to topography, there is no way to get reception. Residents have to travel to higher ground to get cell service, delaying the response time for emergency medical service or law enforcement. A lack of connectivity, whether cellular or internet, has real implications for those living or visiting San Juan County.

Permitting and Right-of-Way

It is important to obtain various permits at the earliest stages of implementation. This includes coordinating with utilities; addressing canal and waterway crossings; securing railroad permits; obtaining federal, state, and local permits in the right-of-way; and obtaining easements when broadband equipment encroaches land outside of the public right-of-way.

Table 12 Potential Permitting Entities within San Juan County shows many of the permitting entities within San Juan County with longer lead times. Figure 29 shows land ownership throughout the region, which informs permitting. In San Juan County it can take up to 180 days to receive all relevant permits, sometimes longer if tribal-related permitting is involved. 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 an exhaustive list and may evolve between the publication of this plan and the construction phase.

Table 12 Potential Permitting Entities within San Juan County

LEVEL	APPROXIMATE TIMEFRAME FOR PERMITTING	ENTITY
Local	30 Days	San Juan County Engineering
State	30 Days	State Parks and Recreation
State	30 Days	State Trust Lands
State	30 Days	State Wildlife Reserve
State	30 Days	UDOT
Federal	180 Days	Bureau of Indian Affairs
Federal	180 Days	Bureau of Land Management
Federal	180 Days	National Park Service
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
Tribal	Unknown	Tribal Lands

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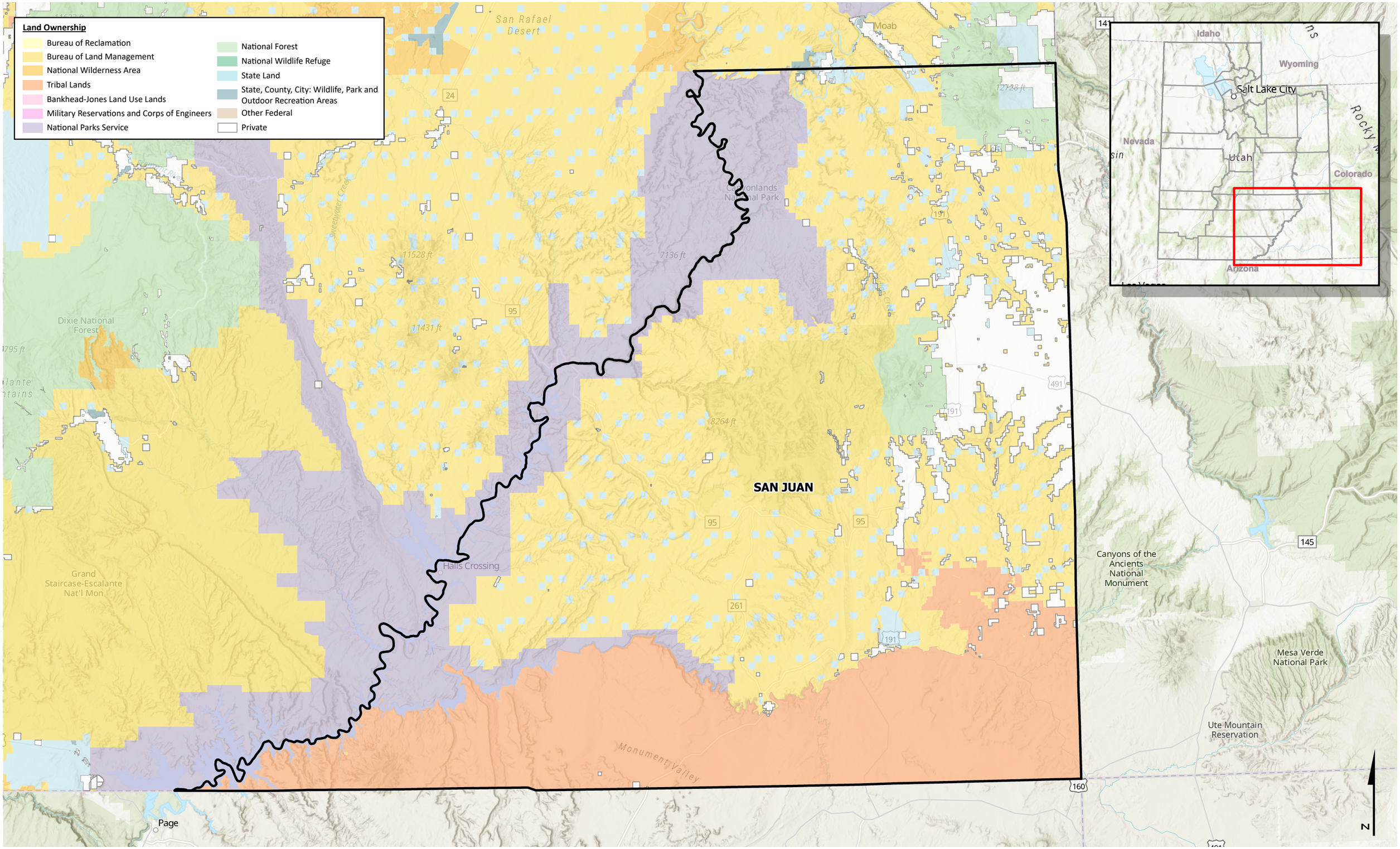


Figure 29: Land Ownership in San Juan County

0 10 20 Miles

5 IMPLEMENTATION PLAN

5.1 PRIORITIES

By utilizing various technical analysis methods, (GIS data, broadband prioritization mapping, speed tests, etc.) the priority of individual residences' internet needs can be categorized. These priority tiers are shown below in Table 13 Priorities for Broadband Deployment and Digital Access.

Table 13 Priorities for Broadband Deployment and Digital Access

PRIORITY	RANKING	DESCRIPTION
Establishing high-speed internet in all eligible unserved areas.	High	Those without current internet access have the highest priority.
Providing higher available speeds to those in underserved areas.	Low	Stakeholders below the 100/20 download/upload speed threshold will be prioritized, but not at the level of those without any internet access.
Bridging the gap between rural unserved communities and served communities.	Medium	Utilizing middle mile infrastructure to branch off current established fiber infrastructure so those in rural communities have access.
Eliminating the "outliers" in metropolitan communities that are unserved.	Medium	Determining residences in urban areas that are still without service to create infrastructure that will provide sufficient speeds.

5.2 KEY EXECUTION STRATEGIES

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

GOAL 1: Extend and Improve Broadband Access and Infrastructure

OBJECTIVE	STRATEGY	IMPLEMENTATION DETAILS
Expand high-speed internet access to all unserved and underserved areas of San Juan County.	Expand the reach of existing ISP networks in San Juan County to reach all unserved and underserved households. Provide letters of support to ISPs applying for federal and state grants. Work with Tribal Nations to provide resolutions in support of broadband expansion efforts.	**Key Players:** San Juan County, ISPs, Tribal entities, municipalities **Funding Sources:** USDA, FCC, NTIA, CPF **Timeline:** Ongoing
Pursue funding opportunities available to San Juan County and assist Tribal Entities and ISPs with obtaining funds for deployment of new broadband infrastructure.	Monitory and apply for, or provide support for, federal broadband funding made available through the BEAD program, USDA, Capitol Projects Fund, or other Tribal broadband funding mechanisms. Provide letters of support and assistance for entities applying for grant funding in alignment with the San Juan County Broadband Plan. Understand funding awarded and applications in process in San Juan County to avoid duplication of efforts.	**Key Players:** San Juan County, municipalities, **Funding Sources:** BEAD program, USDA, Capitol Projects Fund, other Tribal broadband funding **Timeline:** Ongoing
Explore alternative technologies as a solution to high-speed internet access in the remote and rural areas of San Juan County.	Hold quarterly meetings with Emery Telcom to assess coverage for unserved areas.	**Key Players:** San Juan County, Emery Telcom, cellular/wireless providers **Funding Sources:** Private ISP investment **Timeline:** Ongoing, Quarterly

Support and implement initiatives to launch public Wi-Fi networks and computer labs at key community locations (such as libraries, community centers, and Tribal Chapter Houses) to enable easy and free access to the internet.	Meet with institutions to find out what resources they need to provide a public Wi-Fi network. Find funding source for computer labs. Meet with Emery Telcom to ensure anchor institutions are connected to broadband.	**Key Players:** San Juan County, Libraries, Community Centers, Tribal Entities, Emery Telcom **Funding Sources:** Need to identify **Timeline:** Winter 2024
Update San Juan County ordinances and policy to streamline broadband deployment	Add and revise county ordinances to include broadband considerations. Support County municipalities in ordinance and code revisions, as requested. Coordinate broadband infrastructure installation with utility work. Establish a Dig-Once policy Evaluate permitting processes to identify opportunities to include strategies for broadband expansion Add broadband supportive language to any County planning effort	**Key Players:** San Juan County, local municipalities **Funding Sources:** N/A **Timeline:** Ongoing

GOAL 2: Reach Target Populations through Partnerships

OBJECTIVE	STRATEGY	IMPLEMENTATION DETAILS
Continue Tribal partnerships with NTUA, NUC, Ute Mountain Ute Tribe, and local Tribal Councils to understand priorities and implementation efforts in a way that honors and respects Tribal sovereignty	Establish monthly in-person meetings with NTUA regarding telecom build-outs in tribal areas. Establish and maintain quarterly update meetings with Tribal entities to understand and support local expansion efforts. Act as a navigator between Tribal entities and other broadband partners.	**Key Players:** San Juan County, NTUA, NUC, Tribal Councils, Ute Mountain Ute Tribe, San Juan Southern Paiute Tribe, Tribal service organizations **Timeline:** Ongoing

Partner with area healthcare providers, universities, non-profits and community organizations to understand the impact connectivity has on other regional issues and identify partnership opportunities.	Establish regular check-ins with these organizations to stay informed of their needs and build support for implementation efforts.	**Key Players:** Navajo Tribal Health, Ute Mountain Ute Tribe-White Mesa Community, Utah State University Extension, t **Timeline:** Ongoing
Build County-wide support of broadband expansion both internally and externally	Host tribal meeting to implement this plan. Bring maps to perform map challenges for the state. Ensure County economic, general and area specific plans include broadband considerations Monitor local broadband deployment and look for opportunities to maximize impacts through partnerships Establish a local broadband coalition comprised of Tribal, municipal and community representatives to drive and advocate for broadband expansion.	**Key Players:** San Juan County, Tribal Nations, municipalities, non-profits, community organizations **Funding Sources:** USDA Broadband Technical Assistance Grant **Timeline:** Winter 2024

GOAL 3: Increase High-Speed Internet Adoption and Affordability

OBJECTIVE	STRATEGY	IMPLEMENTATION DETAILS
Collaborate with community service organizations, ISPs, and education providers to expand the range of affordable plan options tailored to the needs of low-income individuals and families.	Format County franchise agreements to require ISPs to offer subscriptions and plans that are affordable or no cost after the ACP benefit is applied. Look for opportunities to apply for digital equity grant programs to implement broadband access programming.	**Key Players:** San Juan County, ISPs, municipalities, community organizations, school district **Timeline:** Ongoing

Inform residents and businesses of the available internet service options in San Juan County	Develop public awareness campaigns to promote the benefits of broadband access and communicate available connectivity options. Establish partnerships with local organizations, nonprofits, and community leaders to foster engagement and expand audience. Raise awareness of ACP program throughout County.	**Key Players:** County officials, residents, businesses, ISPs, municipalities **Funding Sources:** ACP Outreach Grant (FCC) **Timeline:** Ongoing
Increase knowledge among San Juan County residents	Support the expansion of programs that provide digital literacy education to San Juan County residents. Increase participation in workforce development programs in San Juan County through partnerships.	**Key Players:** County officials, non-profits, community organizations **Timeline:** Ongoing

5.3 ONGOING STAKEHOLDER ENGAGEMENT

The successful implementation of this plan includes continued stakeholder engagement and touchpoints. Continued stakeholder engagement is critical to implementing a robust broadband plan that accurately reflects community needs. 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, Tribal leaders, technical experts, and organizations that represent the covered populations. A broadband working group will ensure that there is county-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 San Juan County and the ISP. By working together, San Juan County 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 San Juan County. 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. San Juan County 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:
  - Highlight broadband expansion progress in County Commission meetings, through monthly posts on social media platforms, and on the County website.
  - Meet and coordinate regularly with local ISPs to understand expansion priorities and track progress of ongoing projects.
  - Hold workshops to adopt this plan and engage tribal entities, the public, individuals, and businesses in San Juan County to perform Internet Speed Tests and FCC Map Challenges.
  - Develop communication campaigns to drive survey and speed test participation. Understanding that many unserved and underserved areas of the County may not have connectivity, campaigns must have a multi-pronged approach and collateral should include social media content, newsletter copy, public service announcement scripts, website copy, direct mail pieces, and/or press releases for local newspapers.

- **Identify and Update Community Priorities:** Each community within San Juan County 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.
    - Continue gathering input and perspectives through a year-round, publicly available local broadband survey. As projects and initiatives are implemented, the survey may be adapted to measure the success of that programming. Survey responses will be reviewed and evaluated twice yearly.
- **Understand Regional Context:** By establishing and strengthening working relationships with a variety of stakeholders, San Juan County may identify additional opportunities, barriers, or initiatives. Continued coordination with key stakeholders will allow San Juan County to clearly communicate the benefits of connectivity, empower local entities to advocate for broadband initiatives, and build enthusiasm and support for projects. This may be accomplished through:
    - Continued engagement with the Tribal Communities in San Juan County to understand priorities and opportunities and to offer a coordinated approach to project implementation.
    - Meetings with rural educators to understand connectivity needs.
    - Working with the Southeastern Utah Association of Local Governments to understand regional initiatives and identify partnership opportunities.
- **Advertise and Continue to Increase Enrollment in the Affordable Connectivity Program (ACP).** 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.
    - Expand awareness of the Tribal ACP benefits to members of the Navajo Nation, Ute Mountain Ute-White Mesa Community, and San Juan Southern Paiute Tribes.
    - Identify ACP champions and explore options within organizations to include ACP information and enrollment assistance to those in need.

5.4 ESTIMATED TIMELINE FOR UNIVERSAL SERVICE

Universal service is the goal of providing broadband service to every resident of San Juan County. 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 by. Due to this timeline being determinant on external elements, San Juan County 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 San Juan County officials are listed in Section 5.3 of this plan.

Individual Broadband Project Minimum Timeline

It will be up to the ISPs to carry out the design and construction of broadband infrastructure projects within San Juan County, 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 14. 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.

5.5 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 and 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: 99%

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.

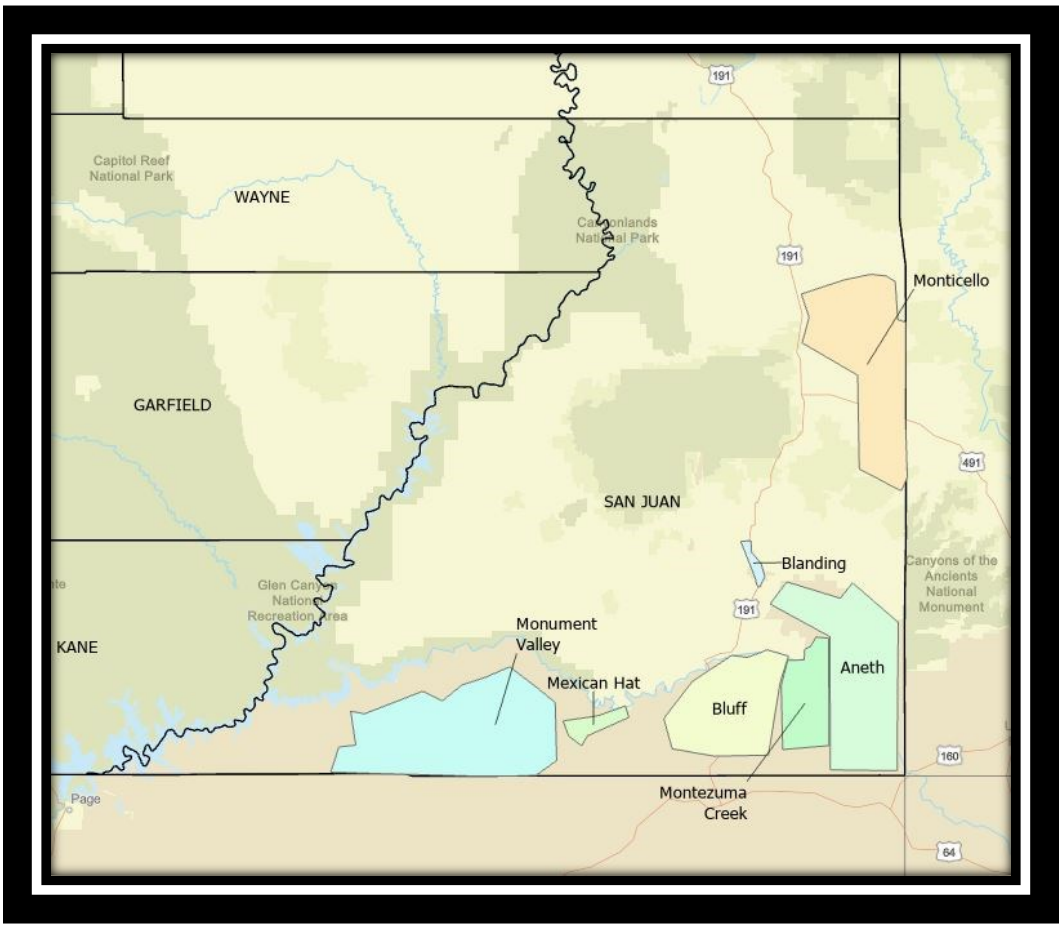
Table 15 below outlines an estimate for providing fiber optic service to the unserved and underserved households in the communities of San Juan County. Areas in the "Area" column of Table 15 corresponds to the identified service areas in Figure 30.

Table 15. Estimated Costs for Broadband Deployment in San Juan County

AREA	TOTAL LENGTH (MILES)	% AERIAL	TOTAL COST (DOLLARS)	COST PER PASSING (DOLLARS)	# OF LOCATIONS	UNDER-SERVED	UN-SERVED	COST FOR JUST UN-SERVED & UNDER -SERVED
Aneth	361.6	99%	20,046,977.44	32,386.07	619	3	516	$16,808,370.33
Blanding	46.74	99%	2,591,023.62	25,402.19	102	9	93	$12,584,972.16
Bluff	191.06	99%	10,592,164.08	32,591.27	325	132	49	$5,899,019.87

Mexican Hat	44.06	99%	2,442,459.40	29,786.09	82	74	8	$2,442,459.38
Montezuma Creek	158.34	99%	8,778,168.99	27,009.75	325	43	282	$9,232,700.75
Monticello	389.14	99%	21,573,684.19	90,266.46	239	4	235	$27,137,424.69
Monument Valley	275.74	99%	15,286,955.99	29,062.65	526	19	268	$8,340,980.55

Figure 30. Identified Service Areas in San Juan County



5.6 ALIGNMENT

The San Juan County General Plan[27], completed in 2022, details the vision for the county to value rural character, recreation opportunities, vibrant economies, and sustainable development.

The Local Broadband Plan emphasizes the importance of connecting critical infrastructure to fiber, enhancing the reliability and resilience of essential services. By prioritizing the deployment of fiber optic networks, San Juan County seeks to support future growth and technological advancements.

[27] San Juan County. San Juan County Master Plan. https://sanjuancounty.org/planning/page/san-juan-county-master-plan

Through the alignment of priorities within the San Juan County General Plan and the strategic execution of the Local Broadband Plan, San Juan County is committed to establishing high-speed internet in all unserved areas, bringing connectivity to underserved areas, providing reliable infrastructure, and partnering with ISPs to serve the entire county and ensuring critical infrastructure is connected to fiber. This comprehensive approach will drive equitable access, economic growth, and enhanced quality of life for all residents of San Juan County.

5.7 TECHNICAL ASSISTANCE

The successful implementation of the Local Broadband Plan in San Juan County requires support and technical assistance from the UBC in addition to Telecommunication Consultant/Contractor services.

This support encompasses various areas, such as broadband infrastructure development, policy guidance, and access to funding opportunities.

As previously highlighted in Section 4

Workshops and site visits in San Juan County raised awareness to the need for funding to staff IT positions that could assist with technical assistance and cybersecurity measures. The area simply does not possess the workforce and economy to support this role on-site. Chapter and tribal leadership are being left to make decisions and asked questions that they really do not know how to answer or understand what they are being asked yet are left to make critical decisions for their communities without a full grasp of what it means.

The elderly and aging population in San Juan County are hesitant to adopt and utilize high-speed internet. Many have the belief that they have lived their lives without internet access and do not see a need to use it now. Outreach specific to this audience is needed to make them aware of the benefits, educate them on digital skills, and overcome the hesitation to adopt.

6 CONCLUSION

This San Juan County Local Broadband Plan serves as a comprehensive road map for maximizing the potential of broadband technology to drive economic growth, enhance connectivity, and foster innovation. By expanding broadband infrastructure, affordability, reliability, and accessibility, the plan aims to connect households and create a more prosperous San Juan County. Through collaboration among government entities, private sector partners, agencies, and community stakeholders, this Local Broadband Plan establishes a solid foundation for harnessing the transformative power of high-speed internet to empower individuals, businesses, and communities alike.

Priorities

Those in underserved areas or residences without internet access will be prioritized first. Any households below the 100/20 Mbps download/upload threshold will be considered, but second to those households that are unserved or do not have any high-speed internet options available. Residences in vastly underserved areas such as Ute Mountain Ute White Mesa Tribe, San Juan Southern Paiute Band, and Navajo Tribal lands will also take high priority, as the general network structure is less established than several other parts of the state and San Juan County.

These priorities were informed by stakeholder input and technical analysis. As the Local Broadband Plan is implemented, other strategic focus areas may arise and this plan may be updated to meet that need.

Expected Outcomes

The investment in and expansion of high-speed internet infrastructure will yield significant returns for those living in and visiting San Juan County. Research shows that broadband expansion improves health, expands the economy, and offers education opportunities. The quotes below were experiences and feedback gathered during the outreach phase of this plan and are specific to San Juan County.

"The biggest benefit to the county if everyone had internet would be for the K-12 students. It would be easier for people to return to school and access resources online. Business would be better — remote work jobs are in Monticello, but some of them require high speeds. More of an economic issue than a broadband issue to get people to stay."

- San Juan County Workshop Attendee

"We need broadband available to all and not just the city people. It should be made available to everyone in rural areas due to the students' needs for schoolwork. Thank you!"

- Tribal Survey Respondent

Appendix A: Survey Data

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

Q1 What is your address?

Answered: 3 Skipped: 0

ANSWER CHOICES	RESPONSES	
Name	0.00%	0
Company	0.00%	0
Street Address	100.00%	3
Address 2	33.33%	1
City/Town	100.00%	3
State/Province	0.00%	0
ZIP/Postal Code	100.00%	3
Country	0.00%	0
Email Address	0.00%	0
Phone Number	0.00%	0

#	NAME	DATE
	There are no responses.	

#	COMPANY	DATE
	There are no responses.	

#	STREET ADDRESS	DATE
1		5/30/2023 6:17 PM
2		5/15/2023 12:16 PM
3		5/1/2023 2:14 PM

#		DATE
1		5/15/2023 12:16 PM

#		DATE
1		5/30/2023 6:17 PM
2		5/15/2023 12:16 PM
3		5/1/2023 2:14 PM

#	STATE/PROVINCE	DATE
	There are no responses.	

#	ZIP/POSTAL CODE	DATE
1	Utah	5/30/2023 6:17 PM
2	AZ 86514	5/15/2023 12:16 PM
3	84534	5/1/2023 2:14 PM

#	COUNTRY	DATE

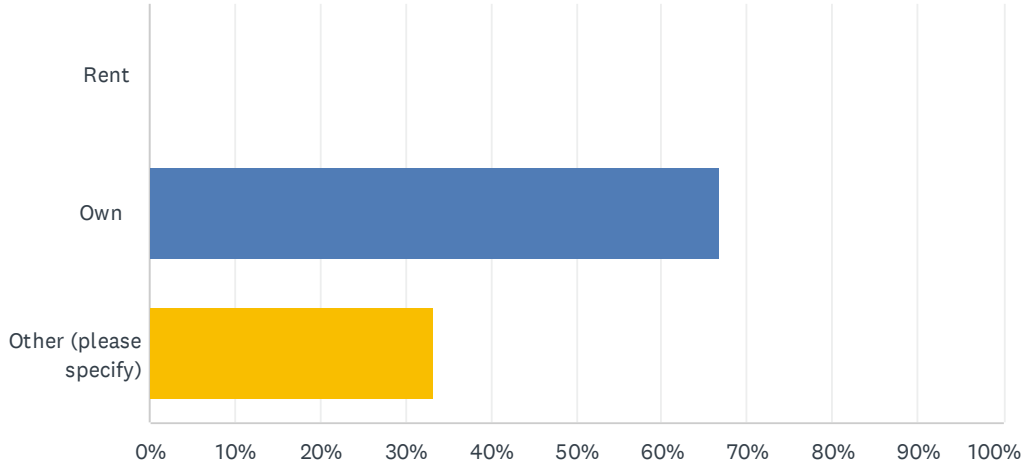
There are no responses.

#	EMAIL ADDRESS	DATE
	There are no responses.	

#	PHONE NUMBER	DATE
	There are no responses.	

Q2 Do you rent or own this property?

Answered: 3 Skipped: 0

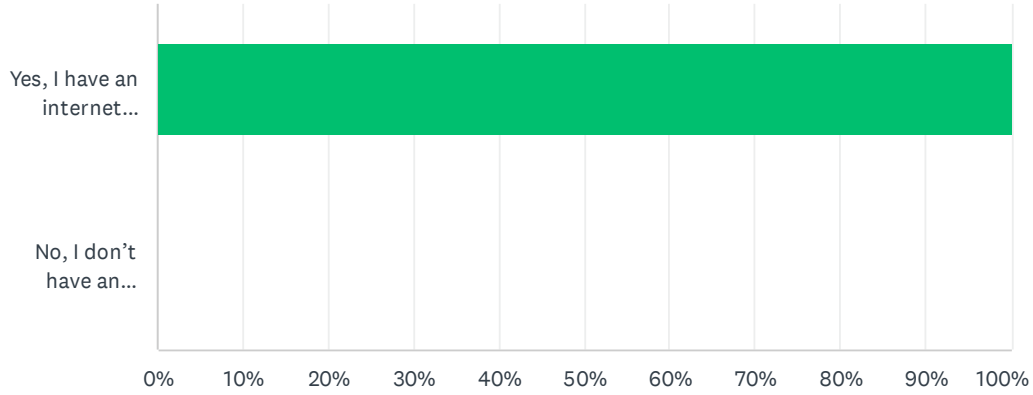


ANSWER CHOICES	RESPONSES	
Rent	0.00%	0
Own	66.67%	2
Other (please specify)	33.33%	1
TOTAL		3

#	OTHER (PLEASE SPECIFY)	DATE
1	Parents home	5/1/2023 2:14 PM

Q3 Do you have an internet connection at your household?

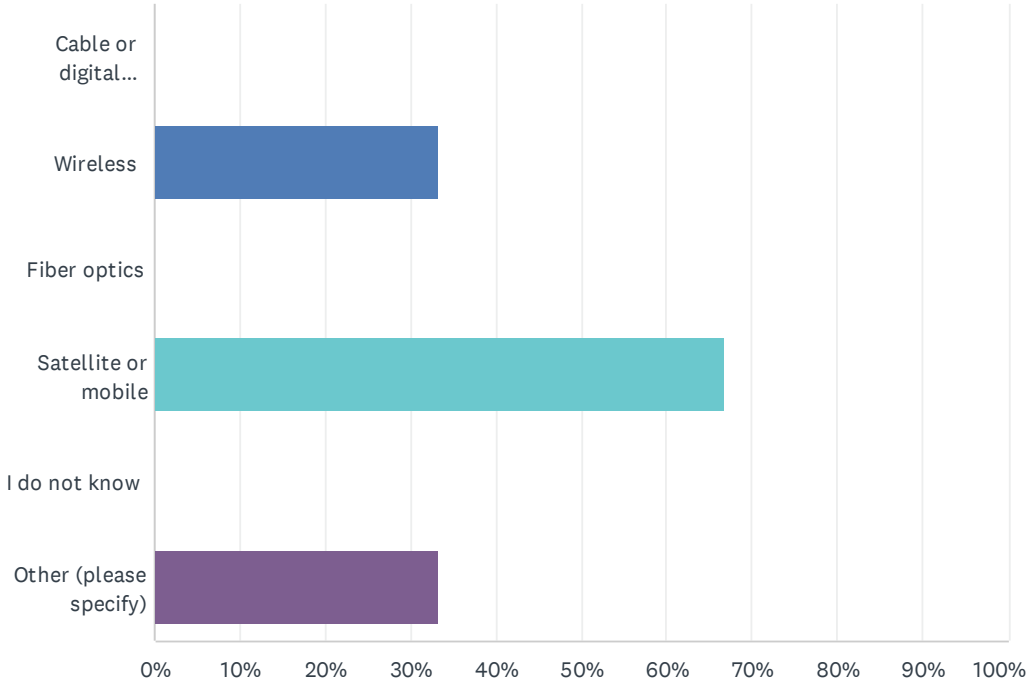
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes, I have an internet connection at my household.	100.00%	3
No, I don't have an internet connection at my household.	0.00%	0
TOTAL		3

Q4 What kind of internet connection do you have? (Select all that apply)

Answered: 3 Skipped: 0

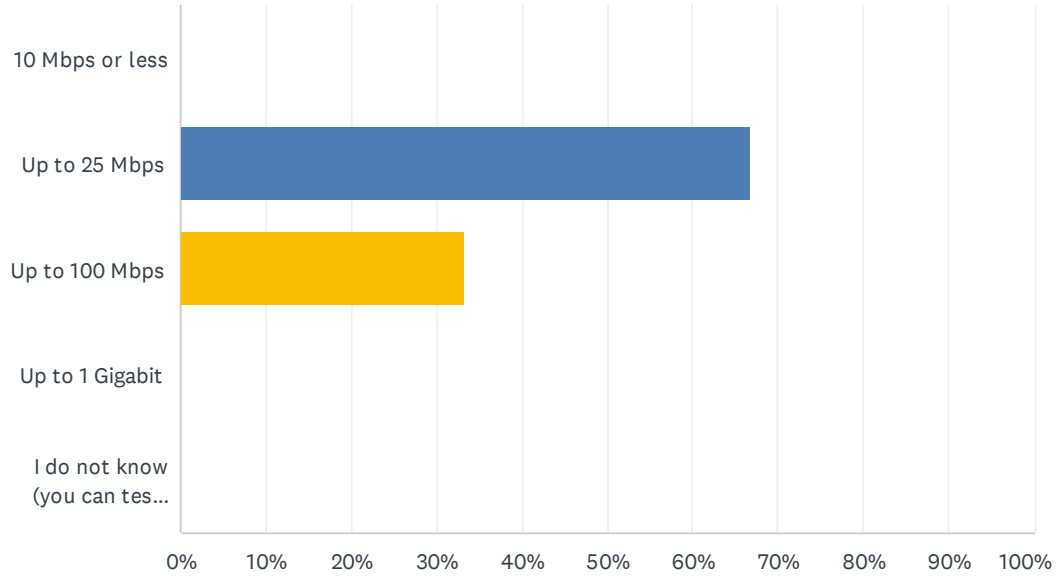


ANSWER CHOICES	RESPONSES	
Cable or digital subscriber line (DSL- telephone line)	0.00%	0
Wireless	33.33%	1
Fiber optics	0.00%	0
Satellite or mobile	66.67%	2
I do not know	0.00%	0
Other (please specify)	33.33%	1
Total Respondents: 3		

#	OTHER (PLEASE SPECIFY)	DATE
1	AT&T	5/1/2023 2:16 PM

Q5 What speed is your internet service (download speed)? (Megabits per second = Mbps)

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
10 Mbps or less	0.00%	0
Up to 25 Mbps	66.67%	2
Up to 100 Mbps	33.33%	1
Up to 1 Gigabit	0.00%	0
I do not know (you can test your internet speed at speedtest.utah.gov)	0.00%	0
TOTAL		3

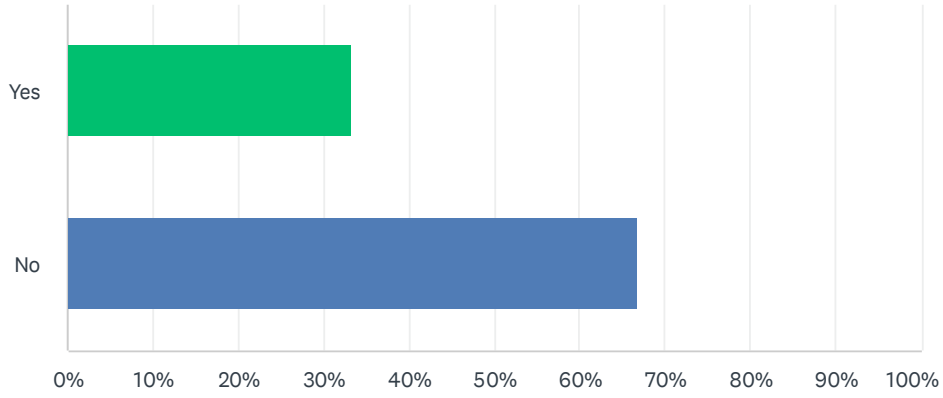
Q6 Which company do you use for internet? (For example, Emery Telecom, Frontier, River Canyon Wireless, Starlink, CenturyLink, etc.)

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	Choice woreless	5/30/2023 6:19 PM
2	Starlink	5/15/2023 12:21 PM
3	At&t	5/1/2023 2:16 PM

Q7 Does your internet bill include other services such as phone, TV, or premium content?

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	33.33%	1
No	66.67%	2
TOTAL		3

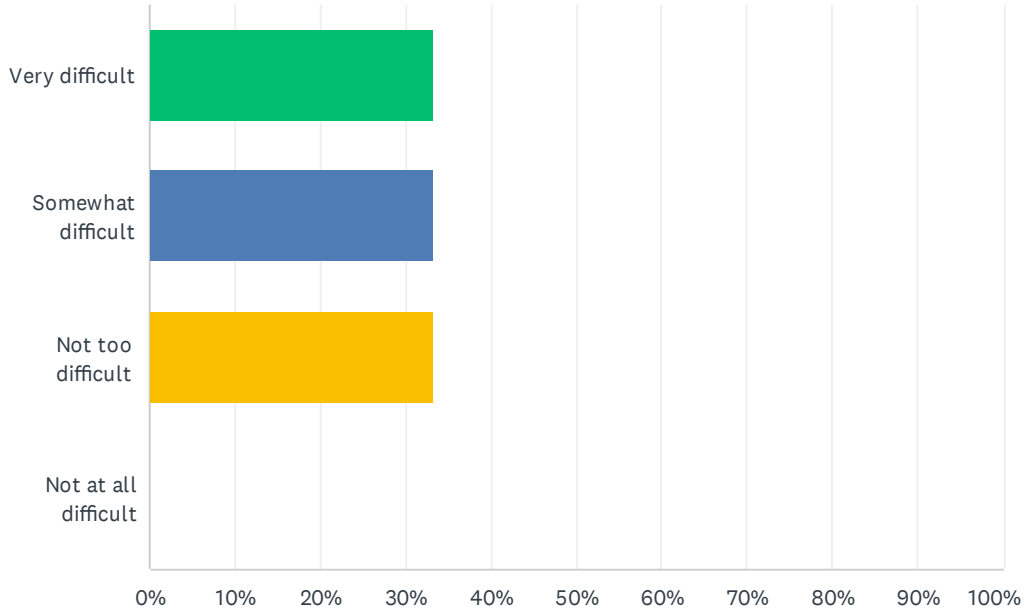
Q8 What is the monthly charge for your internet service excluding the costs of other services or bundle options? Write "Unknown" if unknown.

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	79	5/30/2023 6:19 PM
2	90.00	5/15/2023 12:21 PM
3	$50	5/1/2023 2:16 PM

Q9 How difficult, if at all, is it for you to fit your monthly internet bill into your household's budget?

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very difficult	33.33%	1
Somewhat difficult	33.33%	1
Not too difficult	33.33%	1
Not at all difficult	0.00%	0
TOTAL		3

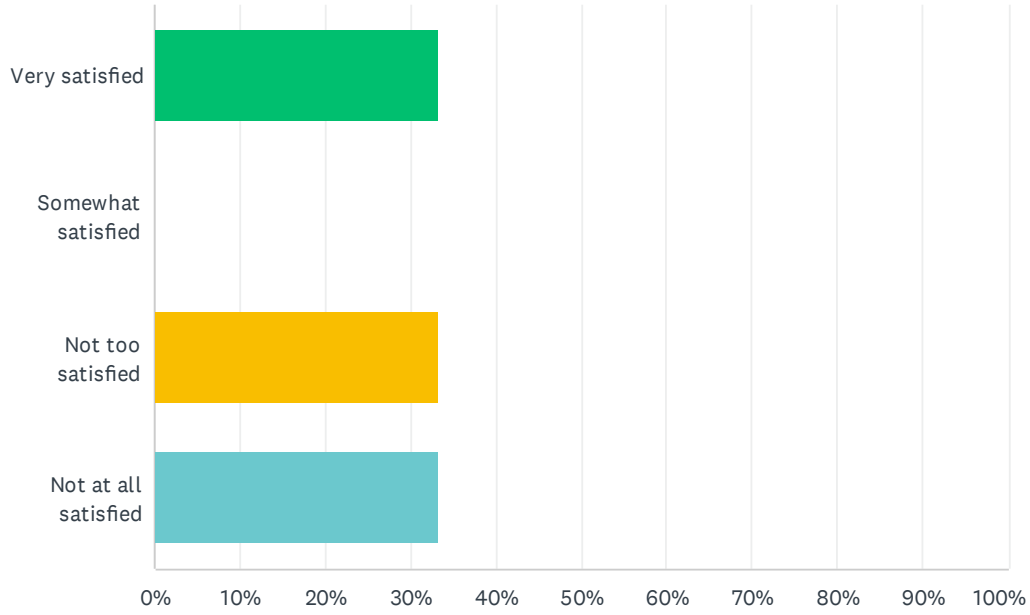
Q10 At what monthly price would you consider a home broadband subscription to be too expensive to consider?

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	25	5/30/2023 6:19 PM
2	90.00	5/15/2023 12:21 PM
3	$100	5/1/2023 2:16 PM

Q11 How satisfied, if at all, are you with the quality of your home internet connection for doing the online activities that are important to you, such as taking classes, doing telework, or using video or streaming applications?

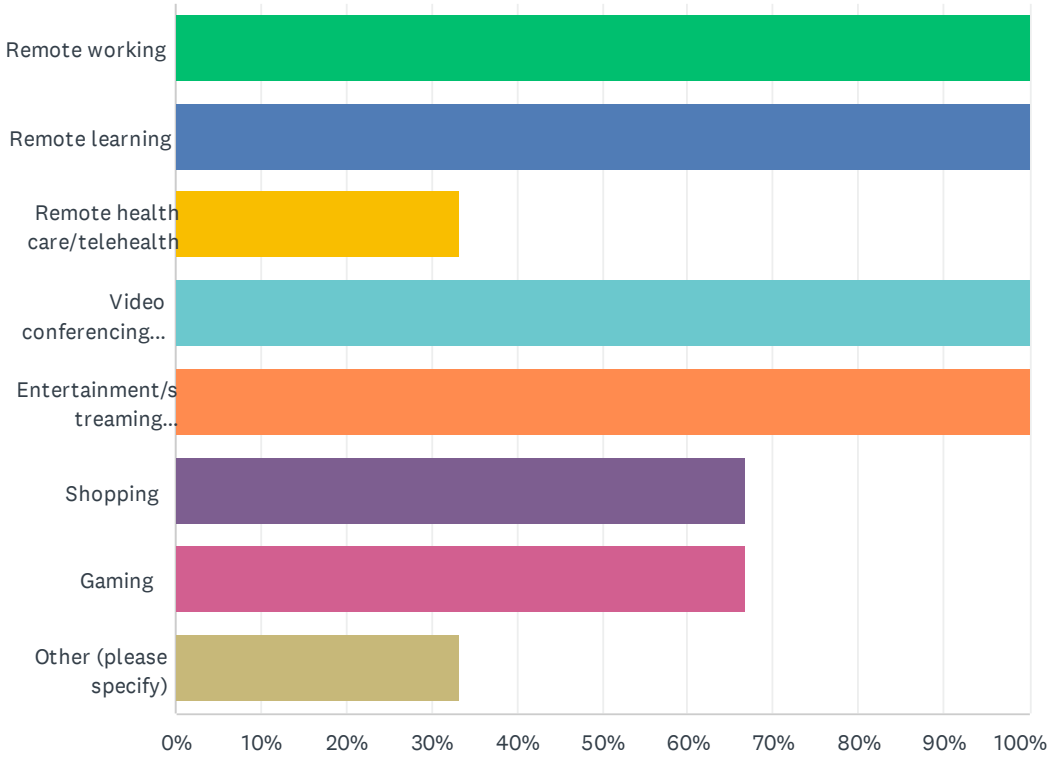
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very satisfied	33.33%	1
Somewhat satisfied	0.00%	0
Not too satisfied	33.33%	1
Not at all satisfied	33.33%	1
TOTAL		3

Q12 What do you use the internet for? Select all that apply.

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Remote working	100.00%	3
Remote learning	100.00%	3
Remote health care/telehealth	33.33%	1
Video conferencing/chatting	100.00%	3
Entertainment/streaming services	100.00%	3
Shopping	66.67%	2
Gaming	66.67%	2
Other (please specify)	33.33%	1
Total Respondents: 3		

#	OTHER (PLEASE SPECIFY)	DATE
1	Tax preparation	5/15/2023 12:21 PM

Q13 Can you provide more details about what is preventing you from accessing the internet at your household? Select all that apply.

Answered: 0 Skipped: 3

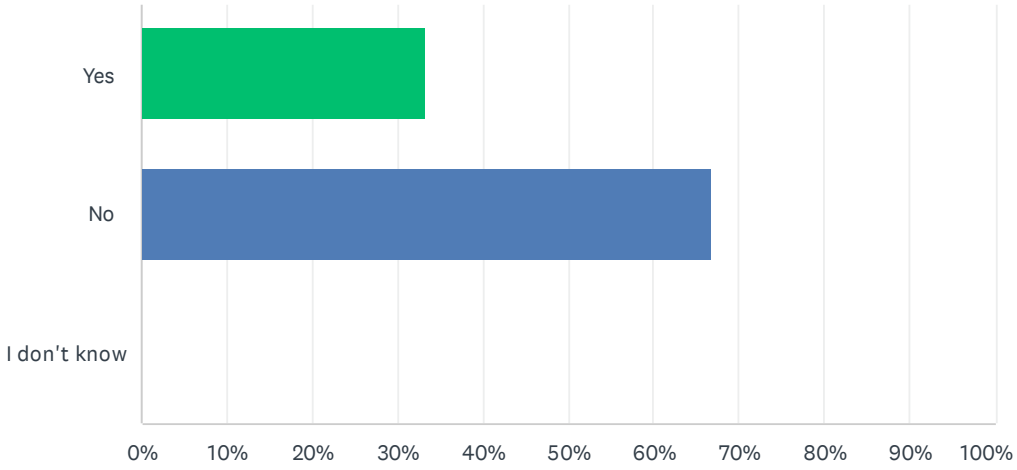
⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
Initial connection fees are too expensive	0.00%	0
Monthly charges are too expensive	0.00%	0
I do not have a computer or tablet to use	0.00%	0
I do not know how to use a computer or tablet	0.00%	0
I do not know how to get internet service	0.00%	0
I do not need it/am not interested in it	0.00%	0
I have physical limitations	0.00%	0
I am worried about privacy and others getting my information	0.00%	0
An internet connection isn't available in my area	0.00%	0
I access the internet at a public internet source, such as a library or a community center	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 0		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q14 Do you have a tablet device you can use to access the internet at home?

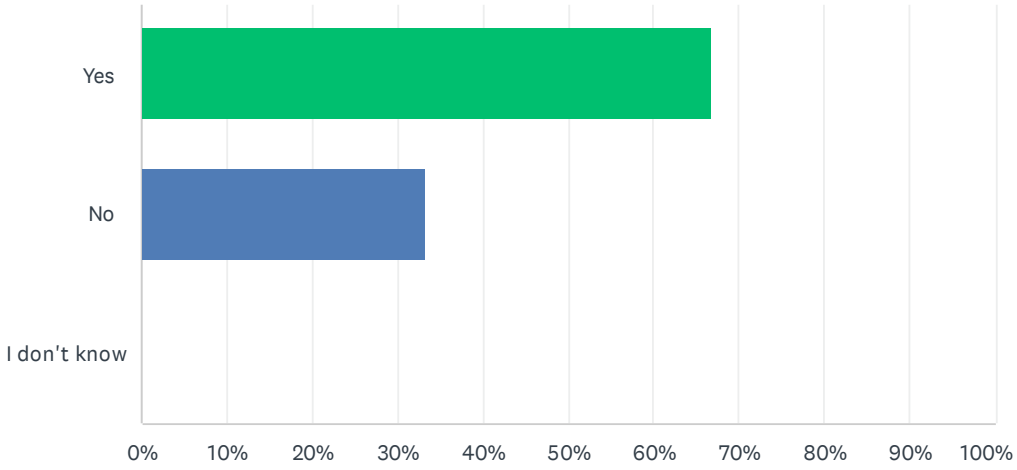
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	33.33%	1
No	66.67%	2
I don't know	0.00%	0
TOTAL		3

Q15 Do you have a desktop or laptop computer you can use to access the internet at home?

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	66.67%	2
No	33.33%	1
I don't know	0.00%	0
TOTAL		3

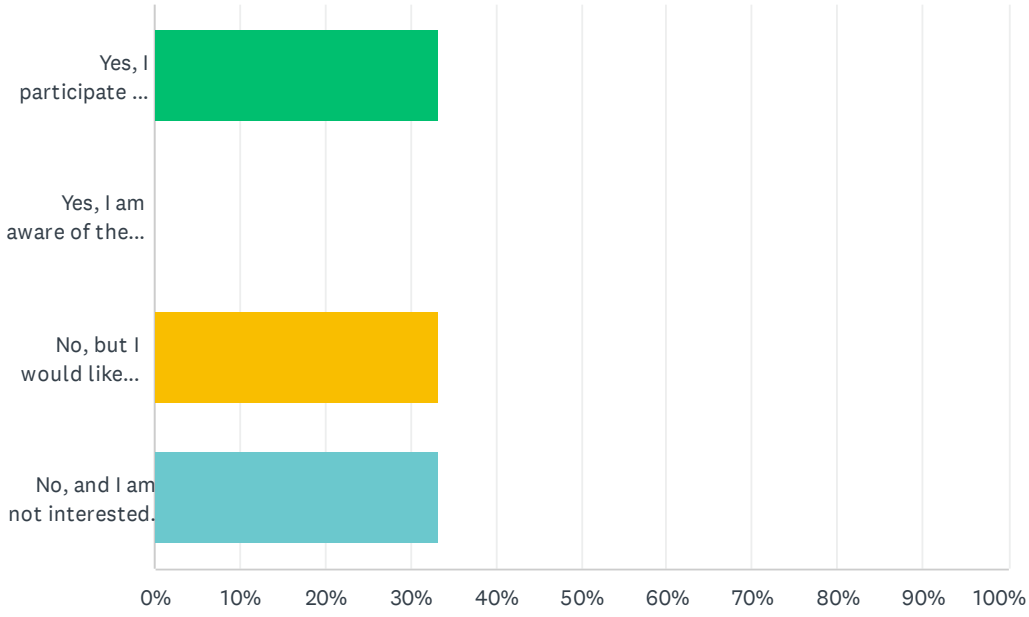
Q16 Please share how a high-speed internet connection/access to connected devices improves or would improve your quality of life.

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	Make working from home and school learning a lot easier.	5/30/2023 6:20 PM
2	unnecessary travels, convenient online services, cost effective, etc	5/15/2023 12:22 PM
3	I could be able to conduct lectures from home.	5/1/2023 2:17 PM

Q17 Are you aware of the Affordable Connectivity Program, which provides a $30 monthly discount for internet to low-income households living off the Reservation or a $75 monthly discount for eligible households on Tribal lands?

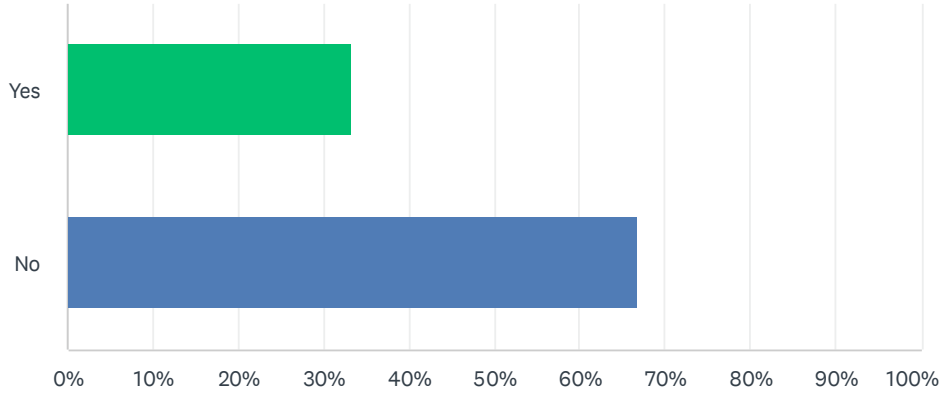
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes, I participate in the ACP.	33.33%	1
Yes, I am aware of the ACP, but do not participate in it or am not eligible.	0.00%	0
No, but I would like information to learn if my household qualifies (Click here to learn more about the enhanced tribal benefit).	33.33%	1
No, and I am not interested.	33.33%	1
TOTAL		3

Q18 Do you own or manage a business?

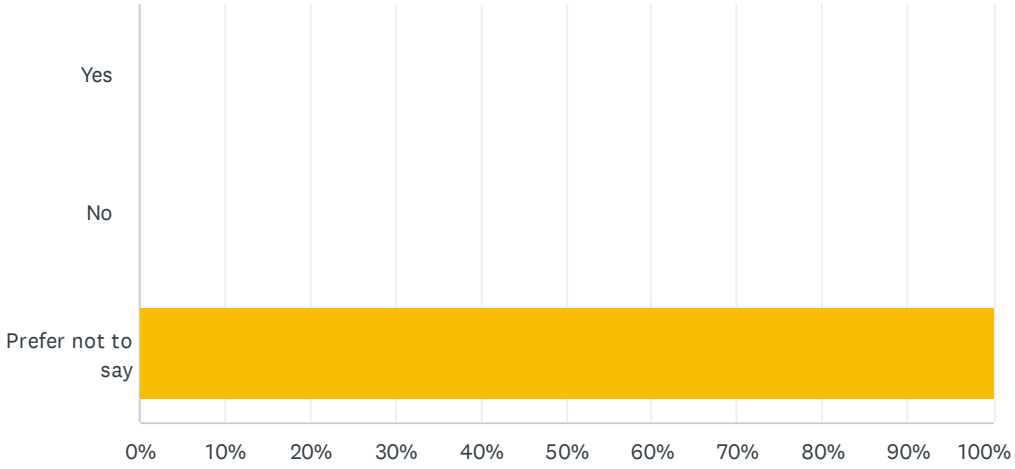
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	33.33%	1
No	66.67%	2
TOTAL		3

Q19 Is your business located at your primary residence?

Answered: 1 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	0.00%	0
Prefer not to say	100.00%	1
TOTAL		1

Q20 What is your business address? (Optional)

Answered: 0 Skipped: 3

ANSWER CHOICES	RESPONSES	
Name	0.00%	0
Company	0.00%	0
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	0.00%	0
Phone Number	0.00%	0

#	NAME	DATE
	There are no responses.	

#	COMPANY	DATE
	There are no responses.	

#	ADDRESS	DATE
	There are no responses.	

#	ADDRESS 2	DATE
	There are no responses.	

#	CITY/TOWN	DATE
	There are no responses.	

#	STATE/PROVINCE	DATE
	There are no responses.	

#	ZIP/POSTAL CODE	DATE
	There are no responses.	

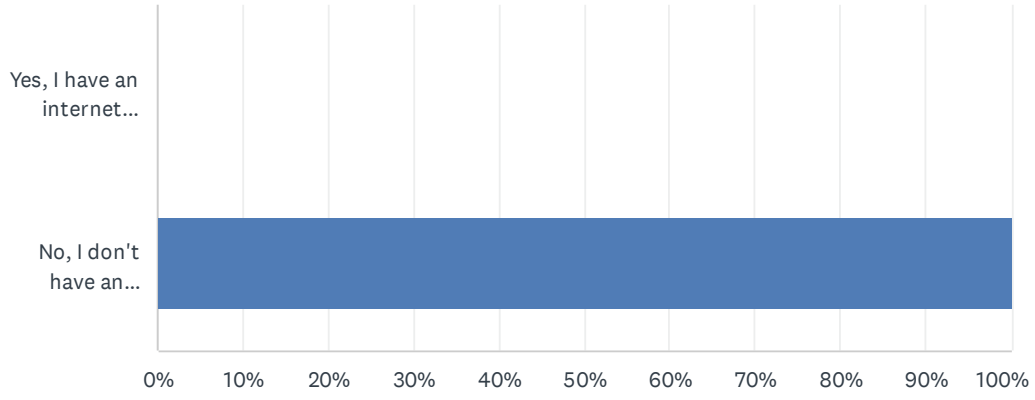
#	COUNTRY	DATE
	There are no responses.	

#	EMAIL ADDRESS	DATE
	There are no responses.	

#	PHONE NUMBER	DATE
	There are no responses.	

Q21 Do you have an internet connection at the business you own or manage?

Answered: 1 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes, I have an internet connection at my business	0.00%	0
No, I don't have an internet connection at my business	100.00%	1
TOTAL		1

Q22 What kind of internet connection do you have? (Select all that apply)

Answered: 0 Skipped: 3

⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
Cable or digital subscriber line (DSL- telephone line)	0.00%	0
Wireless	0.00%	0
Fiber optics	0.00%	0
Satellite or mobile	0.00%	0
I do not know	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 0		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q23 What speed is your business internet service (download speed)? (Megabits per second = Mbps)

Answered: 0 Skipped: 3

⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
10 Mbps or less	0.00%	0
Up to 25 Mbps	0.00%	0
Up to 100 Mbps	0.00%	0
Up to 1 Gigabit	0.00%	0
I do not know (you can test your internet speed at speedtest.utah.gov)	0.00%	0
TOTAL		0

Q24 Which company do you use for business internet? (For example, Emery Telecom, Frontier, River Canyon Wireless, Starlink, CenturyLink, etc.)

Answered: 0 Skipped: 3

#	RESPONSES	DATE
	There are no responses.	

Q25 Does your business internet bill include other services, such as phone, TV, or premium content?

Answered: 0 Skipped: 3

⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	0.00%	0
TOTAL		0

Q26 What is the monthly charge for your business internet service excluding the costs of other services or bundle options? Write "Unknown" if unknown.

Answered: 0 Skipped: 3

#	RESPONSES	DATE
	There are no responses.	

Q27 What do you typically use the internet for at your business? Select all that apply.

Answered: 0 Skipped: 3

⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
Banking/online invoicing/payment processing/payroll	0.00%	0
Communication (VoIP phone system, email)	0.00%	0
Off-site backup storage	0.00%	0
Office productivity (Video conferencing, Slack, Microsoft Teams)	0.00%	0
Cloud Storage	0.00%	0
Marketing/Social Media/Market Research	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 0		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q28 Has the speed or reliability of your internet service affected your business?

Answered: 0 Skipped: 3

⚠ No matching responses.

ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	0.00%	0
TOTAL		0

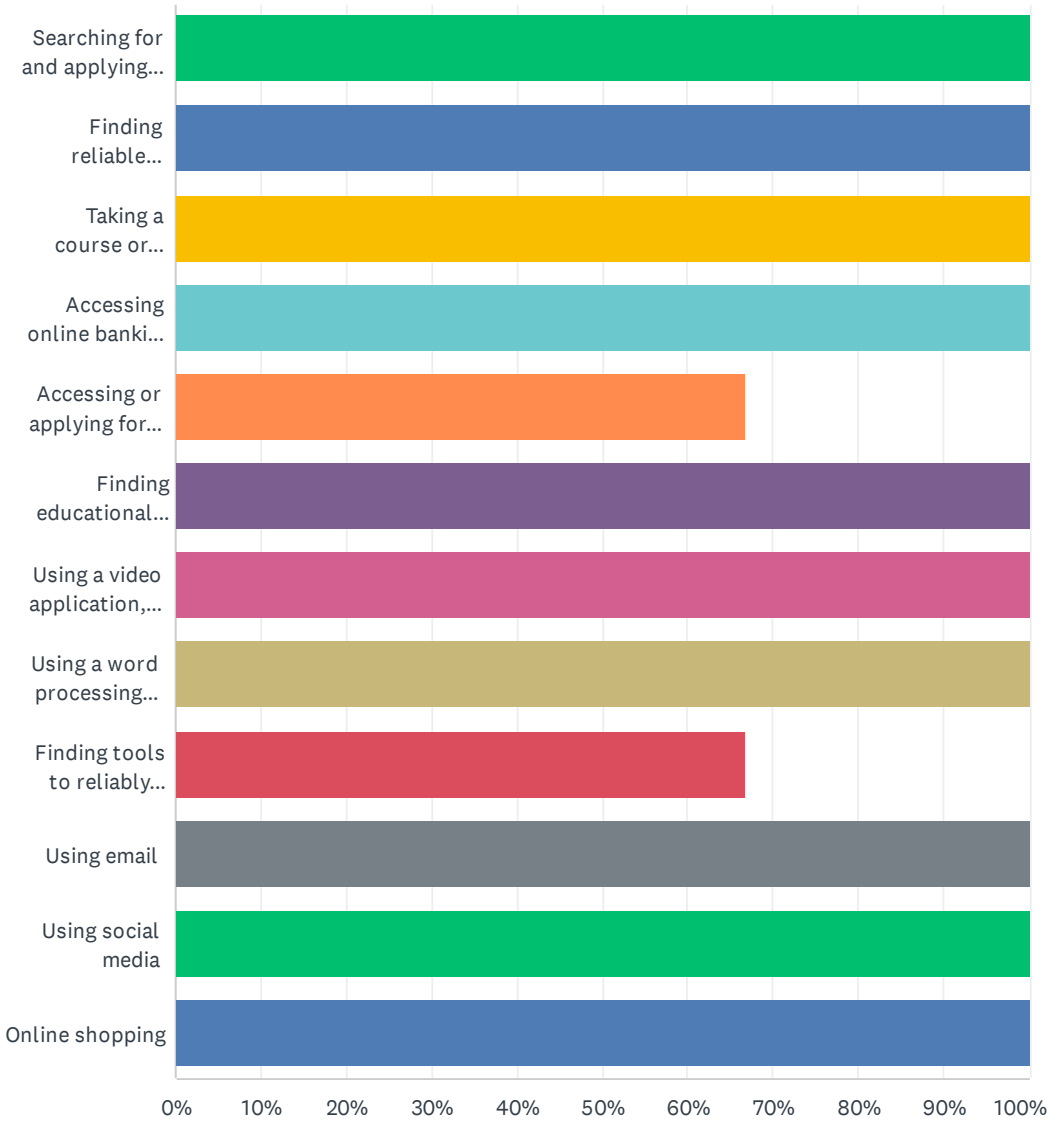
Q29 Please describe how internet reliability - or lack of internet connection - has affected your business.

Answered: 1 Skipped: 2

#	RESPONSES	DATE
1	We tried choice wireless. It was very slow and didn't connect right. Always was very slow when it did connect and would cut off all the time and had to restart modem all the time.	5/30/2023 6:22 PM

Q30 Please check each task below that you feel confident completing using the internet.

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Searching for and applying for jobs, including creating or submitting a resume	100.00%	3
Finding reliable information about a health or medical condition	100.00%	3
Taking a course or training materials to improve your job skills	100.00%	3
Accessing online banking or financial services	100.00%	3
Accessing or applying for government services	66.67%	2
Finding educational content and information	100.00%	3
Using a video application, such as Zoom, for work, school or telehealth	100.00%	3
Using a word processing application, such as Google Docs or Microsoft Word, to create a document	100.00%	3
Finding tools to reliably protect the privacy of your personal data	66.67%	2
Using email	100.00%	3
Using social media	100.00%	3
Online shopping	100.00%	3
Total Respondents: 3		

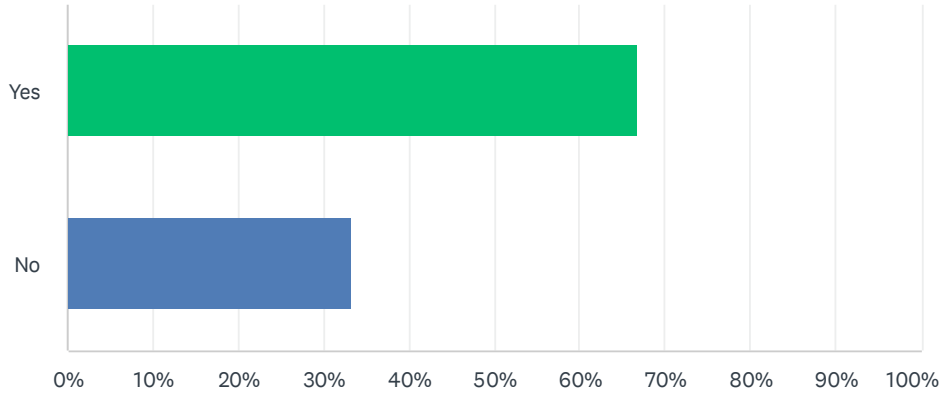
Q31 Do you have anything else to share about digital skills and comfort with internet use within your area?

Answered: 2 Skipped: 1

#	RESPONSES	DATE
1	most of the area has dead spots, we need consistent wifi or roaming features so we have no dead spots. Terrain issues. satellite is better for terrain issues.	5/15/2023 12:25 PM
2	N/A	5/1/2023 2:18 PM

Q32 Does your household have enough computer devices available to meet the needs of those living in your household?

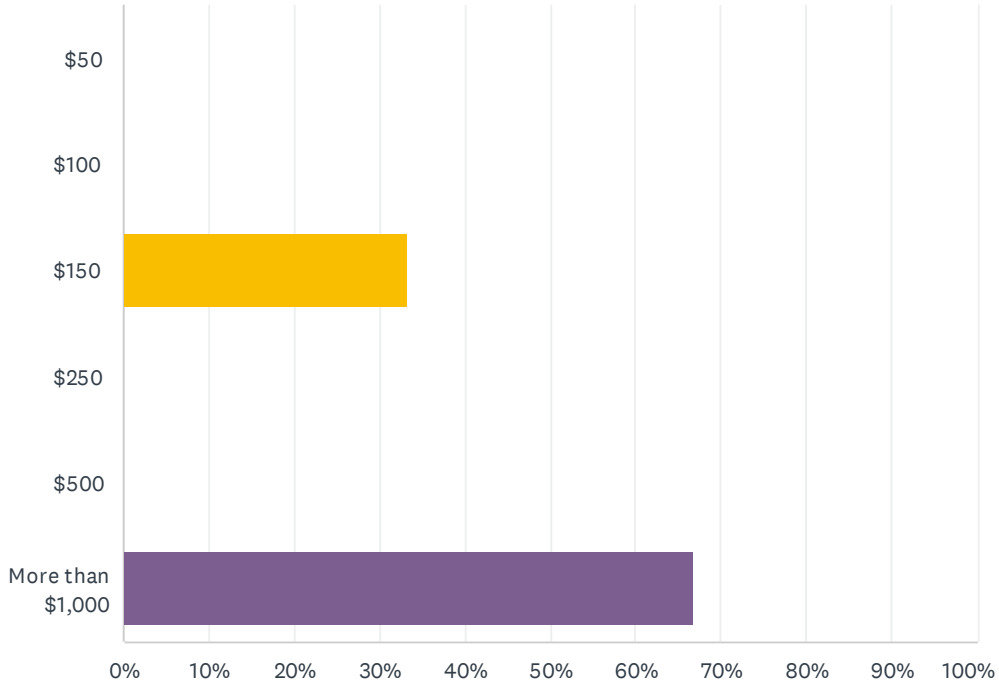
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	66.67%	2
No	33.33%	1
TOTAL		3

Q33 If you were considering purchasing a desktop or laptop computer, what would you consider to be too expensive?

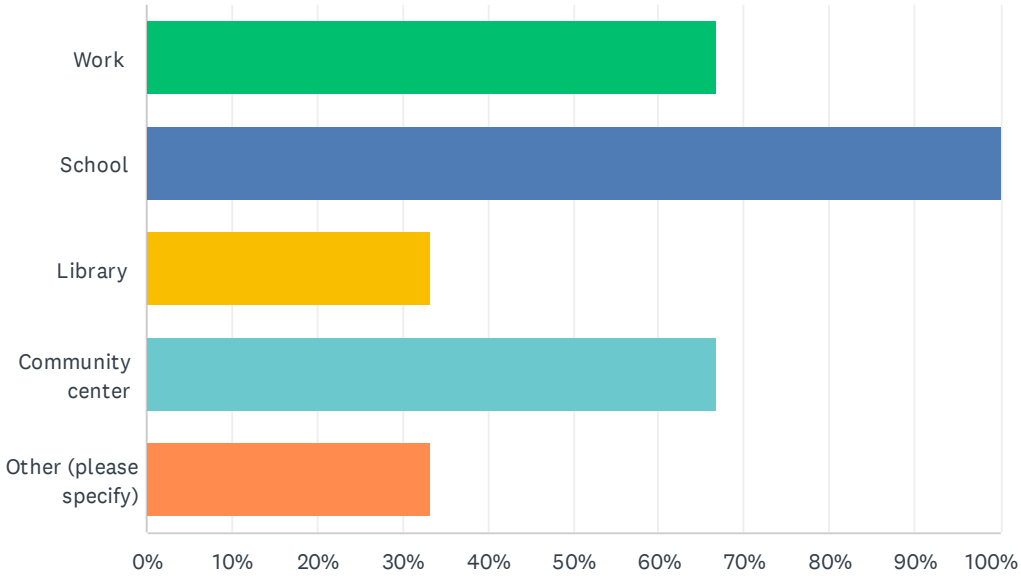
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
$50	0.00%	0
$100	0.00%	0
$150	33.33%	1
$250	0.00%	0
$500	0.00%	0
More than $1,000	66.67%	2
TOTAL		3

Q34 Select the other ways your community accesses devices if they do not own them. Select all that apply.

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Work	66.67%	2
School	100.00%	3
Library	33.33%	1
Community center	66.67%	2
Other (please specify)	33.33%	1
Total Respondents: 3		

#	OTHER (PLEASE SPECIFY)	DATE
1	Other people and clinic	5/30/2023 6:25 PM

Q35 What barriers make it difficult for individuals in your area to access device(s)? (e.g., affordability, supply issues).

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	Affordability and finding work to afford internet. Hard to find jobs around here. Most jobs are seasonal.	5/30/2023 6:25 PM
2	cost and updated devices...	5/15/2023 12:27 PM
3	Cost	5/1/2023 2:20 PM

Q36 What would make it easier for individuals in your area to have access to device(s)? (For example, lower costs, subsidizing programs for device purchases, etc.)

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	Open areas that have internet and people not being mean when you try to connect to the internet.	5/30/2023 6:25 PM
2	subsidizing programs for devices and for upgrades	5/15/2023 12:27 PM
3	Low cost	5/1/2023 2:20 PM

Q37 What type of technical support do you think would be beneficial?

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	People who are not mean and people that you can understand. It’s hard to understand Indians from India.	5/30/2023 6:25 PM
2	IT services availability at chapter/community centers (libraries)	5/15/2023 12:27 PM
3	Fiber optic high speed internet	5/1/2023 2:20 PM

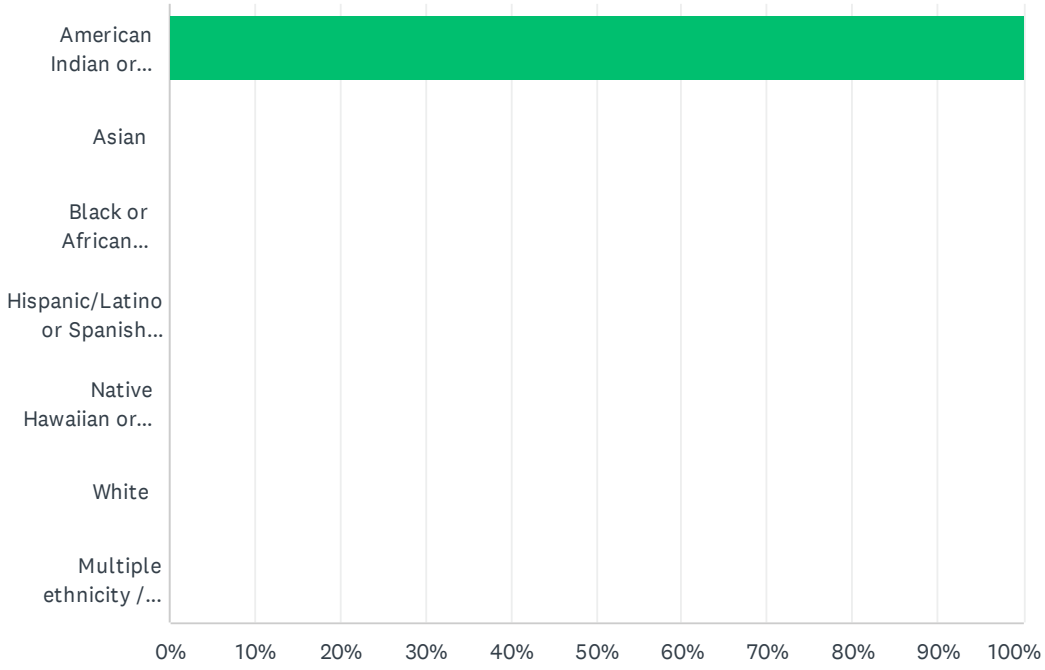
Q38 Is there anything else you'd like to share about devices or technical support in your area?

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	Home visit to teach how to use stuff and hands on training to use stuff for the internet devices	5/30/2023 6:25 PM
2	Provide online trainings for IT services and upgrades	5/15/2023 12:27 PM
3	We need high speed fiber optic internet	5/1/2023 2:20 PM

Q39 What is your race/ethnicity? Select all that apply.

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
American Indian or Alaska Native Tribe/Band	100.00%	3
Asian	0.00%	0
Black or African American	0.00%	0
Hispanic/Latino or Spanish Origin	0.00%	0
Native Hawaiian or Other Pacific Islander	0.00%	0
White	0.00%	0
Multiple ethnicity / Other (please specify)	0.00%	0
TOTAL		3

#	MULTIPLE ETHNICITY / OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

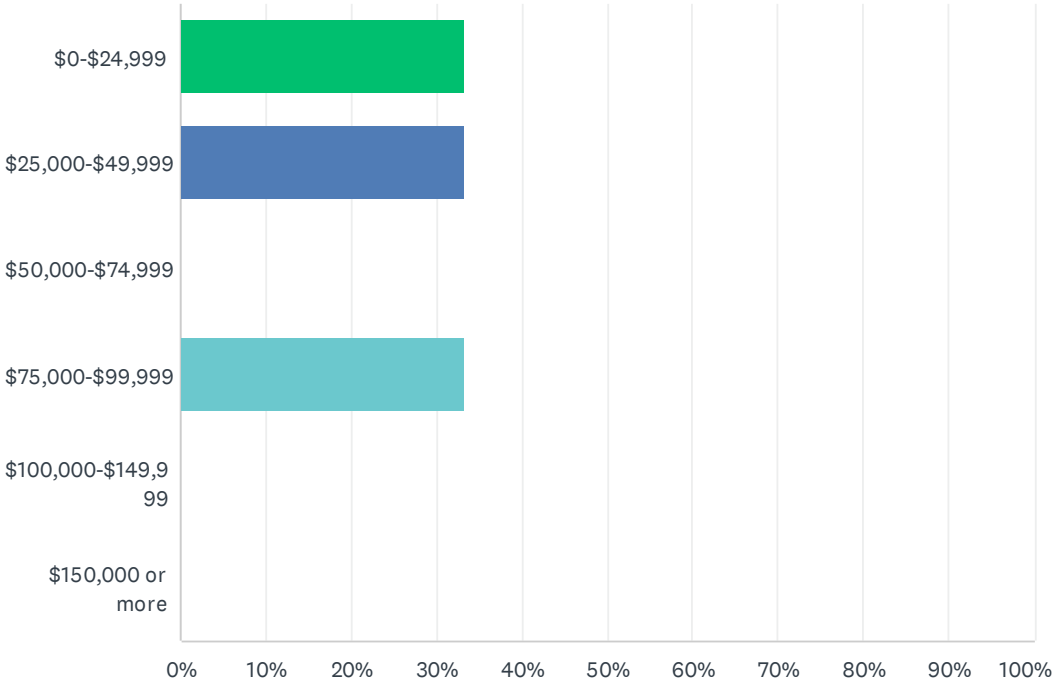
Q40 What language is spoken most often in your household?

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	English	5/30/2023 6:26 PM
2	Navajo & English	5/15/2023 12:28 PM
3	English	5/1/2023 2:21 PM

Q41 What is your household's gross annual income?

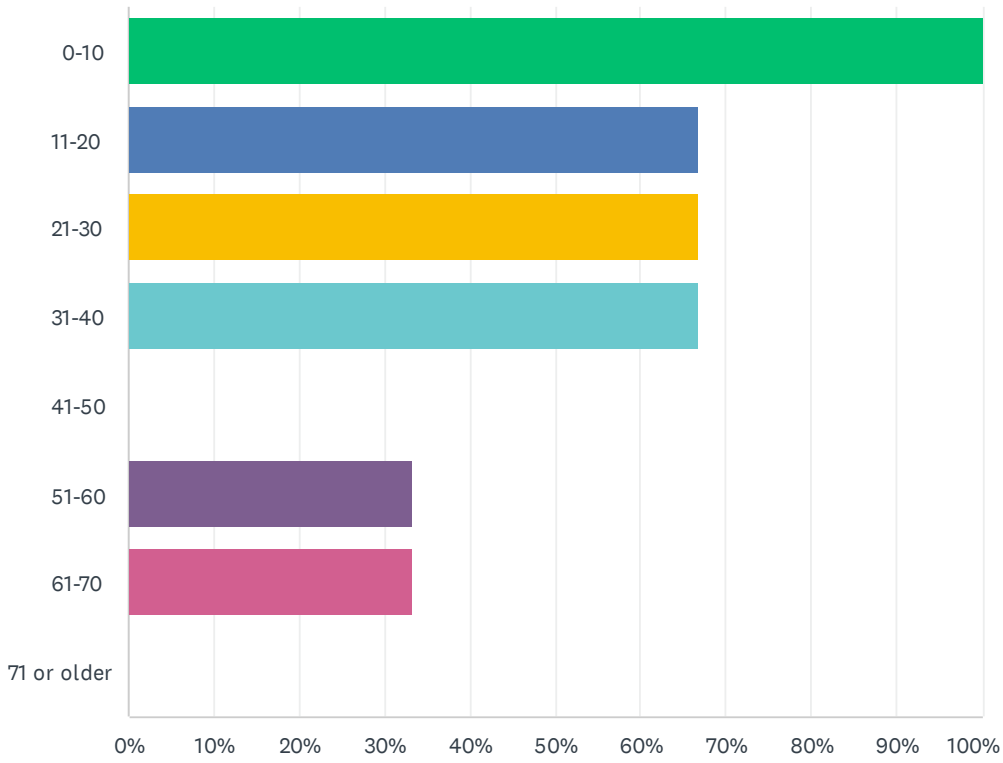
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
$0-$24,999	33.33%	1
$25,000-$49,999	33.33%	1
$50,000-$74,999	0.00%	0
$75,000-$99,999	33.33%	1
$100,000-$149,999	0.00%	0
$150,000 or more	0.00%	0
TOTAL		3

Q42 Which age groups live in your home? Select all that apply.

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
0-10	100.00%	3
11-20	66.67%	2
21-30	66.67%	2
31-40	66.67%	2
41-50	0.00%	0
51-60	33.33%	1
61-70	33.33%	1
71 or older	0.00%	0
Total Respondents: 3		

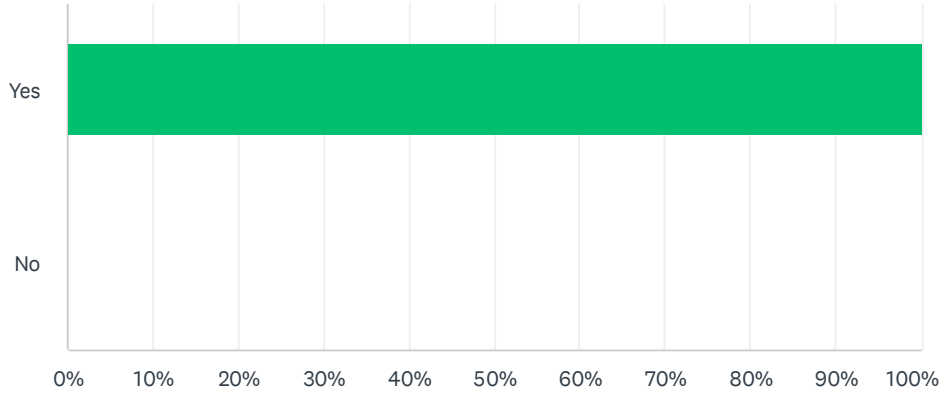
Q43 How many generations live in your household?

Answered: 3 Skipped: 0

#	RESPONSES	DATE
1	3	5/30/2023 6:26 PM
2	3	5/15/2023 12:28 PM
3	3	5/1/2023 2:21 PM

Q44 Do students live at your household?

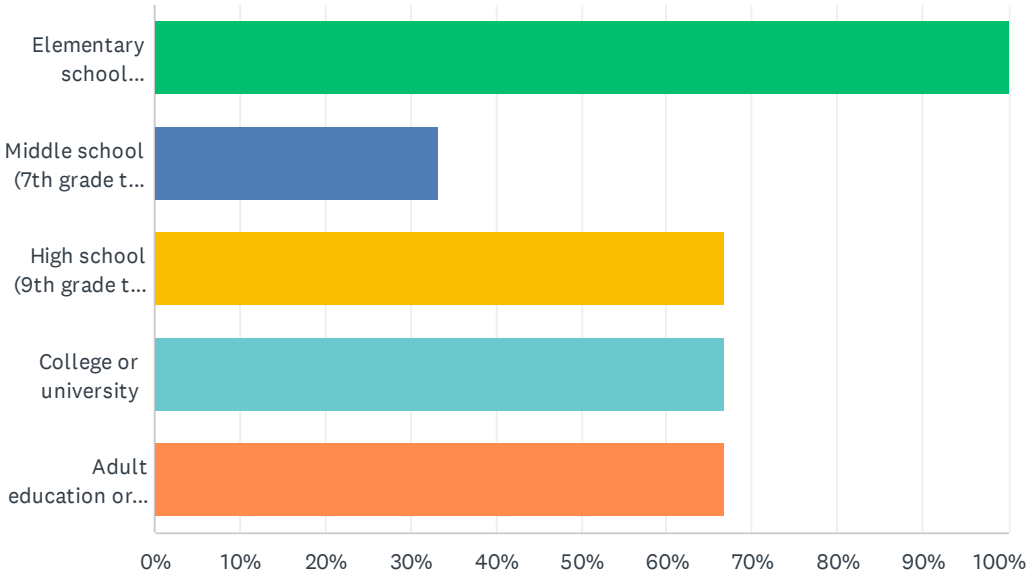
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	100.00%	3
No	0.00%	0
TOTAL		3

Q45 What is the education level of the students who live in your household? Select all that apply.

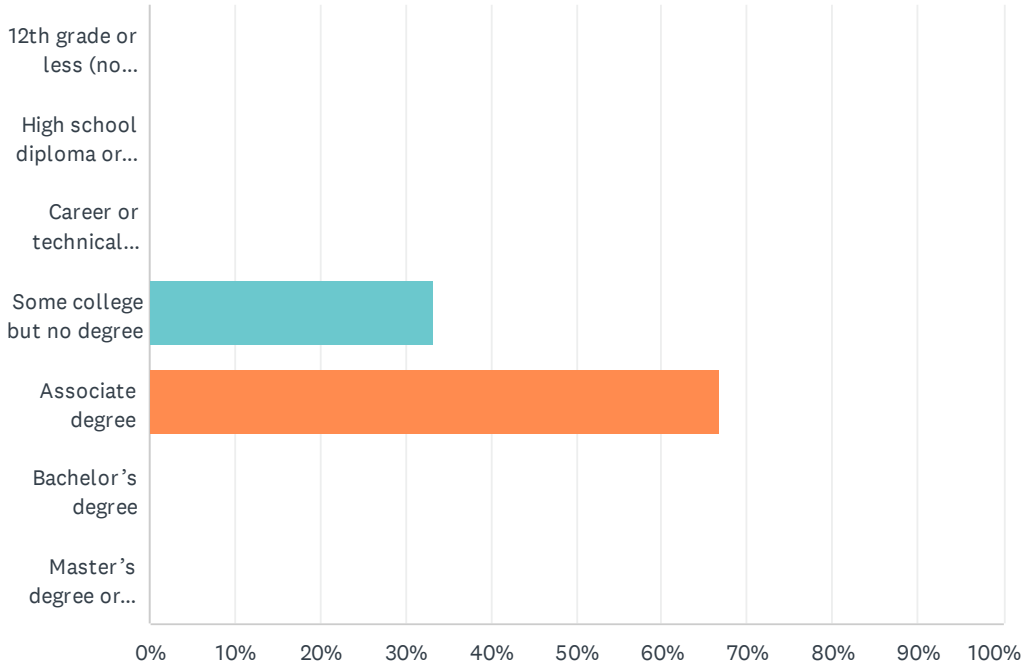
Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
Elementary school (kindergarten to 6th grade)	100.00%	3
Middle school (7th grade to 9th grade)	33.33%	1
High school (9th grade to 12th grade)	66.67%	2
College or university	66.67%	2
Adult education or technical training	66.67%	2
Total Respondents: 3		

Q46 What is the highest level of education completed by someone in your household?

Answered: 3 Skipped: 0



ANSWER CHOICES	RESPONSES	
12th grade or less (no diploma)	0.00%	0
High school diploma or equivalent (GED)	0.00%	0
Career or technical education certificate	0.00%	0
Some college but no degree	33.33%	1
Associate degree	66.67%	2
Bachelor's degree	0.00%	0
Master's degree or doctorate	0.00%	0
TOTAL		3

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Resident Response #	Date			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.						
		County	City/Town	Response	Response	Response	Response	Open-Ended Response	Open-Ended Response	Response	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	Gaming
1	6/1/2023 15:40	San Juan County	Montezuma Creek	Own	Yes, I have an internet connection at my residence.	Satellite or mobile	Up to 100 Mbps	Starlink	$120	No	Remote working	Remote learning	Remote health care/telehealth	Video conferencing/chatting	Entertainment/streaming services	Shopping	
2	4/21/2023 18:39	San Juan County	Monticello	Own	Yes, I have an internet connection at my residence.												
3	4/20/2023 21:11	San Juan County	Blanding	Rent	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)	Emery Telecom	Unknown	No		Remote learning			Entertainment/streaming services		Gaming

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Resident 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?	What is your race/ethnicity? Select all that apply.	
	Other (please specify)	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)	Open-Ended Response	Open-Ended Response	Response	Response	Multiple ethnicity / Other (please specify)
1															No, and I am not interested.	White	
2																	
3															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.	White	

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Resident Response #	What language is spoken most often in your household?		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?
	Response	Other (please specify)	Response	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71 or older	Response	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	Response
1	English		$150,000 or more		11-20			41-50	51-60			Yes			High school (9th grade to 12th grade)			Master's degree or doctorate
2																		
3	English		$25,000-$49,999						51-60			No						Associate degree

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Community Leader Response #	Date	What areas or residents do you represent?	What organization do you represent?	Tell us about internet access and how it relates to the people you serve.					What barriers make it difficult for individuals in your area to access the internet? (e.g., affordability, knowledge, infrastructure).	What would make it easier for individuals in your area to access the internet? (e.g., lower costs, subsidizing programs for internet service, educational programming for digital skills, infrastructure improvements).	Do you have anything else to share about internet access in your area?	Tell us about the access to devices for the people you serve.	Select the ways your community accesses devices if they do not own them. Select all that apply.		
		Open-Ended Response	Open-Ended Response	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 other than those that currently are available.	Some people can't afford the internet option(s) available to them.	Some people do not want the internet.	Open-Ended Response	Open-Ended Response	Open-Ended Response	Response	Work	School	Library
1	11/30/2022 16:31	San Juan County	USU Extension Create Better Health	Some people who want internet access have it.		Some people want internet provider options other than those that currently are available.	Some people can't afford the internet option(s) available to them.		affordability, infrastructure	Lower costs,infrastructure improvements, subsidizing programs	We have it at a high cost and it is not always reliable, I have it at my home and it goes out often because of storms and other things. I use my internet for work often	Most have a tablet or smartphone at home.	Work	School	Library

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Community Leader Response #				What barriers make it difficult for individuals in your area to access device(s)? (e.g., affordability, supply issues).	What would make it easier for individuals in your area to access to device(s)? (e.g., lower costs, subsidizing programs for device purchases).	Is there anything else you'd like to share about devices in your area?
	Community Center	Our organization provides devices to residents	Other (please specify)	Open-Ended Response	Open-Ended Response	Open-Ended Response
1				Being able to afford them and supply	Lower cost and subsidizing programs	They are necessary for work and school and reliable affordable internet is a must

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Elected Official Response #	Date	Are you a local or state representative?		Which municipality, county or area do you represent?	Do you feel knowledgeable about the current state of broadband internet coverage for the area you represent?	What tools and/or resources could Connecting Utah provide to help you learn about internet coverage in your area?		Has the area you represent benefited from past efforts to expand internet access?	What were those efforts?	Tell us about internet access for the people you serve. Select all that apply.						What barriers make it difficult for individuals in your area to access the internet? (e.g., affordability, infrastructure).
		Response	County	Open-Ended Response	Response	Response	Other (please specify)	Response	Open-Ended Response	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 do not want the internet.	Other (please specify)	Open-Ended Response
1	3/17/2023 12:34	Tribal representative	San Juan County	Teec Nos Pos SE San Juan County	Yes	Other (please specify)	All of the above	No		Some people who want internet access have it.	Some people want internet access but have no internet providers available.	Some people want internet service provider options other than those that are currently available.	Some people can't afford the internet option(s) available to them.			Availability, and perhaps some users are fix-income families. Dependability and fixed rates are good.

Appendix A. UBC Statewide Survey: San Juan County Responses

UBC Statewide Survey Elected Official Response #	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 the area(s) you represent 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 area?	Tell us how the people you serve access the internet if devices are not available at their residences. Select all that apply.					What barriers make it difficult for individuals in your area to access device(s)? (e.g., affordability, supply issues).	What would make it easier for individuals in your area to access device(s)? (e.g., lower costs, subsidizing programs).	Do you feel like your area(s) 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 area?
	Open-Ended Response	Response	Open-Ended Response	Open-Ended Response	Open-Ended Response	Work	School	Library	Community Center	Other (please specify)	Open-Ended Response	Open-Ended Response	Response	Open-Ended Response
1	lower cost, availability, and yes infrastructure improvements.		Yes, NTUA Choice, Cellular One	Vaguely - for my community not as a whole	Question 10 Answer: Yes and no	Work	School	Library	Community Center	Senior Citizens	Availability and mission statements for internet providers.	Lower costs, subsidized programs - additional funding would help	No	Needs services for a levels of our community on the Navajo Nation.

Appendix B: Tribal Chapter Discussions

The following pages include notes from stakeholder meetings and workshops held with the tribes in San Juan County, gathered as part of the local broadband planning outreach.

Red Mesa Chapter Site Visit | May 9, 2023

Attendees

- Herman Farley, Red Mesa Chapter President
- Martha Saggboy, Mexican Water President
- Mack McDonald, San Juan County CAO
- Elaine Gizler, San Juan County Economic Development Director
- Rebecca Dilg (virtual), UBC Director
- Francine Pacheco, Public Engagement, Horrocks
- Thaddeus Yazzie, Tribal Liaison, Horrocks

Notes

- Teec - Grazing permits had dispute on issues for broadband
- Resolution modification for broadband line
- We need to know where the line is coming from, can be tapped off from to serve Red Mesa
- We are limited in access, especially Utah portion. Alw very tail end of NN services - NM AZ always first
- ROW have been established but only for hospital and/or school - we need access on Utah portion and for all residents. NTUA didn't bring it up (middle mile) need last mile! Need to have another comm. Meeting. To discuss last mile.
- Hughes Net sat - $200 month per GB
- Starlink sat - $120 unlimited
- Satellite drops a lot - no consistency
- Choice Wireless
- No cell phone towers
- When IIJA gives money, NTUA is the one holding the funds.
- No landline - have satellite services only and very limited. Have caps on data - run trhough data fast. Only access that is sufficient is for the school. Microwave.
- MW - have collected data via phone
- Like the big picture - we need more than just community planning. Need to plan larger
- Applied for seed money for BB
- Want three phase, but couldn’t' get because of lack of buildings
- 1.6m finally built this year, 3 phase line finally built in 2022
- Preliminary engineering
- Download speed is good - upload is bad
- Reached out donors - Elon Must sent 76 packs
- Two utility line NTUA and Rocky Mountain power

- NTUA took over Rocky Mountain power

- Has GIS data - same consultant for land use plan.
- CLUP prelim eng. For hydro pipe line

- Want to hit on public health telemedicine

- Permitting is the biggest hurdle, not funding.
- Francine - From previous CLUP experience, permitting does not run with land such as a covenant and can be overridden, need to help chapters navigate process.
- Install infrastructure (MW) but never activated
- Existig Power poles are not tall enough to support
- How is this going to be mapped out - who is going to do what
- RM 95% Utah/5% AZ
- N35 - nav route from AZ to mont creek
- MW - look into Emery, redundancy
- NN already has plans to expend funds
- Tico Charlie may have the NTUA plans
- MW - clup c mtg next 5/17
- In order to bb chatpers need it in the clup c to get NN fund at federal

- If not up for update, need amendment

- RM - barrier - no permenant employee community coordinator or AMS. Only AMS has been advertised
- Section 9001-9005
- Digital access - need staff and managerial to manage full time and also understand
- USDA - funding for technical assistance that can be used for hiring
- NN takes 15% of external funding - maybe SJC apply on behalf of NN
- If gets funding, need equitable distribution and not equal. MW ahead of others , not RM to make sure everyone gets what they need
- John Champagne - partnering with NTUA CommNet purchased Sacred Wind
- (Navajo Mountain has Emery Telecomm and has Middle Mile - need to focus on Last Mile)

- ET is having hard time acquiring ROW, stuck at bridge at Mexican Hat

- Resources committee has authority to do eminant domain
- Permits do not run with land - issued by BIA and BIA does not own land, NN does
- NEPA has not been done on routes
- Burial sites, sacred sites, endangered species?
- N35 has ROW all the way down

Aneth Chapter Site Visit | May 10-11, 2023

Day 1 Attendees

- Wesley Jones, Aneth Chapter President
- Rebecca Dilg (virtual), UBC Director
- Elaine Gizler (virtual), San Juan County Economic Development Director
- Francine Pacheco, Public Engagement, Horrocks
- Thaddeus Yazzie, Tribal Liaison, Horrocks
- Chuck Howe (virtual), Tribal Liaison, Horrocks

Day 2 Attendees

- Wesley Jones, Aneth Chapter President
- Elmerson Phillips, Aneth Chapter Vice-President
- Darrell Williams, Aneth Chapter Manager
- Francine Pacheco, Public Engagement, Horrocks
- Thaddeus Yazzie, Tribal Liaison, Horrocks

Day 1 Notes

- RD - Federal funding - infrastructure
- Recognize NN is a sovereign nation

- WJ - chapter meeting on 5/16 need to have a presence
- Very beneficial to community, comm mbrs have expressed concern limited serv. No previous efforts.
- Was just introduced 5/2 at planning meeting to chapter.
- Very limited internet serv.
- Individual serv.
- No knowledge who the provider is out here.
- RD - John Champagne -- CommNet also works with NTUA
- Recently awarded erate funding, connect anchor institutions. This includes the Aneth Chapter house.
- Include in the chapter meeting.

- WJ - the more people, the better. Would prefer in person.

- RD - will reach out to Emery Telecomm, John Champagne to attend in person.

- 15-18 miles North
- McCraken mesa

- WJ - planning 24 acre development, will also be on the agenda for 5/16 @ 1:30

Day 2 Notes

- Cellular One
- AT&T

- Verizon - spotty
- Have NTUA but doesn't go beyond the chapter house

- Schools provide only for students - provide a PIN to log on

- Montezuma Creek may have fiber optic

- No middle mile?

- Hughes Net - very little service

- While meeting is going on - chapter president suggests set up table to solicit feedback from community

Teec Nos Pos Chapter Site Visit | May 11, 2023

Attendees

- Kenny Victor, Teec Nos Pos Chapter President
- Lucinda Tomchee, Teec Nos Pos Community Service Coordinator
- Mack McDonald, San Juan County CAO
- Elaine Gizler, San Juan County Economic Development Director
- Rebecca Dilg (virtual), UBC Director
- Francine Pacheco, Public Engagement, Horrocks
- Thaddeus Yazzie, Tribal Liaison, Horrocks
- Chuck Howe (virtual), Tribal Liaison, Horrocks

Notes

- KV
    - Chapter house has DSL
    - Other use may be hot spots, schools have small towers
    - Have not seen hot spots

- NN --> Resolution for ROW (time consuming) --> Resolution for cable, even to existing power lines (political agendas may also hinder passing of resolution)

MEETING NOTES

Date: June 15, 2023

Location: Red Mesa Chapter House

Attendees: Various

A coordination meeting conducted on behalf and in conjunction with San Juan County Utah officials as part of the Utah Broadband Center Subgrantee Plans was held on June 15, 2023, with various Navajo Chapter officials whose Chapters are located within the boundaries of San Juan County, Utah. The following are Thaddeus Yazzie's notes:

MEETING PURPOSE

Previously, Horrocks and San Juan County Utah (SJCU) officials met with Red Mesa and Mexican Water Chapter officials on Tuesday May 9, 2023, to discuss the Chapters' existing broadband infrastructure, broadband infrastructure needs, and if they had any knowledge of any broadband existing or proposed broadband infrastructure plans. Each of the Chapter had limited knowledge about whether there were any existing or proposed broadband plans in development, not only for their respective Chapters, but also for the Utah portion of the Navajo Nation. It was recommended that Horrocks and SJCU officials meet with the Navajo Tribal Utility Authority (NTUA), a tribally-owned enterprise that provides multi-utility services to the Navajo Nation, to discuss their broadband plans as they currently are the biggest broadband provider on the Navajo Nation. After coordination between Horrocks, SJCU, Red Mesa Chapter, and the NTUA, this meeting was coordinated with the intent to obtain information regarding NTUA's existing or proposed broadband plans.

ATTENDEES

Listed below are the meeting attendees:

- Herman Farley, President, Red Mesa Chapter
- Lydia Lee, Fiber Project Manager, NTUA (attended via telephone)
- Mack McDonald, Chief Administrative Officer, San Juan County Utah
- Elaine Gizler, Economic Development & Tourism Director, San Juan County Utah
- Sylvia Stubbs, Commission Vice Chair, San Juan County Utah Board of Commissioners
- Sarah Lee, President, Sweetwater Chapter
- Melissa Reese, Interim Chapter Manager, Mexican Water Chapter
- Corey Johnson, Owner, Interlinx Solution & Interested Community Member
- Francine Pacheco, Horrocks
- Thaddeus Yazzie, Horocks

TOPICS DISCUSSED

The following topics were discussed:

- Red Mesa Chapter provided the current plans NTUA as for extending their fiber optic line from Teec Nos Post to Red Mesa High School, Red Mesa Trading Post, and terminating at the existing tower behind Red Mesa High School via the *Teec Nos Post to Red Mesa Distribution Line (As-Built) with Fiber Optic Cable (Dated 9/14/2022)*. Based upon the information provided, NTUA should be installing a fiber optic line on their existing overhead utility infrastructure and will be amending the existing overhead utility right-of-way (ROW) agreements to include the fiber optic line. Currently, their project is in the ROW phase and NTUA anticipates a 2024 completion but that is dependent on the ROW phase.
- Upon completion of the aforementioned fiber optic line, NTUA plans to install 96-strand fiber optic cable and extend their fiber optic network to Mexican Water Chapter.
- There are plans to extend the fiber optic cable to Red Mesa Head Start which neighbors the Red Mesa Chapter House via the Navajo Nation E-Rate Program. Depending on what is planned and constructed, the dark fiber may be leased.
- Mexican Water Chapter passed a resolution to bring fiber from Arizona to Utah, but they also may review bringing in fiber from Aneth, Utah instead.
- Most of NTUA's planned fiber optic lines will be installed on their existing overhead utility infrastructure.
- Currently, NTUA is planning fiber optic line installation from Montezuma Creek, Utah to Aneth, Utah. Aneth Chapter House currently is served by a microwave network.
- It was mentioned that San Juan District has provided a microwave network to its residents during the COVID-19 pandemic but has since turned that network off, though the existing infrastructure remains.
- There appears to be a lack of qualified personnel which would be able to service network outages at the various Navajo Chapters if an internet network is installed. Most Chapters appear to rely on local personnel.
- Upon the conclusion of the meeting, a meeting was set up for June 22, 2023 at 10:00 AM at NTUA headquarters in Fort Defiance, Arizona between Horrocks via teleconference, SJCU officials, and NTUTA to discuss the NTUA's current broadband efforts.

BROADBAND PLAN STRATEGY SUGGESTIONS

Below are Thaddeus Yazzie's strategy suggestions for the broadband plan as it continues to be developed based upon the two meetings conducted:

- Attend the meeting with NTUA to gain insight into their current and future broadband plans for the Navajo Nation.
- Though the E-Rate program may bring high-speed internet to Red Mesa Head Start, it remains unclear if dark fiber will be installed, too, thus bringing high-speed internet to Red Mesa Chapter House and its surrounding residents is still unclear. If dark fiber is installed, an internet service provider could utilize the dark fiber to bring high speed internet to Red Mesa Chapter House.

- A microwave network exists, this may be the method for future network connectivity to the more rural residents. Much discussion would be needed in transferring the infrastructure to an internet service provider.
- During planning, design, and construction, close coordination with NTUA should be adhered to.
- Utilizing qualified local community members may be a satisfactory method of educating the public about the internet, particularly the elderly population.
- Much of the future of the broadband plan continues to be dependent on NTUA's current and future broadband plans.

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HORROCKS ENGINEERS

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Job _____ Sheet No. 1 of _____

Calculated By _____ Date _____ Check By _____ Date _____ Scale

→ Red Mesa Chapter (Jun 15, 2023) @ 1:30 PM

→ NTUA ROW (Ethel Kee (?))

→ Lydia LEE (NTUA)

→ Lydia (ROW agent) → final project manager (→ arranging final construction

→ Rebecca (~~Request to~~ response to questions)

→ Melissa Rena (Broadband / 911)

→ On behalf of Martha Segsboy

→ Lucinda Tsinnie (TNP)

→ VP (TNP)

→ E911 (Navajo Nation) → the other meeting

→ Navajo Nation Fire Department

→ Emergency Communication for COVID-19 Response

→ ~~NCC~~ NN addressing authority / NDOT

→ Mc Baldwin - GIS / Rural addressing

→ NTUA / SJCOG / LRRAC / NNAA / NCCA / County / NPOT / CHR

↳ local rural ~~agency~~ community members

↳ Community health (CHR)

↳ addressing

→ 12/31/2026 → project completion for Fiscal Recovery Funds received

→ ARPA 2021

↳ NN got their funding May 2021 → needs to be spent by 2026.

→ June 2024, deadline for the director of broadband internet.

↳ due December 2026.

→ NN Rural addressing implementation documents.

→ Lydia Lee → Francine P, Mack (SJCOG), Elaine G, Sylvia Stipps (Commission)

→ Melissa (Mexican Water Chapter), Corey Johnson (interlink solutions owner), Sarah Lee (to, Tiba chapter/pres)

→ NTUA follow up to Red Mesa store/school district

→ Lydia Lee → time table protocols →

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Job _____ Sheet No. _____ of _____

Calculated By _____ Date _____ Check By _____ Date _____ Scale

→ TNP, existing underlay in ROW
→ tapping onto fiber

→ tower behind Red Mesa ~~[illegible]~~ school
→ still in the ROW
→ fiber will go to Mexican [illegible]
→ 96 strand
→ arch/bio → survey plats, → subcontractor [illegible]
→ 2024 completion → dependent on the ROW

cost → no ARPA
→ NN consortium
e-rate (?)

→ Mexican water passed their resolution
→ interest to go to Ote Bird
→ [illegible] tower → fiber to Ouch
→ SCADA information

→ Estab funding for the Red Mesa headstart

→ all aerial → no ducts → on the electrical line
→ branch off from the headstart ~~[illegible]~~ cabinet
→ Monroe Keeto (?)

→

→ NTUA → ~~[illegible]~~ get together → Ute Dolfiance office

LYDIALENTVA.COM
→ oneth requests, montezuma creek area
↳ microwave network
→ most fiber aerial
→ USDA funding / oneth → NN ~~[illegible]~~ consortium e-rate
→ Estab - red mesa headstart

→ June 22, 2023 @ 10AM

Monroe Keeto
Bernadette Lee

Appendix C: Notes from Other Stakeholder Meetings

The following pages include notes from stakeholder meetings and workshops gathered as part of the San Juan County local broadband planning outreach. Stakeholder meeting and workshop notes gathered as part of the Connecting Utah statewide outreach in the San Juan County area are also included as part of this appendix.

San Juan County | Statewide Connecting Utah Workshop | December 6, 2022

Elected Official Workshop (Person 1 Notes)

1. Introductions
    a. Elaine Gizler recommended meeting with chapters for Navajo Nation
    b. Also recommended to connect with Utah Ignite and the Smart Cities Initiative - Peter Jay - Technical Leader Utah Ignite - peter.jay@uvu.edu.
        i. Check with Rebecca
    c. There were several questions/concerns about why satellite and other options would not be as prioritized as fiber, when they are less expensive. There are many instances of homes spread out throughout the county, where fiber would be far too expensive and impractical, and options such as satellite may be more appropriate.
2. Barriers/Challenges
    a. Not everyone in the county has a physical mailing address, many have PO boxes instead.
    b. There are areas in the county that don't have access to utilities and are not concerned about internet at this point.
        i. West of Blanding City - private land, owned by the Navajo Nation, finally have power to the houses, has been extremely difficult to get power to homes in these areas.
    c. Housing has been a huge issue because any availability is taken up by AirB&Bs.
    d. 94% of the county land is public, which doesn't make much available for private development.
    e. There are many areas of the county where there will be several homes grouped together, expanses of land, then more homes, etc. There are also stretches where there is a single home every mile or so.
        i. Areas where there will just be one or two houses, may not be on the map for access (Montezuma Canyon, Mailbox Road, Dude Ranch Road).
        ii. The real households that need it are the ones on the sparsely populated streets
    f. The majority of Blanding does not have broadband. However, there is new internet infrastructure that is set to be constructed in the future.
    g. Jobs in the county are primarily government, health, school district, mining, and hospitality.
    h. San Juan County School District built their own system to provide internet connections to their schools and needs funding to maintain their system. Has been trying to lobby with the Governor's Office for help with ongoing funding.
        i. Parts of their infrastructure is built on lands where owners have agreed to allow it there, only if it is for K-12 student education. Land owners most likely won't agree to allow parts of the infrastructure on their land to be sold off to a for-profit ISP.
3. Education
    a. There is one High School and 4 Middle School/High School combinations in the county. Blanding is the only one that has a separate middle school and high school.
    b. Schools have digital learning Fridays, where students can choose to go to school or work from home.

c. K-12 student commute times to school can be as long as 1.5 - 2.5 hours one-way on a bus.
    i. Many times students can't stay for extracurricular activities, because buses leave before activities start/end.
    ii. If hotspots (with parental controls/firewalls that the school district could dictate for student safety) could be added to busses, that would be very helpful for students to have more time to complete homework.
        1. Can we do broadband on the buses? Talk to UETN? Do hotspots? Can we do funding for that?

4. Current Broadband/Connectivity Status
    a. Fiber on a spur line, no redundancy
    b. Emery Telecom has made some improvements, but overall, connectivity is terrible throughout the county. The group said they have cable through Emery.
        i. Elaine Gizler said she wants us to help facilitate a call with Emery to better understand the coverage in the area, but the group discussed more and it doesn't seem like there's since we've met with them and they are providing their coverage areas.
    c. Providers
        i. Emery Telecom
            1. Are their latest efforts in the area open access for other providers to come in? (David John would like more information on that topic.)
                a. Need to get easement
        ii. Frontier
            1. Frontier refuses to invest. Down to two technicians in the area, and customer service help is very slow and backed-up.
        iii. River Canyon Wireless
            1. River Canyon Wireless out of Moab has some cable.
        iv. Starlink
            1. Scott Burton has heard that most people who have Starlink are not complaining about their internet service.
            2. Starlink is pricy and probably all of Emery is underserved—not getting 20 up.
        v. Verizon and AT&T are the cell providers that are best in the county.
    d. Affordability
        i. Paying $70 per month for 15/4 Mbps (not uncommon).
            1. NTUA doesn’t offer internet here now? Double check those.
        ii. Connection fees are also a real barrier—one household had to pay $4K to get house connected for school access.
        iii. Not affordable unless it’s free.
        iv. Can we develop a percentage allocation for affordability?
    e. Permitting processes
        i. Would mostly be working through UDOT and county roads. May have to do some electrical permits, but there are very few county permitting requirements in place.
        ii. Pretty open, but want to make sure that quality is up to expectation.

1. Contractors often cut corners because the county doesn't have a lot of parameters in place. For example, contractors have cut through lines such as sprinklers, just reburied them, and not informed anyone of it.

f. Devices
   i. Most people have cell phones, schools provide students with Chromebooks.
   ii. University and school district sent out hotspots
      1. Still don't have access to connection via hotspots

5. Priority Areas of Needed Coverage
   a. La Sal: they have River Canyon Wireless, but they are below speeds for not being underserved
   b. Spanish Valley
   c. Old La Sal
   d. Three Step
   e. Deer Neck
   f. Cedar Point
   g. Cedar Mesa
   h. UCOLO
   i. Eastland
   j. Lisbon
   k. Basically everywhere from 491 east to Cortez
   l. Blanding
   m. Bug Point
   n. Geyser Pass
   o. Abajo
   p. Montezuma Canyon
   q. West Summit
   r. Westwater
   s. Dude Ranch
6. Key Areas for Development
   a. Blanding City
   b. Monticello
   c. La Sal
   d. Bluff-they are a small Moab
7. Future Benefits
   a. The biggest benefit to the county, if everyone had internet would be for the K-12 students.
   b. It would be easier for people to return to school and access resources online.
   c. Business would be better—remote work jobs are in Monticello, but some require high speeds. But one person right outside Monticello is stuck with Frontier, so has to come into town
   d. More of an economic issue than a broadband issue to get people to stay
8. Anchor Institutions
   a. There are 29 Navajo Nation chapter house, just west of Blanding City. They are owned by the Navajo tribe, but not on the reservation.
   b. Anchor institutions have fiber, but don't qualify for funding.
      i. Most of the schools and libraries have gig service. City hall has gig service. Navajo Health System is connected to UETN.

ii. Have UETN network, on gig service.
    1. The libraries in Blanding City are connected to UETN.
    2. Lasao Library is connected to UETN.
iii. Police, fire, rec centers don't have gig service.
iv. The Blanding visitor center and Monticello City Hall don't have gig service.

9. Digital Literacy
    a. There are no current digital equity programs available in the county as far as the group is aware. Elaine Gizler says these type of programs would be very useful.
        i. Elaine believes that USU in Blanding would be a great place to bring people togther for classes.
10. Translation
    a. Elaine recommends that we translate materials in Navajo and then send to Elaine to share with the tribe
11. Media
    a. Red Rock Media is a great source for promoting info
    b. There is a radio station in Monticello that covers Grand County all the way to the border
12. Action items:
    a. Provide Elaine with grant info regarding ACP outreach, which is due in Jan.
    b. Sen. Aaron-send planning grant info.
    c. Send Liz' info as a follow up to Elaine as well
13. Elain Gizler's, Director of Economic Development & Visitor Services for San Juan County, info
    a. 117 South Main Street, Post Office Box 490 in Monticello, UT 84535
    b. Office: 435-587-3235
    c. Cell: 801-554-0104
    d. egizler@sanjuancounty.org
14. Tamara Dockstader, Community Development Program Manager for SEUALG, contact info
    a. 375 S Carbon Ave, PO Box 1106, Price, UT 84501
    b. 435-613-0029
    c. Cell: 435+650-8550
    d. tdockstader@se

Elected Official Workshop (Person 2 Notes)

- Recommended to meet with chapters for Navajo Nation
- Also recommended to connect with Smart Cities Initiative (Peter Jay)
    - Check with Rebecca
- Existing digital equity resources
    - No existing training programs
- Anchor institutions have fiber, but don't qualify for funding
    - Have UETN network, on gig service
    - Police, fire, rec centers don't have gig service
    - Blanding visitor center doesn't have gig service
    - Monticello city hall doesn't have gig service
- Fiber on a spur line, no redundancy
- Areas that need fiber
    - Westwater
    - Blanding
    - La Sal

    - Old La Sal
    - Eastland
    - West Summit
    - Dude Ranch
    - Cedar Mesa
- Emery Telcom—is it open access for current projects?
    - Need to get easement
- Also have Frontier and River Canyon Wireless (only have 15/4 Mpbs, $70 per month)
    - NTUA doesn't offer internet here now? Double check those
- Permitting process
    - County doesn't have a lot of permitting, UDOT and county roads for easements
    - Do have electrical permits sometimes
    - Pretty open, but want to make sure the service is as offered
        - Make sure quality is up to expectation
        - Has already happened with Emery Telcom—have cut lines and didn't have them reported or fixed
        - Problem is with contractors—sloppy work
- Feel like connectivity is atrocious in the area
    - Frontier is not investing, can't get a hold of anyone
- Areas where there will just be one or two houses, may not be on the map for access (Montezuma Canyon, Mailbox Road, Dude Ranch Road)
- The real households that need it are the ones on the sparsely populated streets
- Starlink is pricy and probably all of Emery is underserved—not getting 20 up
- Affordability
    - Not affordable unless it's free
- Most people have cell phones, schools have Chromebooks. Schools have intervention time
- Higher priority is to get access, service more than
- Connection fees are also a real barrier—one household had to pay $4K to get house connected for school access
- University and school district sent out hotspots
    - Still don't have access to connection via hotspots
- How would high speed internet access impact community?
    - Easier for people to return to school and access resources online
    - Business would be better—remote work jobs are in Monticello, but some require high speeds. But one person right outside Monticello is stuck with Frontier, so has to come into town
    - More of an economic issue than a broadband issue to get people to stay
    - Biggest benefit would be K-12 education for students—quickest impact, most obviously
- School district
    - 5 middle and high schools
    - Elementary is separate
    - Blanding is the only one that has a separate middle school and high school
    - Commute time for students?
        - Furthest student for Navajo Mountain has a 2.5 hour commute one way
        - Furthest for San Juan High school is hour ten one way
        - Whitehorse is about an hour one way
        - Monument Valley is an hour and a half

    - After school activities—have late bus but has set schedule, so students often have to miss practices and extracurriculars
    - Can we do broadband on the buses? Talk to UETN? Do hotspots? Can we do funding for that?
        - Need to think about firewalls and cybersecurity and provider
- Verizon and ATT are the cell providers that are best in the county
- Talk to Elaine about ACP outreach grants
- Can we develop a percentage allocation for affordability?
- Talk to Utah Ignite (Peter Jay)

Appendix D: Notes from Internet Service Provider Meetings

The following pages contain notes from meetings held with ISPs as part of the San Juan County local broadband planning efforts.

Navajo Tribal Utility Authority (NTUA) | June 22, 2023

Attendees in person:

- NTUA – Lydia Lee (Fiber Project Manager)
- San Juan County – Mack McDonald, Elaine Gizler

Attendees online:

- NTUA – Mujtaba Ansari
- Horrocks Engineers – Francine Pacheco, Eleise Lowe, Thaddeus Yazzie
- UBC – Teri Mumm

Meeting Summary:
Discussed partnership between San Juan County and NTUA with building out fiber to Navajo Nation using grant money.

Discussed challenges that NTUA faces building on private land in deploying utility projects. Eminent domain is frowned upon greatly by tribal leadership and residents and causes rift if used.

Relationship has been established to begin evaluating how to collaborate in overcoming planning challenges. San Juan County officials aim to meet with NTUA monthly moving forward.

Emery Telcom | June 9, 2023

Attendees:

- Rod Moore (Emery Telcom Grants)
- Jared Anderson (Emery Telcom COO)
- Brock Johansen (Emery Telcom CEO)
- Horrocks Engineers – Jason Libert, Eleise Lowe

Meeting Summary:
Have funding from grants and company investment to serve entire San Juan County with exception of tribal areas.

San Juan will be built out within the next two years.

Maps showing funding areas are shown in Figures 9-12 of the plan.

Frontier | June 9, 2023

Attendees:

- Jack Phillips (Frontier)
- Horrocks Engineers – Jason Libert, Eleise Lowe

Meeting Summary:

Only installing fiber going forward

No plans for further build-out in San Juan since Emery Telcom is serving everyone

Company re-org 2 years ago

Pricing (all speeds are symmetrical)

- 100Mbps - $30/month (free service for those who qualify for ACP)
- 500Mbps - $40/month
- 5Gbps - $150/month

Company has pre-ordered installation materials to get ahead of shortages related to BEAD construction

Appendix E: 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

SECTION 13553

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.

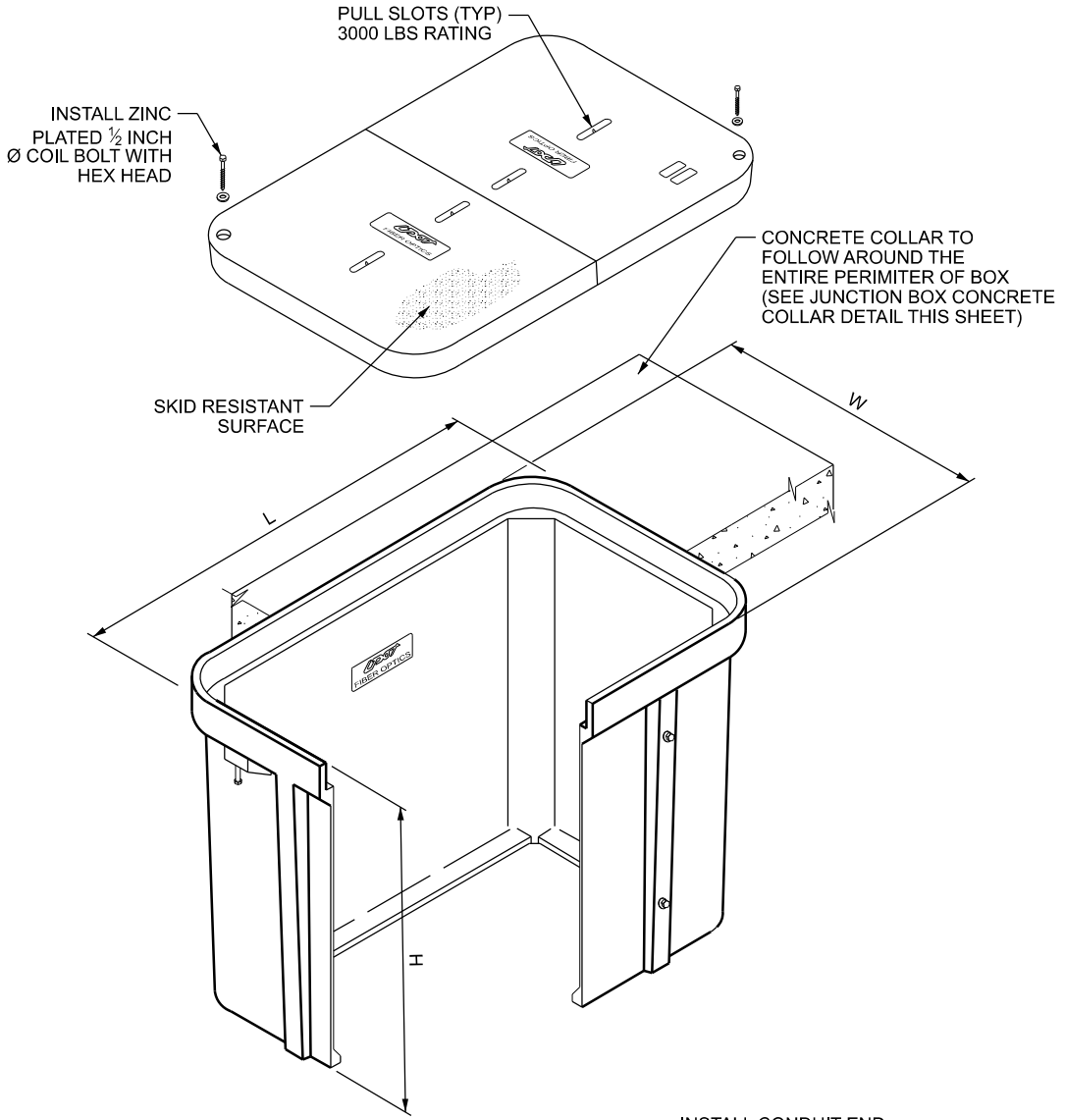
B. Coordinate with local utilities for utility repair.

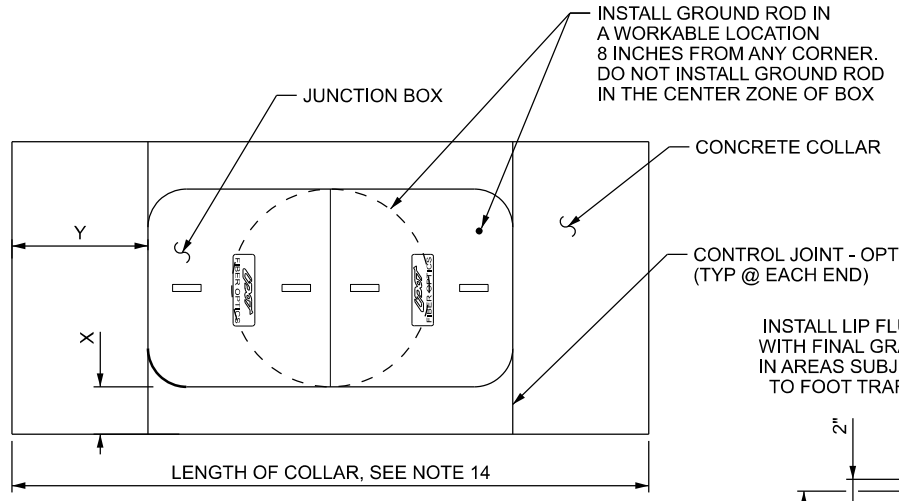
C. Notify the Engineer of all necessary repairs.

D. Replace all damaged facilities in kind.

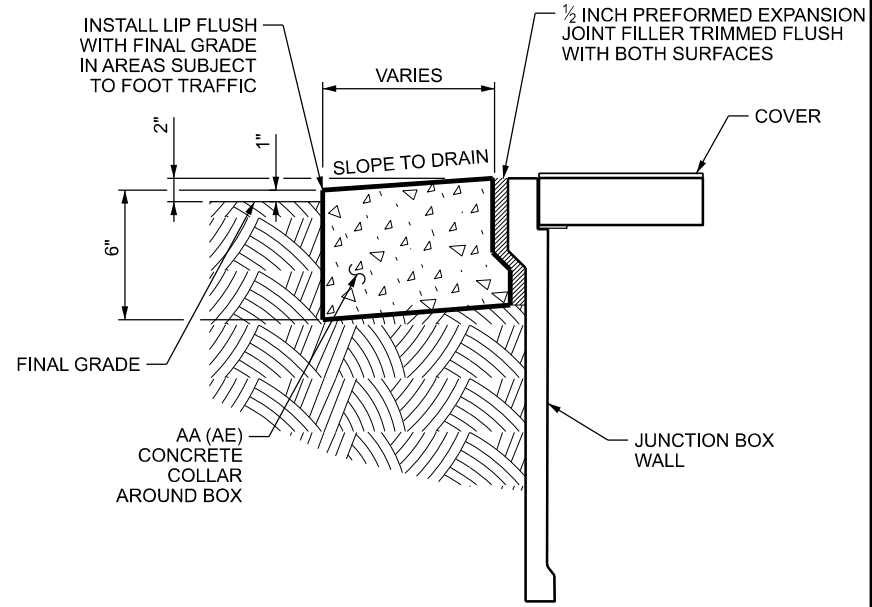
E. Buried microduct bundle coupling and repair:
   1. Expose microducts by removing no more than 12 inches of oversheath beyond area to be coupled or repaired.
      a. Trim microducts to length as necessary to eliminate all bends and deflection.
   2. Use approved couplers.
   3. Splice the locate wires 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





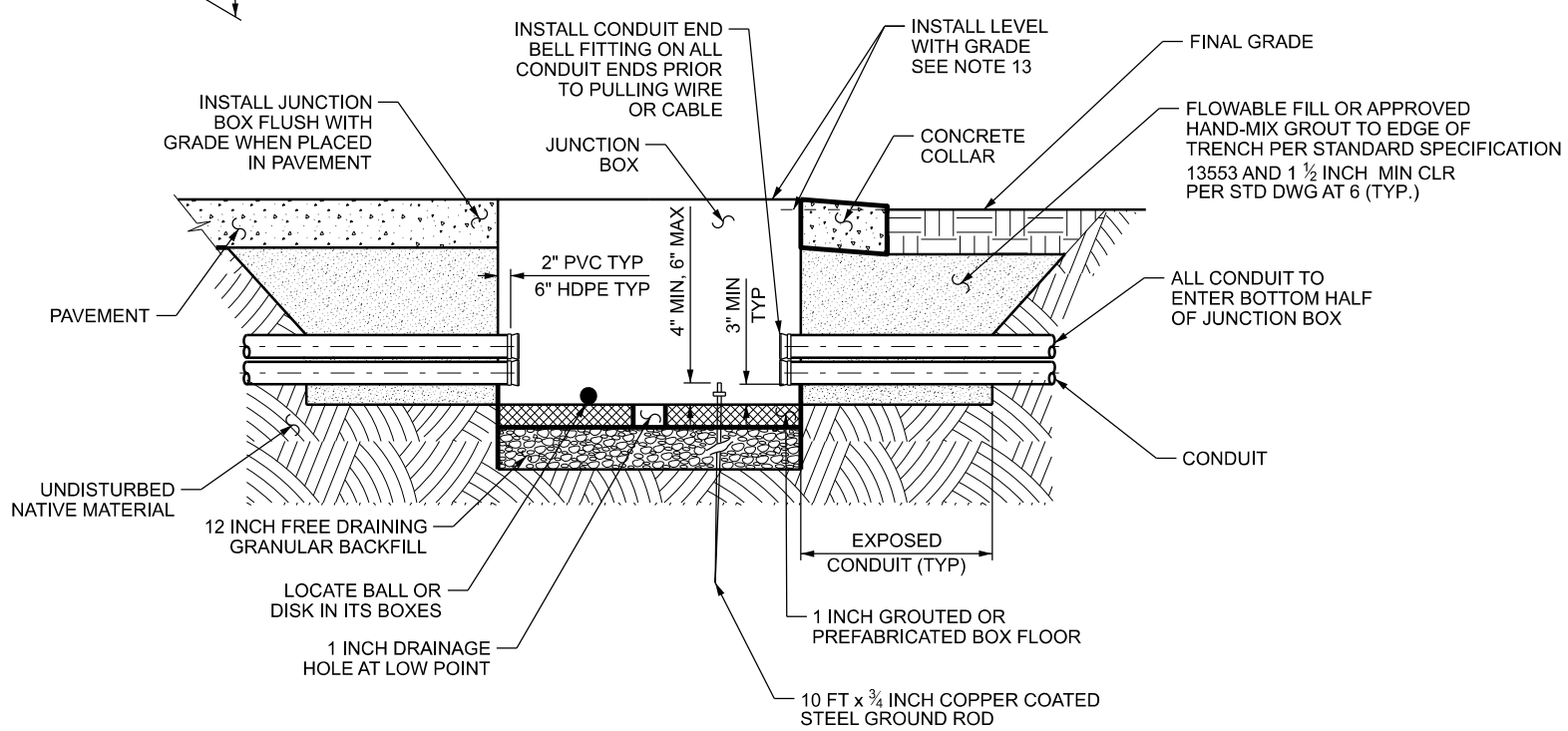
PLAN VIEW - JUNCTION BOX AND CONCRETE COLLAR



JUNCTION BOX CONCRETE COLLAR DETAIL

TABLE OF DIMENSIONS

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



JUNCTION BOX CONDUIT PENETRATION DETAIL

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.

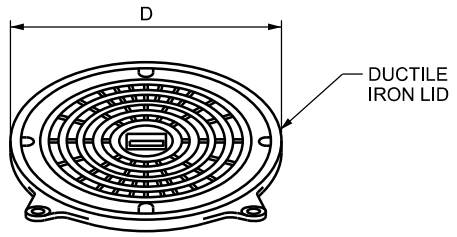
NO.	DATE	APPR.	REMARKS
1	12/07/22	MAA	CHANGE ATMS TO ITS
	4/30/20	MAA	ADDED "OPTIONAL" TO CONCRETE COLLAR DETAIL

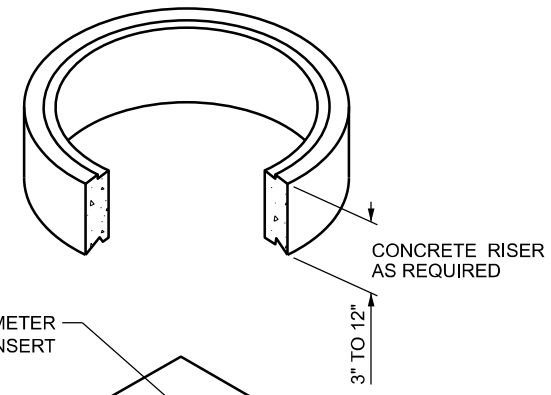
UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH
STANDARD DRAWING EDITION

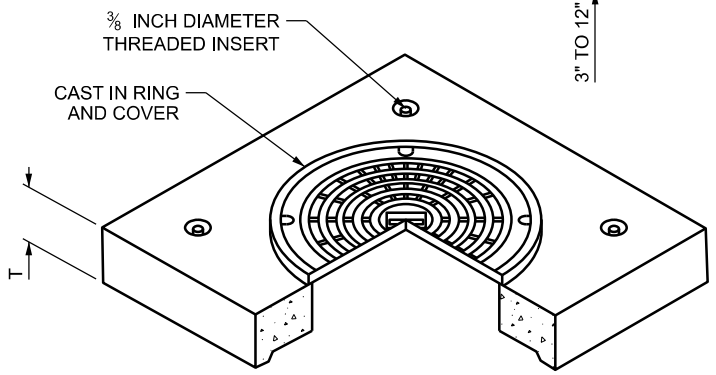
2024 Standard Drawing

POLYMER CONCRETE JUNCTION BOX DETAILS
STANDARD DRAWING TITLE

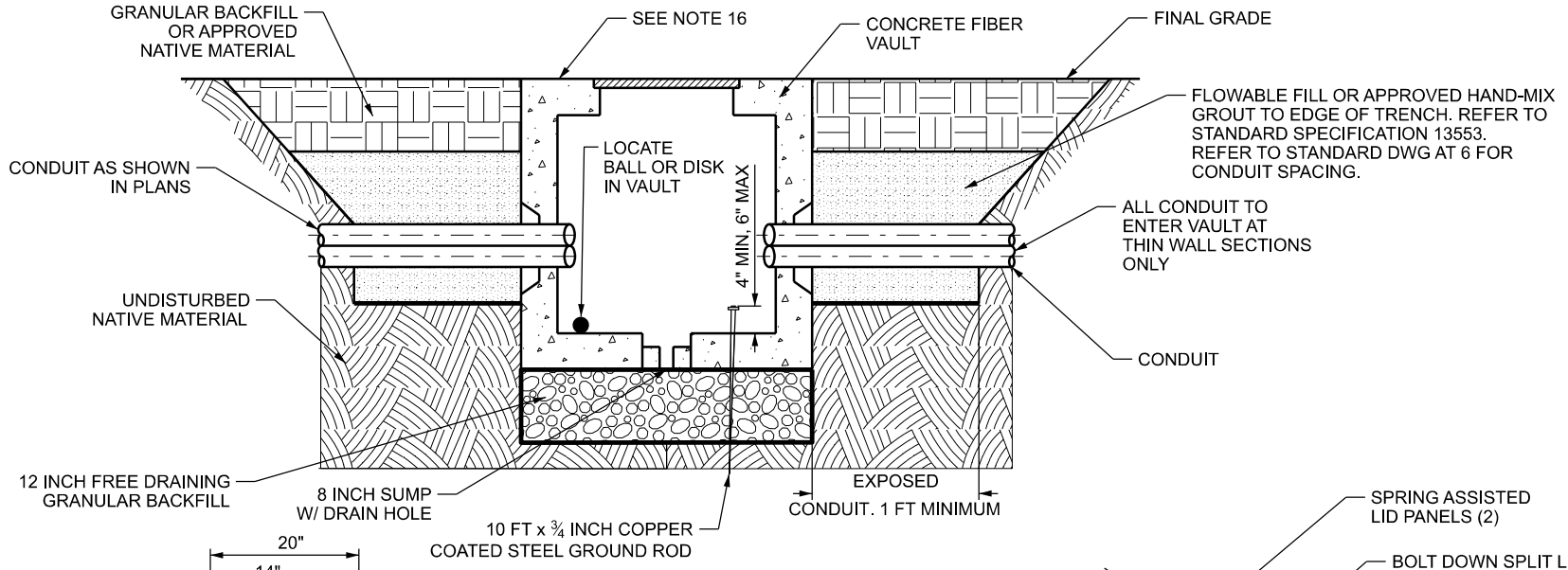
STD. DWG. NO.
AT 7A



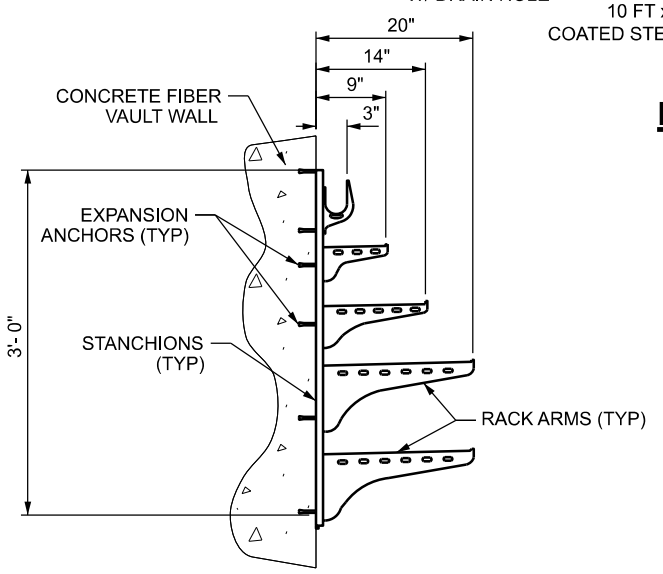




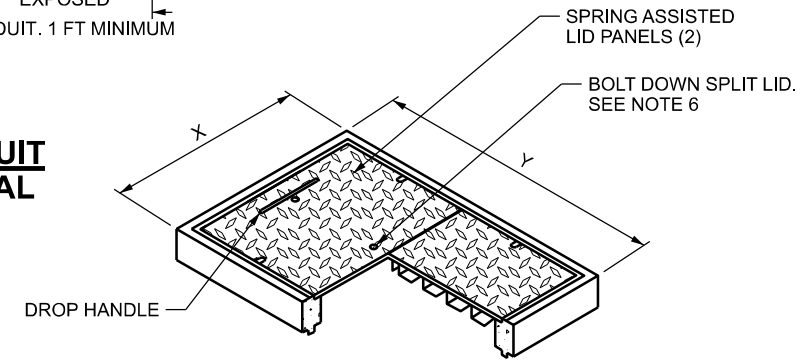
CONCRETE FIBER VAULT WITH MANHOLE LID



FIBER VAULT CONDUIT PENETRATION DETAL



TYPICAL CABLE RACK



METAL LID FOR TYPE IV-CV FIBER VAULT

VAULT DIMENSIONS

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

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 NON-METALLIC 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 ATMS 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.

NO.	DATE	APPR.	REMARKS

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

2024 Standard Drawing

PRECAST CONCRETE FIBER OPTIC AND UTILITY VAULT DETAILS
STANDARD DRAWING TITLE

STD. DWG. NO.
AT 7B

Dig Once Best Practices Overview

SECTION 1: GOALS OF THE LEGISLATION

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.

SECTION 4: CITY AND COUNTY LEGISLATIONS EXAMPLES

(SOURCE: https://broadbandnow.com/report/dig-once-digital-divide/)

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)

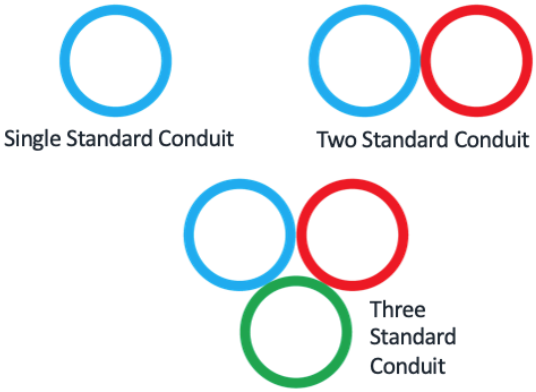
Dura-Line manufactures FuturePath, which are smaller MicroDucts are packaged together under one sheath. There are combinations of FuturePath all the way from 2-MicroDucts, under a single sheath to 24-MicroDucts under a single sheath. Other configurations have mixed sizes of MicroDucts and standard conduit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

Dura-Line's FuturePath HDPE Product Line is Sustainable

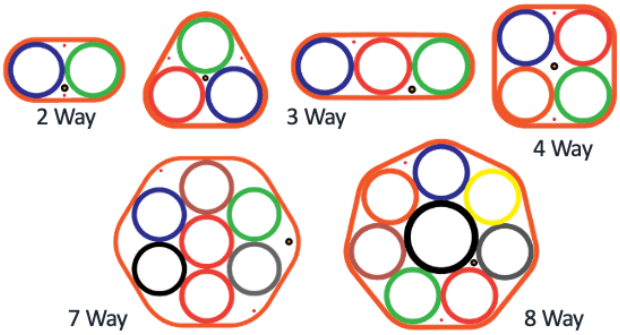
- Supports Dig Once initiatives
- Saves space in overcrowded right-of-ways
- Requires fewer and smaller handholes
- Reduces manpower and machine power for installation
- Reduces fuel consumption, gas emissions, and lower material handling requirements
- Lessens soil displacement Environmental Benefits 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



MicroDucts or FuturePath with high-density fiber cables



Appendix F: Outreach Collateral

Collateral created and distributed as part of the local broadband planning outreach is included within this appendix.

SAN JUAN COUNTY OUTREACH PACKAGE

FLYERS AND MAILER

- San Juan County Broadband Plan Flyer
- San Juan County – Navajo Flyer
- San Juan County – White Mesa Community Flyer
- San Juan County – Ute Mountain Ute Tribe Flyer
- Affordable Connectivity Program Enhanced Tribal Benefit Flyer
- San Juan County – General Mailer

SOCIAL MEDIA SAMPLE POSTS

Shareable Social Media Post #1

Channel Suggestion: Facebook or Instagram

Visual: Facebook Survey Graphic or Instagram Survey Graphic

Copy: Having the skills and ability to access reliable, affordable internet is becoming essential in our daily lives more than ever. San Juan County is developing a broadband plan to expand high-speed internet availability, accessibility, and affordability for all residents including Tribal members. We need to hear from you! Tell us about your connectivity by completing this survey by Wednesday, May 10: surveymonkey.com/r/connectsanjuancounty

Shareable Social Media Post #2:

Channel Suggestion: Twitter

Visual: Twitter Survey Graphic

Copy: Is internet in your area great, slow, nonexistent, or too expensive? Do you live on Tribal land and find it difficult or maybe even impossible to access internet? Take this quick online survey by May 10, so your input can be reflected in San Juan County's broadband plan for all residents and community members have access to high-speed internet! surveymonkey.com/r/connectsanjuancounty

WEBSITE, EMAIL, AND/OR NEWSLETTER CONTENT

Headline: Help San Juan County Expand Broadband Access to all Residents!

Copy:

You can help shape the future of broadband for San Juan County and its communities... Is your internet service too slow, expensive, or nonexistent? Do you live on Tribal land and find it difficult or maybe even impossible to access internet? Would you benefit more from the digital world if you had resources to build your skills? Your input is needed! Here's how you can help get San Juan County online:

- Take the 60-second Utah Internet Speed test at speedtest.utah.gov. Information gathered from the tests will identify gaps in high-speed internet service and areas in need of broadband infrastructure and digital access expansion. *Your internet speeds can vary during the day based on a variety of factors, so please take the speed test multiple times where you work, live, or anywhere you connect to the internet.*
- Share your story by taking the Internet Survey at surveymonkey.com/r/connectsanjuancounty
- Encourage your family, friends, neighbors, and colleagues to take the speed test and survey. **The more you help spread the word, the greater impact it will have on the future of broadband for your local community members.**

If you don't have internet, we still need to hear from you. Please share your input by calling **435-264-8880**.

San Juan County is beginning to develop a local broadband plan to expand high-speed internet access, availability, and affordability to all community members, including Tribal and rural communities. They need your help. **Please complete the survey and speed test by Wednesday, May 10, so your input can be reflected in the plan.**

To learn more about the local broadband plan, visit connectingutah.com/sanjuancounty. For questions, contact the project team at 435-264-8880 or connectingutah@utah.gov.

There is also funding available now through the Affordable Connectivity Program (ACP) to help those who qualify access high-speed internet. This program provides eligible households $30 off their monthly internet bill and up to $100 towards a connected device Visit acp.utah.gov for more information.

Tribal members living on tribal lands may receive a $75 monthly internet discount. For more information on the **enhanced tribal benefit**, visit bit.ly/acp-tribal.

Additional Connecting Utah Flyers

The following materials have been created and distributed to inform the statewide Digital Connectivity Plan. The Shivwits Band may utilize and adapt these materials to fit any outreach or planning needs.

English

- Utah Internet Speed Test General Public Poster (UBC)
- Utah Internet Speed Test General Public Flyer (UBC)
- Utah Internet Speed Test Bookmark (UBC)
- Affordable Connectivity Program Flyer (FCC)

Spanish

- Utah Internet Speed Test General Public Flyer (UBC)
- Utah Internet Speed Test Bookmark (UBC)
- Affordable Connectivity Program Flyer (FCC)

TELL US ABOUT YOUR INTERNET CONNECTIVITY IN SAN JUAN COUNTY

Access to high-speed internet is no longer a luxury, but an essential utility to connect Utahns to work, education, health care, and commerce. Did you know that more than 1,795 San Juan County households do not have access to the internet?

San Juan County has received funds, made available through the Utah Broadband Center (UBC), to develop a local broadband plan to expand high-speed internet access, availability, and affordability to all community members - and we need your help!

WE NEED YOUR INPUT BY WEDNESDAY, MAY 10, 2023

Please complete the following survey and speed test by Wednesday, May 10, so your input can be reflected in San Juan County's broadband plan.

1. INTERNET SURVEY

Tell us about your internet service. Is it too slow, expensive, or even nonexistent? This survey will help us know what the internet looks like for you right now and guide us in closing the gap between those with and without access to the digital world.

connectingutah.com/sanjuancounty

2. UTAH INTERNET SPEED TEST

Share your internet speed with us by completing a 60-second test. Don't just take the test once! We need you to take the test multiple times: at home, where you work, during lunch, or at the end of the day. All these factors impact internet speeds.

speedtest.utah.gov

DO YOU QUALIFY FOR THE TRIBAL AFFORDABLE CONNECTIVITY PROGRAM (ACP)?

If you or someone in your household participates in any of the following programs, you qualify for $30 off your monthly internet bill or up to $100 off a new device. Eligible households on Tribal lands can receive up to a $75 monthly internet bill discount.

- Free/Reduced School Lunch
- SNAP
- Medicaid
- Lifeline
- Federal Public Housing Assistance
- Federal Pell Grant
- WIC

For more information go to acp.utah.gov.

Please visit bit.ly/acp-tribal for more information about the enhanced tribal benefit.

CONTACT INFORMATION

HOTLINE: 435-264-8880 **EMAIL:** connectingutah@utah.gov **WEBSITE:** connectingutah.com/sanjuancounty

CONNECTING UTAH

DO YOU QUALIFY FOR TRIBAL BENEFITS PROVIDED BY THE AFFORDABLE CONNECTIVITY PROGRAM (ACP)?

Did you know you can receive up to **$75/month discount on your internet service** and a **one-time discount of up to $100 for a laptop, tablet, or desktop computer**?

The ACP is a Federal Communications Commission (FCC) program that helps connect families and households on Tribal lands.

YOU ARE ELIGIBLE IF:

Your household is located on qualifying Tribal lands

AND

your household income is at or below 200% of the federal poverty guidelines

OR

Any member of your household participates in one of the following Tribal specific programs:

- Bureau of Indian Affairs General Assistance
- Tribal Head Start
- Tribal Temporary Assistance for Needy Families (Tribal TANF)
- Food Distribution Program on Indian Reservations

OTHER WAYS TO QUALIFY

Households on Tribal lands can also qualify for the benefit if one member of the household meets any of the following qualifications:

- Participates in certain assistance programs, such as SNAP, Medicaid, Federal Public Housing Assistance, SSI, WIC, or Lifeline
- Is approved to receive benefits under the free and reduced-price school lunch program or the school breakfast program including through the USDA Community Eligibility Provision
- Received a federal Pell Grant in the current award year
- Meets the eligibility criteria for a participating company's existing low-income program, and that provider received FCC approval for its eligibility verification process

HOW TO ENROLL:

1. Go to **affordableconnectivity.gov** to submit an application or print a mail-in application
2. Contact a participating provider to select an eligible plan and have the approved discount applied to your bill

Eligible households must complete both steps: applying for the program and contacting the participating provider to select a service plan.

For more information go to:
acp.utah.gov

or Visit **bit.ly/acp-tribal** for information about the enhanced tribal benefit

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SAN JUAN COUNTY

TELL US ABOUT YOUR INTERNET CONNECTIVITY

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