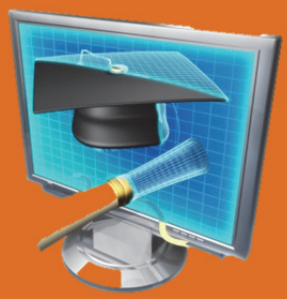

Southwest Utah Regional Broadband Plan

Five County Association of Governments

For Beaver, Garfield, Iron, Kane and Washington County

Five County Association of Governments
Beaver
Iron
Garfield
Washington
Kane

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EXECUTIVE SUMMARY

The purpose of the Southwest Utah Regional Broadband Plan is to identify the primary needs to improve broadband Internet service and make recommendations that the public and private sector should pursue to meet these needs. A Regional Broadband Planning Council composed of representatives from various industry sectors served as the steering committee to the Regional Broadband Plan.

Broadband Internet service is a vital component to all facets of society in Southwest Utah, including education, healthcare, economic development, public safety and everyday communication. While broadband Internet service is provided throughout the majority of the region, some communities suffer from a lack of coverage and most struggle to provide adequate broadband services to meet the growing demand for bandwidth, redundancy and reliability.

The needs identified for broadband Internet vary according to location. In general, needs can be categorized by urban (St. George and Cedar City Areas), rural (Panguitch, Kanab, Milford and other small cities and towns) and frontier areas (Big Water, Boulder and other isolated communities and areas). In some areas, basic reliable broadband Internet is still not provided, while others need more redundant networks to attract and retain businesses.

To meet the growing need for broadband Internet service, the following priority recommendations were identified:

1. **Development of detailed Broadband Plans for local jurisdictions**
2. **Disseminate information about broadband mapping tool to prospective businesses**
3. **Enhance broadband database to include available infrastructure and project schedules**
4. **Improve coordination with the Utah Education Network (UEN) to expand broadband access and capacity**
5. **Refine grant policies to provide broadband service for small providers in rural and isolated areas**
6. **State Liaison Program for cooperating with public land managers**
7. **Remove barriers and support the private sector to lead the charge to expand broadband infrastructure**
8. **Ongoing regional broadband coordination**

INTRODUCTION

The Southwest Utah Regional Broadband Plan is part of a statewide effort called the Utah Broadband Project. The Utah Broadband Project is a joint effort between the Utah Governor's Office of Economic Development (GOED), the Public Service Commission (PSC) and the Department of Technology Services' Automated Geographic Reference Center (AGRC) to develop a statewide map of available broadband services and a plan to increase broadband deployment and adoption in the State of Utah. Similar programs have been undertaken in all 50 states through the State Broadband Initiative (SBI) program, which is being administered by the National Telecommunications and Information Administration (NTIA) and funded through the American Recovery and Reinvestment Act of 2009.

In 2013, the Utah Broadband Project partnered with each of Utah's seven Associations of Governments (AOGs) to form regional broadband planning councils with the goal of assessing broadband availability and needs on a local level. These teams were tasked with identifying regional issues, priorities and goals related to broadband deployment and adoption, and creating community awareness about broadband-related issues.

The Southwest Utah Regional Broadband Plan was compiled based on feedback and discussions held during meetings with local communities and the Regional Broadband Planning Council and an online survey targeted to residents and business representatives in the region. The plan focuses on broadband issues and needs for the Five County Association of Governments region. The region includes Beaver, Garfield, Iron, Kane and Washington Counties.

This Regional Broadband Plan provides guidance for the advancement of broadband services and infrastructure, and will help to enhance broadband usage and demand in the region. The plan also provides a framework to advise the State of Utah, local government officials, broadband providers and other stakeholders about broadband-related topics and issues.

PLANNING PROCESS

REGIONAL BROADBAND PLANNING COUNCIL MEETINGS

The Five County Regional Broadband Planning Council, composed of representatives from various industry sectors (see acknowledgements for list of participants), served as a steering committee for the Southwest Utah Regional Broadband Plan. The council guided the planning process from identifying needs to finalizing the document. Seven Regional Broadband Planning Council meetings were held in locations throughout the region, including St George, Washington, Cedar City and Kanab. Meetings were open to the public and posted on the Utah Public Meeting Notice Website. Because of long travel distances, council members were able to

attend meetings via conference call, and several members elected to do so, when needed. The findings from these meetings are incorporated into the substance of this plan. The following is a summary of topics discussed at Regional Broadband Planning Council Meetings.

1st Meeting - September 12, 2013, St. George, Utah

- Introduction of plan process and purpose
- Introduction of map and survey
- Identification of regional strengths and weaknesses for broadband service

2nd Meeting - October 15, 2013, Cedar City, Utah

- Review initial findings of survey
- Identification of regional opportunities and challenges
- Discussion about educational needs and challenges

3rd Meeting - December 4, 2013, Washington, Utah

- Review findings from the 2013 Broadband Tech Summit
- Summarize and analyze strengths, weaknesses, opportunities and challenges
- Discuss best practices for broadband deployment
- Identifying key priority areas

4th Meeting - January 23, 2014, Kanab, Utah

- Review final survey findings
- Review and discuss needs assessment and goals
- Identify strategies to increase broadband deployment
- Discuss feasibility of “dig once” policy

5th Meeting - March 4, 2014, St George, Utah

- Fiber 101 Presentation
- Identify and discuss strategies to increase broadband deployment
- Focus on public-private partnerships for expanding infrastructure
- Discuss grant process for broadband infrastructure

6th Meeting - April 15, 2014, Cedar City, Utah

- UEN Presentation
- Review Draft Plan
- Focus on education-related recommendations

- **7th Meeting - May 22, 2014, St George, Utah**
  - Finalize recommendations for plan
  - Discuss next steps for regional coordination

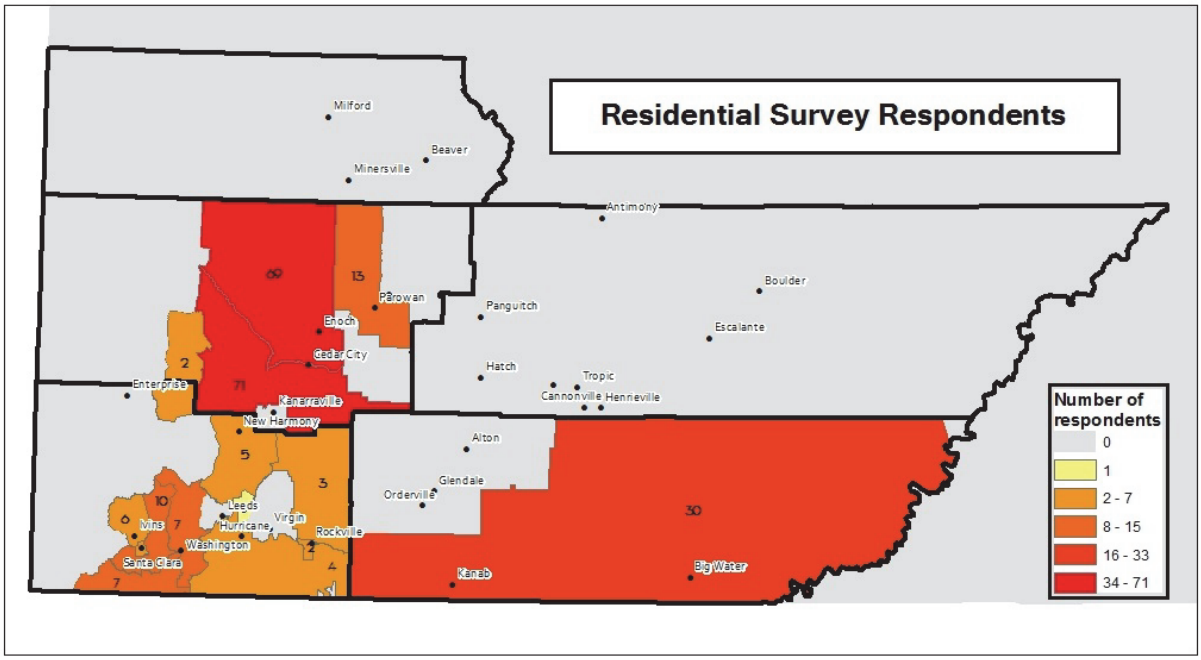
REGIONAL BROADBAND SURVEY SUMMARY

DISTRIBUTION

To obtain input for the Southwest Utah Regional Broadband Plan from residents and business representatives, Five County AOG staff distributed an online survey in October 2013. The survey was patterned after the broadband survey distributed by the Center for Public Lands and Rural Economics in 2011, with questions for both business representatives and residents. Staff solicited feedback via city and county jurisdictions and area Chambers of Commerce throughout the region. Several cities posted a link to the survey on their respective city websites. Area Chambers of Commerce distributed the survey via listserv.

REPRESENTATION

The survey was designed to solicit feedback from the public to gain insight about the broadband service needs throughout the region, but is not a representative sample for the Five County Region. A total of 255 residents and 55 business representatives completed the survey. A significant number of respondents resided in Kane, Iron and Washington Counties with little participation in Beaver and Garfield County, for both residents and business representatives.



RESIDENTS: FINDINGS

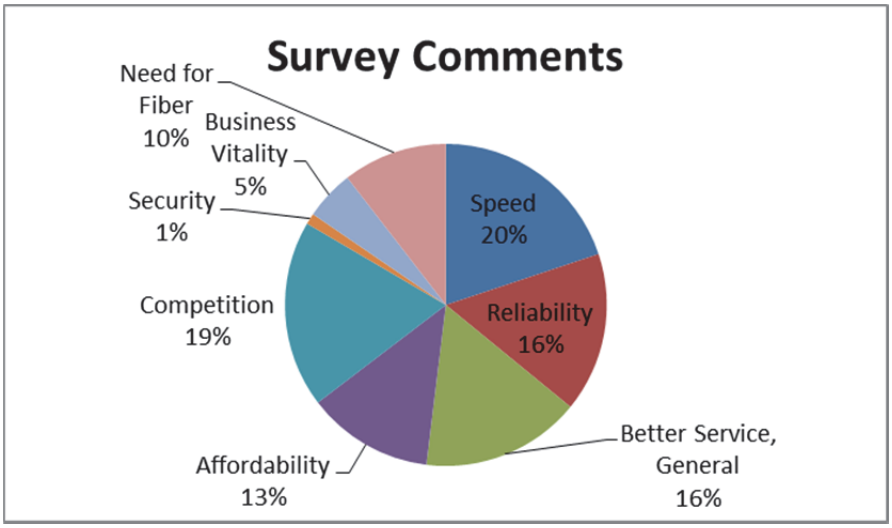
- A variety of devices are used to access the Internet, including desktop computers, laptops, tablets and smart phones.
- The vast majority of respondents (86%) access the Internet at work, while 59% access the Internet at school and 40% at someone else's home.
- The majority of respondents are connected via DSL (34%), wireless (25%) or cable modem (24%) at home.
- Approximately 93% of respondents would like a faster Internet connection.
- In general, respondents felt that they are paying too much for the Internet service that they are provided with. The average price that respondents pay is $48, while the average price that respondents feel would be reasonable is $31. In 2011, the Utah Broadband Project conducted a statewide survey and residents responded that they were willing to pay an average of $34 a month in urban areas and $33 a month in rural areas, which is slightly higher than the results in this region.
- Many respondents (43%) combine or "bundle" Internet with phone or television services, but several expressed frustration with the bundle packages. They are only interested in Internet service and feel that Internet service is too expensive as a stand-alone service.
- The majority of respondents (87%) have expressed that since they first got high-speed Internet, the connection has either stayed the same or improved.
- When asked, 83% of respondents believe that both Internet speed and reliability for Internet service are equally important.

BUSINESSES: FINDINGS

- A variety of businesses including construction, manufacturing, education and food services rely on broadband Internet for day-to-day operations, 96% communicate via email, 84% use it for website applications, 72% for banking and 60% for file sharing among other important uses.
- The majority of businesses are connected via fixed wireless (36%), DSL (32%), or fiber to the premises (27%).
- Approximately 67% of respondents indicated that they are satisfied with the cost of their Internet service that they are provided with, while 52% are satisfied with the connection speed.
- Only 9% of survey respondents would describe the availability of broadband as competitive with several options.

COMMENTS

At the end of the survey, two questions allowed respondents to provide general comments. Residents and business representatives expressed several comments, which focused on needed improvements for broadband service. Several respondents expressed the need for improved speed, reliability, affordability and competitive options for broadband service. Many also specifically expressed the need for fiber connectivity.



UTAH BROADBAND NONADOPTERS

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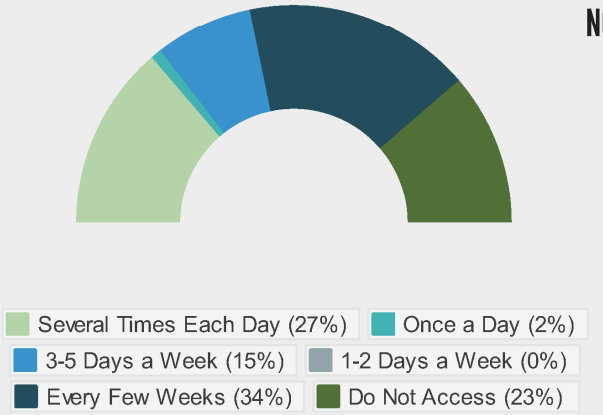
FIVE COUNTY ASSOCIATION OF GOVERNMENTS REGION

The Five County Association of Governments region, which includes Beaver, Iron, Garfield, Washington and Kane Counties, is located in the southwest corner of the state with a population of 203,204 The bulk of the population is located in and around the Iron and Washington County areas including St. George and Cedar City.

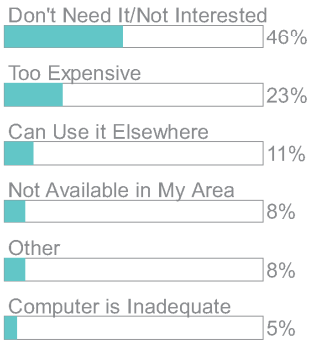


NONADOPTERS OF BROADBAND IN THE FIVE COUNTY REGION ACCESS THE INTERNET INFREQUENTLY

The average age of respondents in the region is 58.5 years, slightly older than the state average of 56.2. The region had a higher rate of retired respondents (48.4 percent) compared to the state average of 42.8 percent. Respondents in the Five County region make, on average, $36,343 per year in total household income, which is much lower than the state average of $51,347.

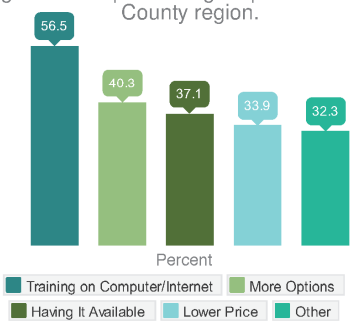
LACK OF INTEREST OR NEED

The key reason for nonadoption in the Five County region was a lack of interest or need. In the region, 45.8 percent of respondents said they did not need high-speed Internet or were not interested in getting it.



KNOWLEDGE AND EXPERTISE

A large majority of nonadopters in the Five County region believe they are not highly skilled in terms of computer and Internet use. This lack of skills or lack of perceived skills is most likely contributing to nonadoption of high- speed Internet in the Five County region.



What would make you more likely to have high-speed Internet access in your home?

REGIONAL OVERVIEW

The Southwest Utah region encompasses a large expanse of 17,640 square miles. The region can be categorized into "urban," "rural" and "frontier" areas. Urban areas include the St. George area in Washington County and the Cedar City area in Iron County. These areas are comprised of the region's population centers and are largely characterized by a variety of high-speed broadband providers. Rural areas include small cities and towns in the region, such as Panguitch, Kanab, Milford and Enterprise. Most rural areas have some form of high-speed broadband service, but options are limited in most areas. Frontier areas include isolated, sparsely populated areas, which are found throughout all five counties in the region. Many of these areas offer limited to no high-speed broadband service. Map 1 details the population density throughout the region. As displayed, the region is comprised of a variety of population centers with large expanses of unpopulated wilderness.

A summary of the region's demographics is included below. These data were obtained from the 2010 U.S. Census and the Utah Department of Workforce Services.

		Beaver	Garfield	Iron	Kane	Washington
Population		6,527	5,107	45,984	7,093	139,484
Average Household Size		3.04	2.47	2.88	2.18	2.96
Median Age		31.5	40.8	26.6	45.5	32.5
Median Household Income		$45,948	$44,345	$42,296	$46,979	$49,145
Education	High School Graduate	91.1%	91.1%	91.2%	94.7%	91.3%
	Bachelor's or Higher	14.7%	21.2%	26.6%	27.1%	25.4%
Unemployment Rate		3.5%	9.2%	4.7%	5.0%	4.4%
Race	White	97.8%	95.9%	95.3%	97.8%	92.6%
	All Others	2.2%	4.1%	4.7%	2.2%	7.4%
Ethnicity	Hispanic/ Latino	10.5%	4.6%	7.7%	3.7%	9.7%
	Not Hispanic/ Latino	89.5%	95.4%	92.3%	96.3%	90.3%
Land Area in Square miles		2,592	5,208	3,301	4,109	2,430

STRENGTHS, WEAKNESSES, OPPORTUNITIES AND CHALLENGES

The Five County Regional Broadband Planning Council worked to identify strengths, weaknesses, opportunities and challenges (SWOC) for broadband service in various sectors in the region. This SWOC analysis helped the council identify regional needs, goals and priorities. A summary of the analysis is included below.

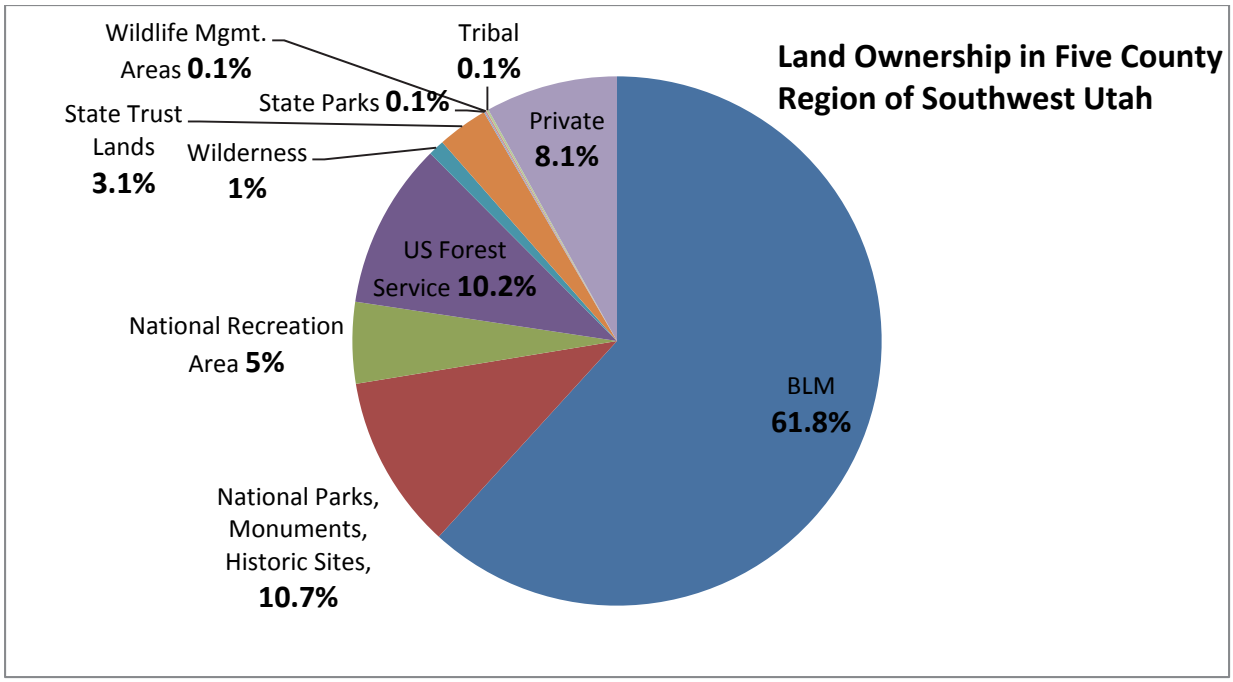
	Strengths	Weaknesses	Opportunities	Challenges
Residential	-Basic broadband proliferation throughout most of region -Comparable affordability in rural areas	-Lack of competition -No broadband service in Big Water and other isolated areas -Many residents cannot afford service	-Possible partnerships with federal/state entities to expand network -USDA and other grants available for rural areas	-Lack of market demand in rural areas -Difficulty working with federal/state entities
Economic Development	-High speed Internet availability for complex business operations in St. George & Cedar City -Wi-Fi availability in tourist-based locations	-Lack of fiber connectivity in many areas -Lack of redundancy in business parks and rural areas	-Improved economic diversity opportunities in rural areas as availability increases -Attracting high profile home-based businesses	-Data usage is increasing dramatically for most industries -Difficulty attracting businesses in search of higher redundancy
Health & Education	-Strong connection provided to schools & libraries via UEN and hospitals via UTN -Responsiveness & investment to the needs for health & education sectors	-Limited bandwidth in isolated areas for telemedicine -Network is vulnerable to uncertainty in government -Lack of knowledge about UEN resources	-Availability of universal service dollars to expand health network -Functionality of UEN to respond to needs	-Inter-state connection of medical network -Reliance on Internet for all education functions with lack of home Internet access for students and limited data capability in schools -More devices per student
Infrastructure	-Local ISPs work well together and are succeeding in attracting customers -UDOT willingness to install conduit & work with service providers	-Regulations prohibiting cooperation between ISPs and federal government. -Lack of communications between private and public sector	-Available right-of-way to access many rural areas. -Infrastructure, such as microwave towers exist in rural areas. -Public/Private partnerships to expand network	-Access to towers for microwave service is difficult, as most land is BLM -Right of way constraints in rural areas -Physical/distance barriers to access isolated/rural areas -Environmental Review adds cost to expansion

RESIDENTIAL SERVICE

While there is basic broadband proliferation in most populated areas throughout the region, broadband service is either non-existent or very marginal in some areas. Big Water in Kane County is a notable example in the region of a significantly populated area with very limited, unreliable broadband service. Big Water is a remote community located 57 miles east of Kanab, Utah and 18 miles north of Page, Arizona. As of the 2010 United States Census, Big Water had a population of 475 with thousands of annual visitors attracted to nearby Lake Powell. Several residents from Big Water participated in the residential survey, expressing frustration about the Internet service, due to unreliability, extremely low speeds and lack of options. Throughout rural and frontier areas in the region, a lack of competition is a definite weakness for Internet service. Maps 9.1.1 - 9.5.3 display the number of fixed broadband providers, which provide at various speeds, available in areas throughout the five counties in the region. While most populated areas are served with some form of high-speed Internet (see Maps 6.1 – 6.3 and 8.1 – 8.3), remote areas offer much fewer choices and comparable lower speeds in areas outside of urban centers.

Partnering with public land managers is a must to deliver service in many areas. Approximately 87% of the land in the region is owned by the federal government and must be crossed to deliver infrastructure. Internet service providers (ISPs) have expressed particular difficulties in working with federal entities when expanding infrastructure. In addition, many isolated communities are disconnected by rugged terrain (as shown on Map 3), which adds to the cost of building infrastructure. Partnering with UEN provides an opportunity to expand residential Internet service, while providing reliable Internet for educational opportunities.

Grants targeted at rural areas, such as those provided by the United States Department of Agriculture (USDA) should be pursued to extend service to areas with limited broadband service. Nonetheless, some ISPs have expressed that many of the grants available are difficult to obtain for rural providers.



ECONOMIC DEVELOPMENT

Within urban areas and in some rural areas, broadband bandwidth is sufficient to support a variety of complex business operations. This bandwidth has been vital to attracting industry to St. George and Cedar City. Lack of redundant Internet service in some business parks has, however, been a barrier to attracting new businesses and retaining existing businesses. In addition, a reliable fiber optic Internet connection is a must for most businesses. Although some ISPs have had the resources to respond to this need, there is an opportunity to improve service in several business parks. Many businesses require at least 25 Mbps download speeds or higher. As displayed on Map 6.3, areas which offer speeds of this magnitude are limited in the region.

In some rural areas, reliable high-speed Internet has enabled communities to attract high profile home-based businesses. For example, in Kanab, a renowned engineer is able to operate an engineering firm, while enjoying the beautiful scenery of Southern Utah.

Reliable wireless Internet service is vital to maintaining the tourism industry, which is heavily relied upon in the region. Several Wi-Fi hotspots have helped visitors obtain an Internet connection while travelling and there is a demand for more. In St. George, InfoWest and Skywire Communications have partnered with the city to provide hotspots throughout the community gathering places. Other communities could pursue similar strategies to connect visitors and residents to broadband service away from home. As tourist sites in the region are often in remote unpopulated locations, such as Grand Staircase National Monument or Bryce

Canyon National Park, visitation rates should be used to help prioritize areas for broadband deployment. Reliable mobile broadband coverage, even throughout unpopulated areas is important for facilitating communication for tourists. Maps 7.1 – 7.5 display the maximum advertised mobile broadband download speeds throughout the region.

The agricultural industry is increasingly relying upon broadband Internet connection. However, in many agricultural areas Internet service is very limited. Circle Four Farms, which operates a large hog farm operation in Beaver County, employing over 500 workers, has made significant investments to bring long range wireless Internet connection to the operation. A lack of redundancy is a limiting factor for this operation. Smaller agricultural operations in remote areas struggle to obtain reliable Internet connections and are not able to afford the expense of obtaining broadband Internet.

HEALTH AND EDUCATION

UEN provides a strong network of high-speed Internet to public education, higher education and library sites across the state through the Wide Area Network (WAN). UEN develops strong public-private partnerships, contracting with a wide variety of Internet Service Providers (ISPs). In Southwest Utah, every school district is connected via a 1 Gigabit/second connection with Southern Utah University (SUU) and Dixie State University connected via a 10 Gigabit/second connection. Despite the strong responsiveness of UEN to the needs of schools throughout the state, many schools continue to struggle to meet the demands for high-speed Internet throughout the region as devices per student and data usage continues to grow at extravagant rates. In addition, with the added reliance of Internet for all functions, home Internet connections become more vital as students are relying more upon the Internet for all functions, including research, homework and communication. Similarly, libraries are finding it difficult to meet the demand for high-speed Internet, as many residents rely upon their services to connect to the Internet.

The Utah Telehealth Network (UTN) finds itself in a similar situation as UEN and despite a responsive network comprised of various clinics and hospitals; the demand for more data usage continues to grow. Telemedicine will become more necessary, particularly in rural areas, which will strain the networks that are currently provided. Both UTN and UEN should build upon the strong networks that are currently formed to respond to needs for growth.

INFRASTRUCTURE

Providing infrastructure is the key component to meeting the needs for the focus areas listed above. In Southwest Utah, a variety of ISPs are working hard to meet the needs for various customers. ISPs communicate and work well together to respond to these needs. Cooperation

with the public sector is vital to providing reliable high-speed Internet. The Utah Department of Transportation (UDOT) has been very cooperative in working with ISPs, installing conduit and allowing installation along UDOT right-of-ways in exchange for services. St. George City has developed a utility notification system process, which informs telecommunication companies when utility projects are happening. This allows ISPs to save money when installing infrastructure in the city as they coordinate with other projects, thus decreasing the need to dig.

Despite these efforts, there are many opportunities for increased public/private cooperation to deliver broadband Internet service. Cities should continue to remove barriers to installing infrastructure and seek opportunities to partner with providers. As noted in the Residential Service section above, working with federal entities is imperative to expanding infrastructure networks albeit difficult and cumbersome at times. Improved communication is needed between these entities and ISPs.

REGIONAL NEEDS

The Regional Broadband Council and the Five County AOG Staff identified needs and priorities for each of the identified sector areas. Understanding that needs are significantly different in various locations in the region. For example, in urban areas, there is a focus to build a more redundant network to attract and retain businesses; whereas, in rural and frontier areas, more reliable service and provider diversity will improve the broadband landscape. Regional needs are categorized based upon urban, rural, and frontier locations as described in the "Regional Overview" section above. A summary of needs is included below.

	Urban (St George, Cedar City Areas)	Rural (small cities and towns, i.e. Panguitch, Beaver, Kanab)	Frontier (isolated, sparsely populated areas)
Residential	-Expanded mobile data capacity -Lower cost options	-More broadband provider diversity	-Basic broadband service in populated areas -More reliable service
Economic Development	-More redundancy and higher bandwidth in industrial areas -Wider availability of existing broadband infrastructure -Increased public Internet access zones -Opportunities to tie into backbone network	-More redundancy and competition -High speed broadband service to attract high profile home businesses -More reliable service	-Increased broadband availability for agriculture, mining, and tourism activities -Cooperation among existing stakeholders to facilitate broadband expansion
Health and Education	-More devices at public access zones -Wider Internet access at home -Increased wireless bandwidth in schools/universities to accommodate more data usage	-Increased bandwidth to health clinics to facilitate video-conferencing -Wider Internet access for students at home -Higher speed in public access zones, establish community libraries to access UEN resources	-Cooperation with UEN to provide basic broadband service to facilitate educational opportunities
Infrastructure	-Cooperation with local governments to overcome right-of-way constraints and provide available conduit on utility corridors	-Work to overcome physical barriers of expansion, -Cooperation with federal entities (i.e. BLM) and ISPs to utilize existing infrastructure of conduit, towers, etc. to expand network	

GOALS

The following regional goals were formulated to guide the priority recommendations to improve broadband deployment and adoption.

1. **PROLIFERATION OF A VARIETY OF OPTIONS FOR AFFORDABLE, RELIABLE, HIGH-SPEED RESIDENTIAL INTERNET SERVICE**

2. **REDUNDANCY AND HIGHER BANDWIDTH IN INDUSTRIAL AREAS, BUSINESS PARKS AND OTHER POTENTIAL SITES FOR BUSINESSES TO RETAIN AND ATTRACT NEW BUSINESSES**

3. **INCREASED BANDWIDTH IN SCHOOLS, LIBRARIES, HOSPITALS AND PUBLIC ACCESS SITES TO ACCOMMODATE GREATER DATA USAGE**

4. **IMPROVED COOPERATION BETWEEN INTERNET SERVICE PROVIDERS AND GOVERNMENT ENTITIES TO EXPAND THE NETWORK OF BROADBAND INFRASTRUCTURE**

PRIORITY RECOMMENDATIONS

The following recommendations are meant to serve as a guide to accomplish the Southwest Utah Regional Broadband Goals. Some of the priorities will help accomplish several of the goals, while others are focused on accomplishing a particular goal. The priority recommendations identify particular strategies to implement and stakeholders involved.

DEVELOPMENT OF DETAILED BROADBAND PLANS FOR LOCAL JURISTICTIONS

Developing partnerships between municipalities, counties and ISPs is vital to developing a reliable high-speed broadband network. In addition, needs and feasibility of broadband deployment vary by location. In some locations, supporting a large scale fiber optic deployment plan might be feasible, while in others microwave deployment in some areas might be the best approach. In any case, just as communities are engaged in planning for transportation infrastructure, planning for expanded broadband deployment will help communities meet the

growing demand for broadband capacity. The private sector has delivered a variety of broadband services to meet customers' needs. In partnership with area providers, municipalities and counties should be developing broadband plans which specifically address the needs of the community. These plans will help leverage resources, remove unnecessary barriers and build a cohesive network of broadband infrastructure. To incentivize the development of Local Broadband Plans, the Utah Broadband Project should seek grant opportunities which communities could utilize. Local Broadband Plans might include the following components.

- An assessment of current broadband infrastructure availability and projected needs for expansion to support community goals.
- Planned infrastructure to meet the demand for services.
- Identification of funding to support broadband deployment.
- Identification of barriers to deploying broadband and considerations for the removal of such barriers.
- Consideration for "dig once" policies. For example, a requirement to install new conduit in coordination with other utility projects or requiring the installation of conduit for new development (see Appendix 1 for sample of a dig once policy).

Key Stakeholders: City and County Administrators, Internet Service Providers, State Staff, Economic Development Professionals, Citizens

DISSEMINATE INFORMATION ABOUT BROADBAND MAPPING TOOL TO PROSPECTIVE BUSINESSES

The Utah Broadband Project Staff coordinates detailed information about available broadband service across the state in coordination with ISPs. This information is invaluable to prospective businesses, seeking to locate in the region. The Utah Broadband Project staff works continually with providers to obtain and update this information. It was noted that relatively few businesses are aware of this tool. Project staff is currently working to provide more detailed information about future service expansions. Disseminating information about the broadband mapping tool is needed to promote business deployment in the region. Economic Development professionals should encourage prospective and expanding businesses to utilize this tool. This will add value to the tool and will create a greater impetus for providing ongoing, accurate information about broadband service

Key Stakeholders: Economic Development Professionals, Utah Broadband Project Staff, Prospective Businesses

ENHANCE BROADBAND DATABASE TO INCLUDE AVAILABLE INFRASTRUCTURE AND PROJECT SCHEDULES

As noted above, the City of St. George has a utility notification process which informs telecommunication companies when utility projects happen, so that providers can take advantage of the open trench to install broadband infrastructure. Surrounding cities have developed similar practices. UDOT has developed a strong relationship with ISPs to provide broadband infrastructure in conduit which UDOT installs along transportation rights-of-way. Conversely, on federal land, providers have found it very difficult to obtain information about available infrastructure. In all cases, a coordinated database of available infrastructure and project schedules would help the productivity of broadband providers, ultimately lowering costs and increasing broadband deployment. In many cases, carriers will not be willing to provide detailed public data with infrastructure locations. However, a secure database that allows access to Utah Broadband Project Staff and providers requesting access would help providers locate available infrastructure and coordinate project schedules. As part of the Utah Broadband Project, staff could manage such a database, in coordination with municipalities, utility companies, UDOT, federal land managers and other infrastructure carriers.

Key Stakeholders: Utah Broadband Project Staff, Utility Companies, UDOT, Federal Land Managers, Municipalities, Infrastructure Carriers, ISPs

IMPROVE COORDINATION WITH UEN TO EXPAND BROADBAND ACCESS AND CAPACITY

UEN supports a strong network of broadband infrastructure to support education at schools and libraries. In many cases, the expansion of UEN's WAN has helped providers expand broadband Internet for residential and business service. Continual communication and coordination with UEN is vital to expanding educational opportunities and expanding Internet access, particularly in underserved areas. In many cases, a coordinator which brings all stakeholders to the table, including UEN, is needed to pool resources to provide broadband infrastructure to the community. In coordination with UEN, the town of Big Water is exploring possibilities to improve broadband Internet coverage to its residents. These opportunities should be explored in other underserved areas.

Key Stakeholders: UEN Staff, ISPs, School District Staff, Library Staff, City Administrators

REFINE GRANT POLICIES TO PROVIDE BROADBAND SERVICE FOR SMALL PROVIDERS IN RURAL AND ISOLATED AREAS.

Although there are grant opportunities available to assist ISPs in serving rural and frontier areas, for some areas, providers still cannot make a business case to provide service. In some cases, grant opportunities are difficult to obtain for small providers, as the requirements for the grant are unrealistic for small providers to meet. For example, one provider noted that when applying for a grant, all residences in each census tract in the service area must be serviced. With census tracts that are thousands of square miles in area, this is unrealistic for a small provider to achieve. It was noted that the customer service of several large providers is poor and in many rural areas, a large provider may be the only choice for service. Making grant opportunities more expansive and equitable would foster more competition in rural areas, as more providers would be able to fill a niche in rural markets. Communities in the region in which broadband coverage is limited or was noted to be in need of improvement include: Big Water in Kane County, Minersville and Milford in Beaver County, and several isolated communities in Garfield County. Opening up grant opportunities with a focus on small providers would provide better opportunities to service these areas.

Key Stakeholders: Utah State Broadband Project Staff, ISPs, Utah State Legislature, Congressional Delegation, Federal Communications Commission (FCC)

STATE LIAISON PROGRAM FOR COOPERATING WITH PUBLIC LAND MANAGERS

Cooperating with federal and state land entities, although vital to expanding broadband Internet service in many areas, has been described as a very cumbersome and difficult process. ISPs are often discouraged to expand service areas when crossing public lands due to extensive environmental review and other barriers. In addition, infrastructure located on federal lands, such as microwave towers, is often difficult to lease. To overcome these barriers to building and utilizing infrastructure on federal lands, a “State Liaison,” which has a strong understanding and relationship with federal land managers and understands the needs of ISPs could assist providers through the process of building and/or utilizing infrastructure on federal lands. This Liaison program should be performed at the state level. The Utah Broadband Project Staff or the State Planning Coordinator could provide this support.

Key Stakeholders: Utah Broadband Project Staff, Federal Land Managers, ISPs

REMOVE BARRIERS AND SUPPORT THE PRIVATE SECTOR TO LEAD THE CHARGE TO EXPAND BROADBAND INFRASTRUCTURE.

Broadband infrastructure deployment in the region, as elsewhere, has been an accomplishment led by the private sector. ISPs and carriers have the technical expertise to deliver broadband Internet services efficiently and effectively. With this acknowledgement, the Five County Regional Broadband Planning Council recommends that the private sector continues to deliver broadband services. The public sector's role in the process is to work with ISPs, to identify ways to remove barriers to expanding infrastructure, invest in infrastructure with appropriate public support and communicate identified needs. Barriers that inhibit deployment of broadband infrastructure include both regulatory and physical barriers. In some cases, municipalities may have cumbersome policies that need to be amended to allow ISPs to more effectively expand. In other cases, communities are too isolated to effectively receive service and incentives may need to be provided. Effective public/private partnerships have been an effective method for delivering broadband Internet service and should continue to be strengthened with an acknowledgement that the private sector should continue to be the primary driver for expanded infrastructure.

Key Stakeholders: ISPs, State and Municipal Staff

ONGOING REGIONAL BROADBAND COORDINATION

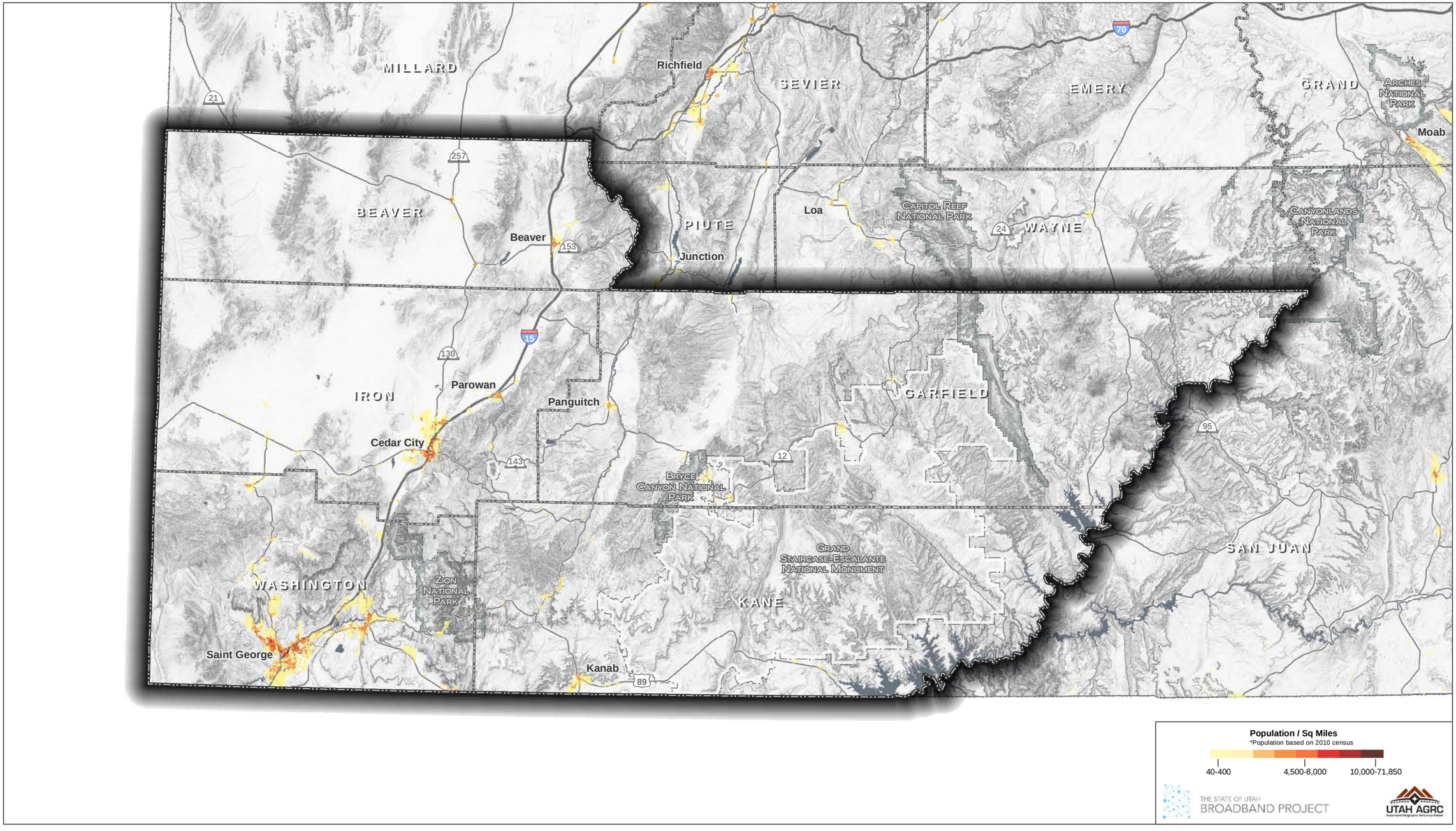
The Regional Broadband Planning Process has brought a variety of stakeholders together that have a shared interest of expanding and improving broadband Internet access. Ongoing regional broadband coordination is needed to provide a forum in which ISPs, economic development professionals, businesses, schools, and others can collaborate on broadband-related projects. Staff support to convene the consortium and coordinate specific projects, as necessary, will strengthen regional broadband coordination efforts. This could possibly be provided at the AOG level. If funding is limited, a volunteer coordinator in the region may need to be recruited. In any case, an effort to retain the partnerships developed during the regional broadband planning process should be pursued.

Key Stakeholders: Regional Broadband Planning Council, Utah Broadband Project Staff, Associations of Governments

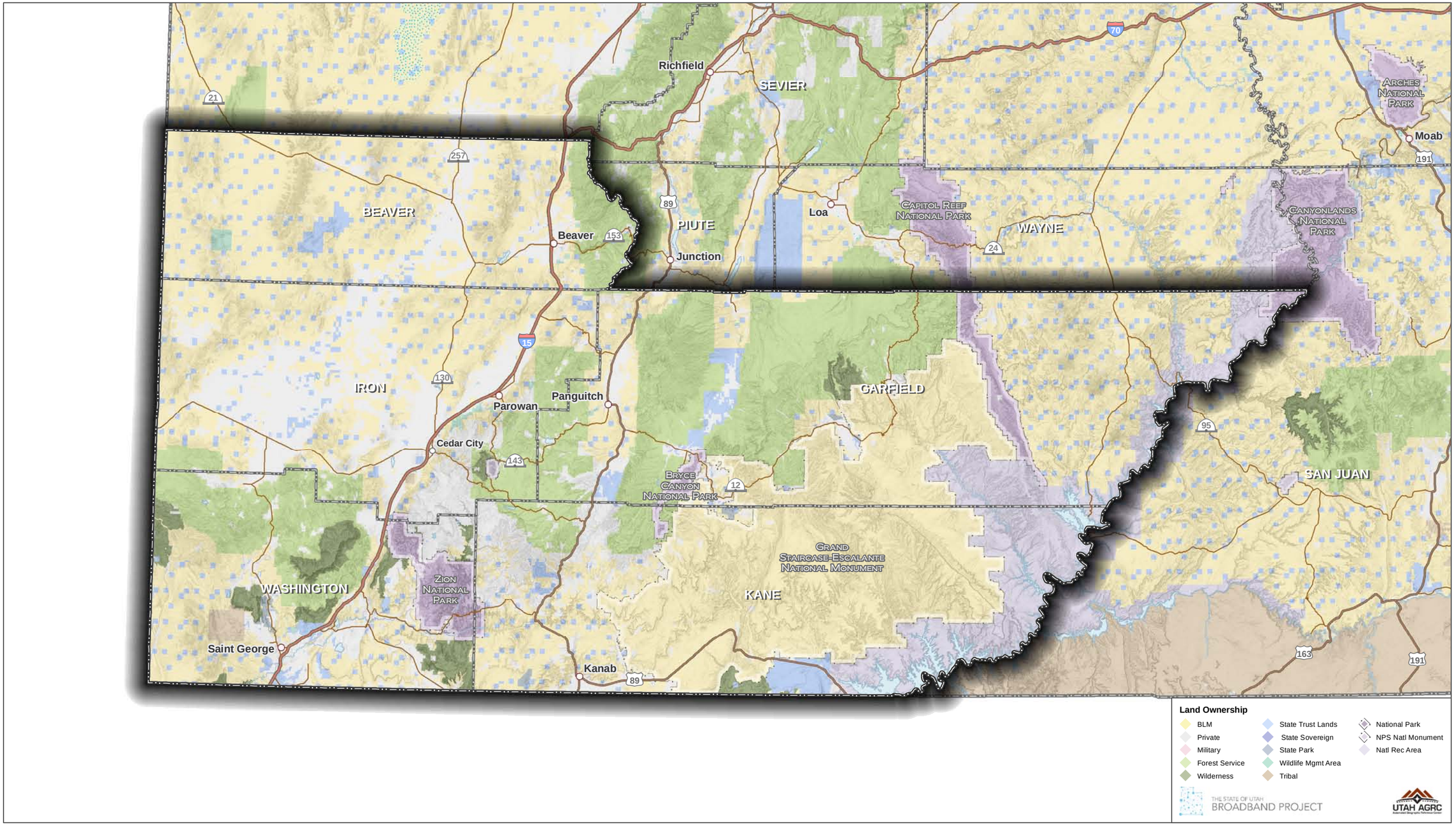
MAPS AND APPENDICES

The Maps and Appendices referenced throughout this document are provided below.

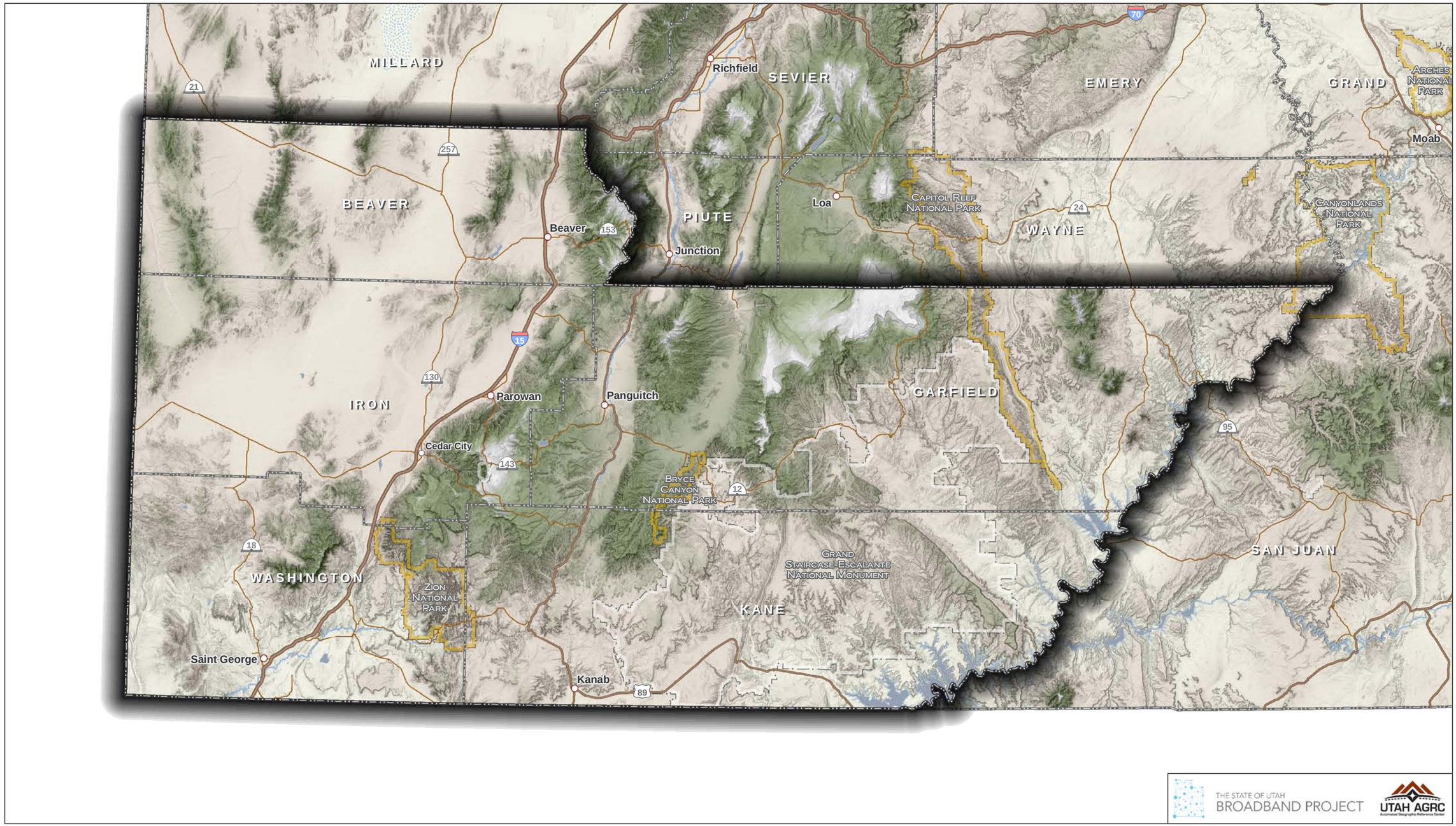
Map 1 - Population Density



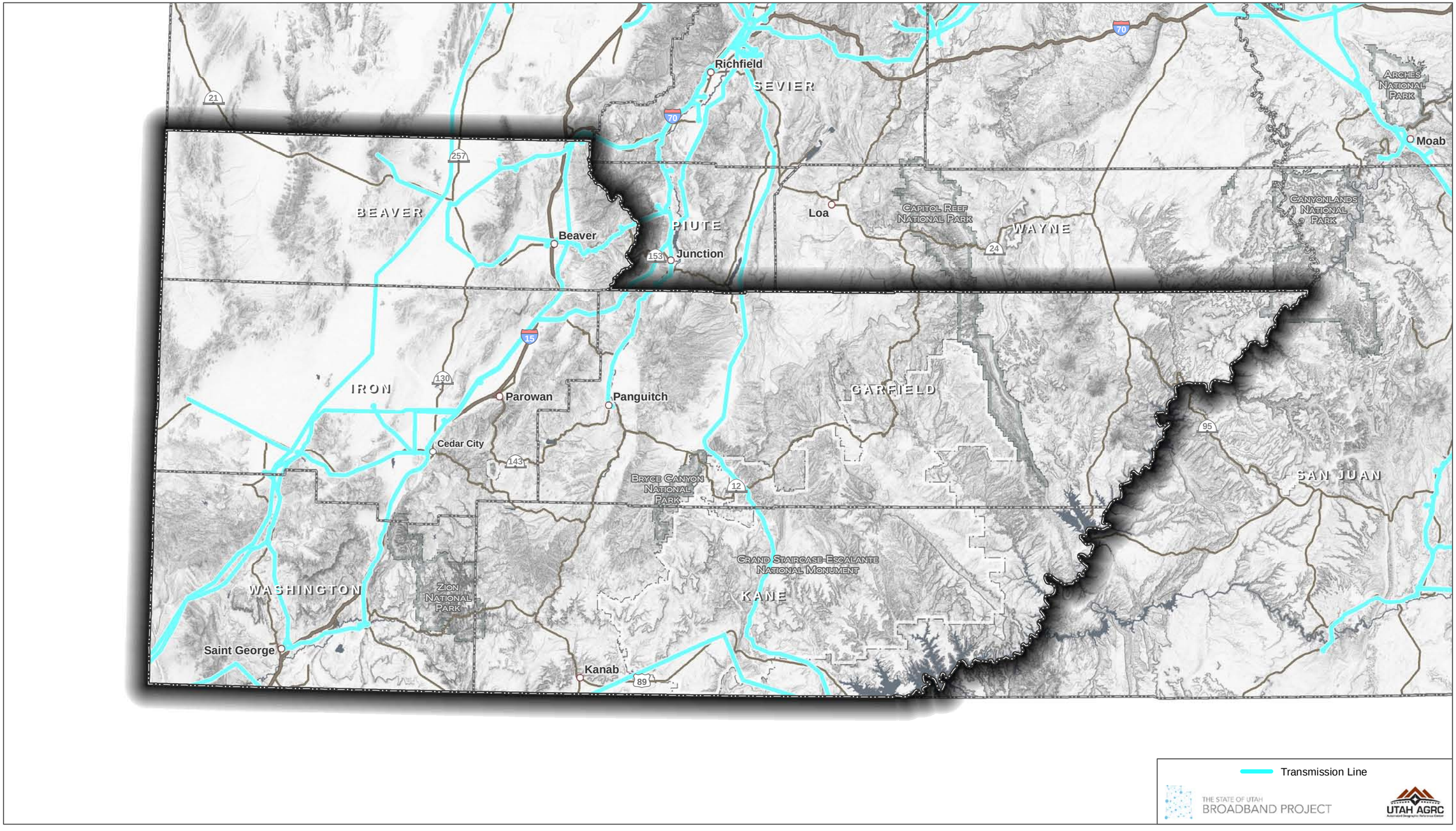
Map 2 - Land Ownership



Map 3 - Terrain

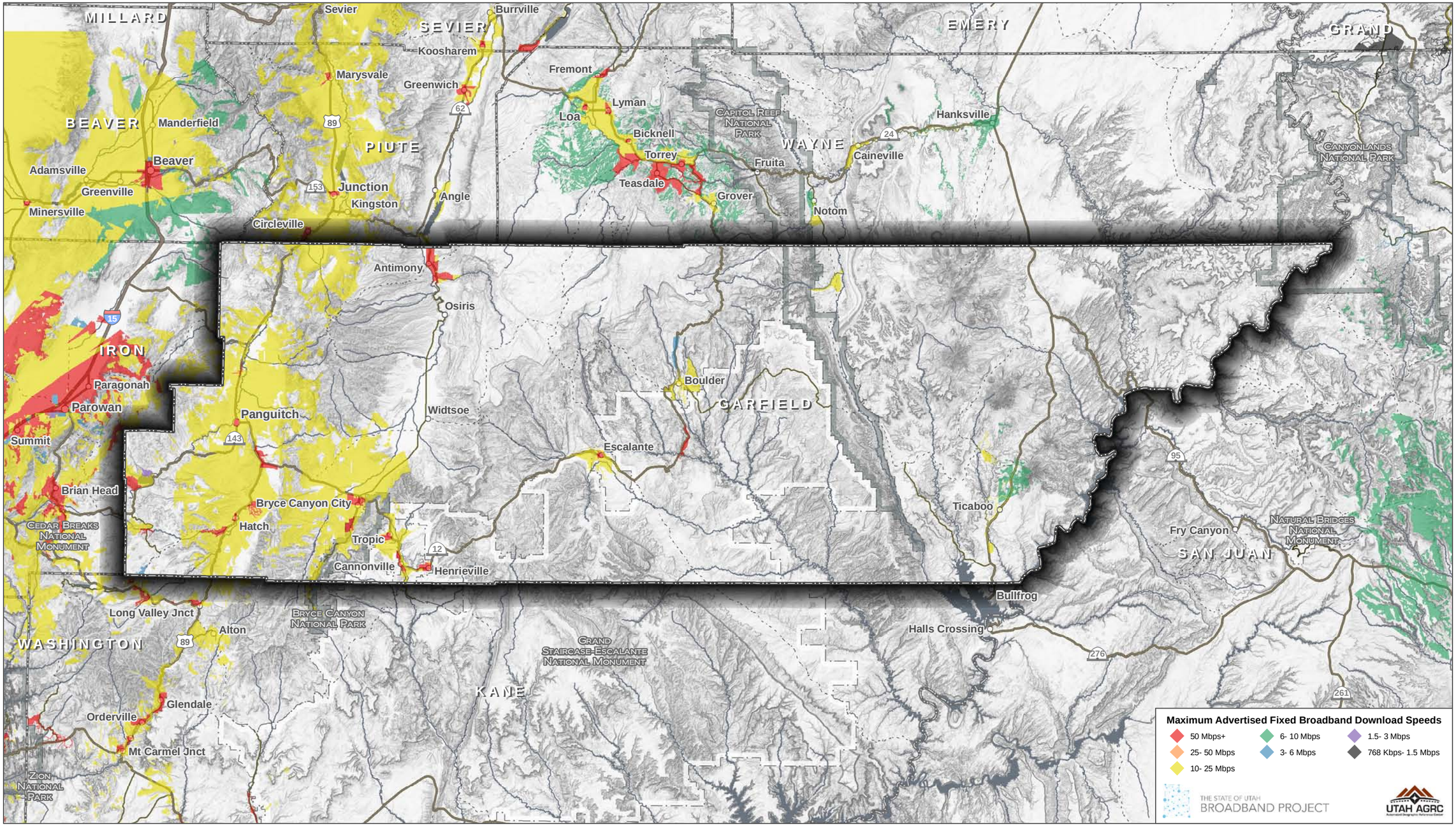


Map 4 - Transmission Lines

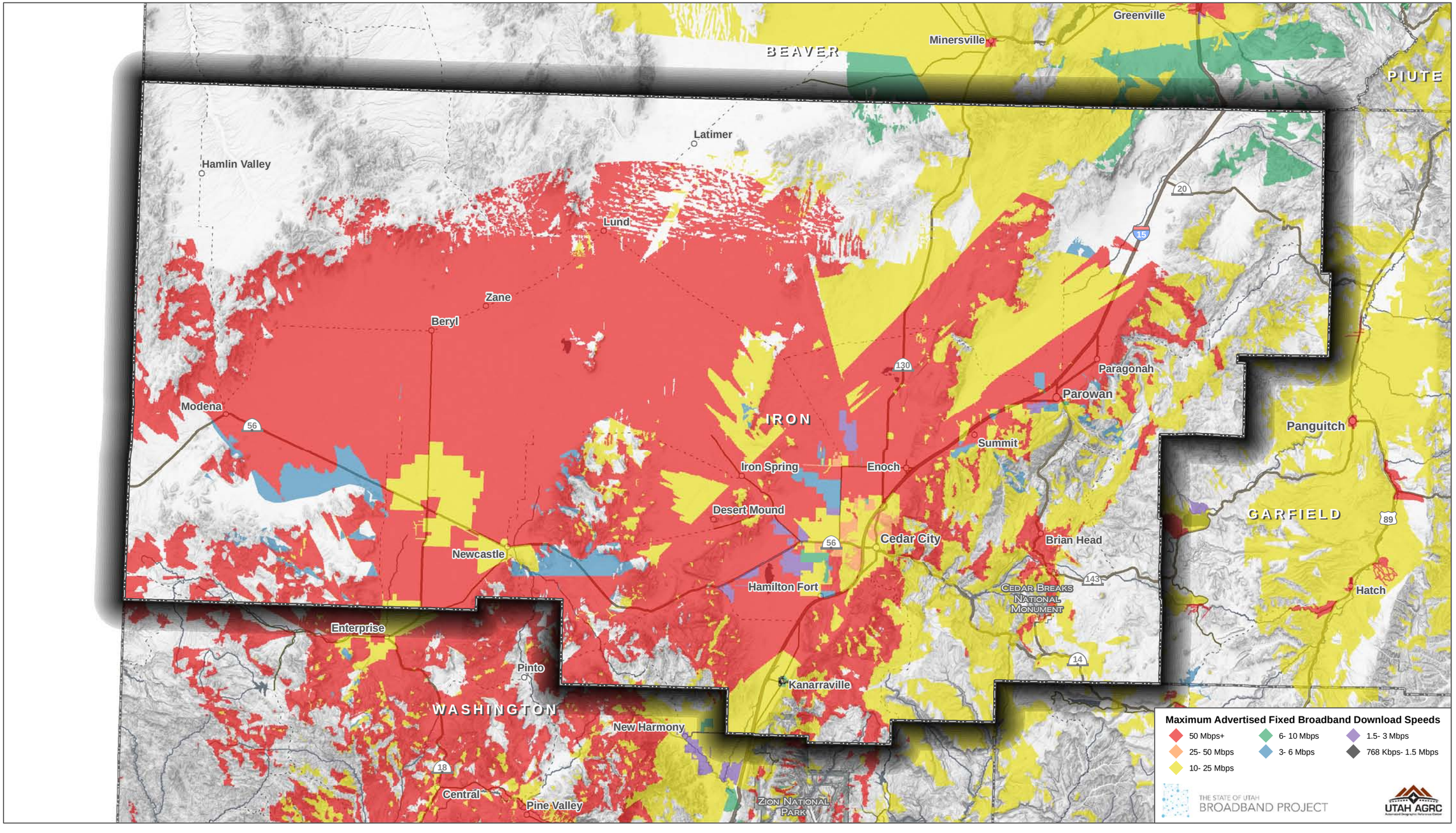


Map 5.1 - Beaver County - Maximum Advertised Fixed Broadband Download Speeds

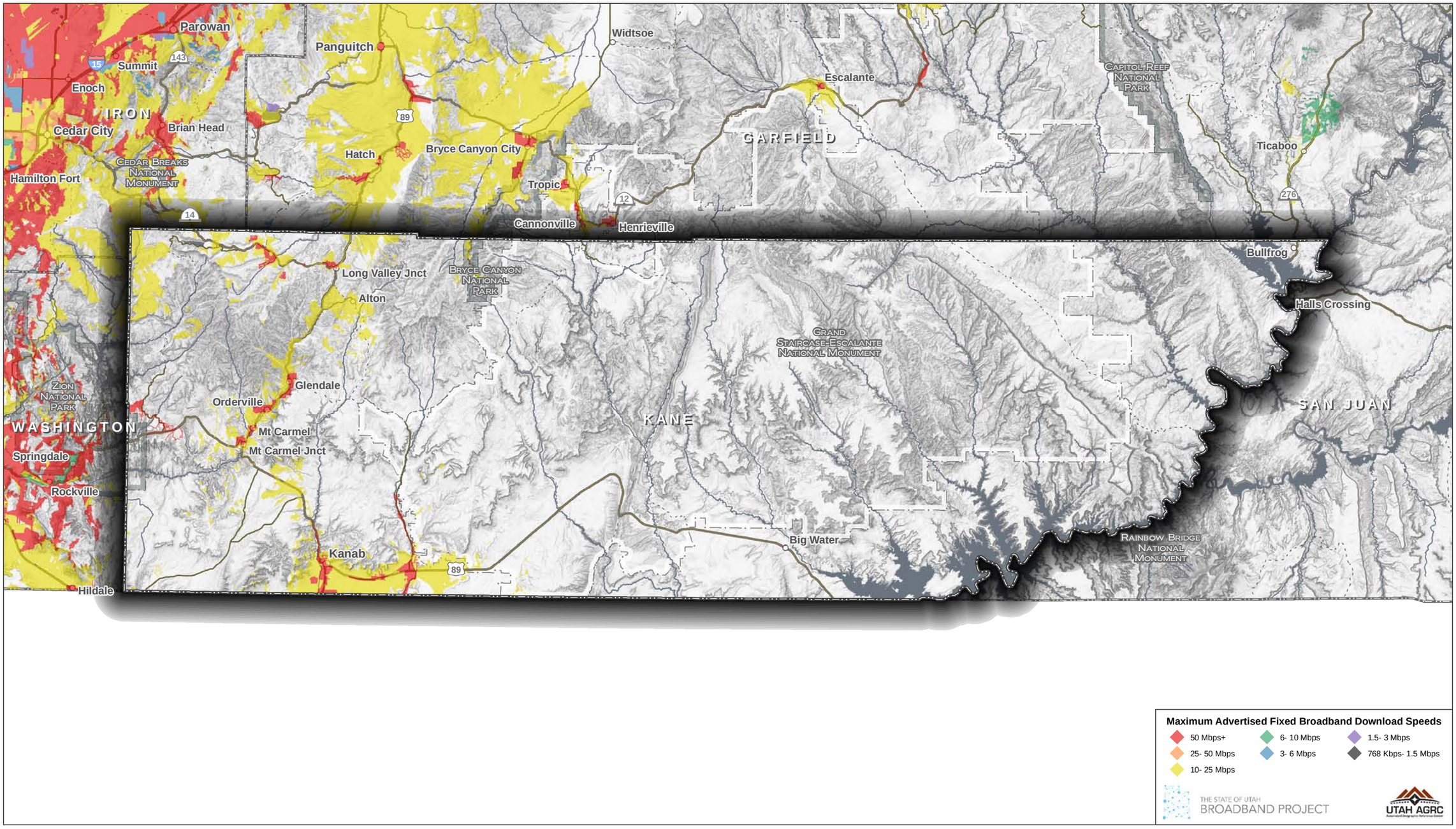
Map 5.2 - Garfield County - Maximum Advertised Fixed Broadband Download Speeds



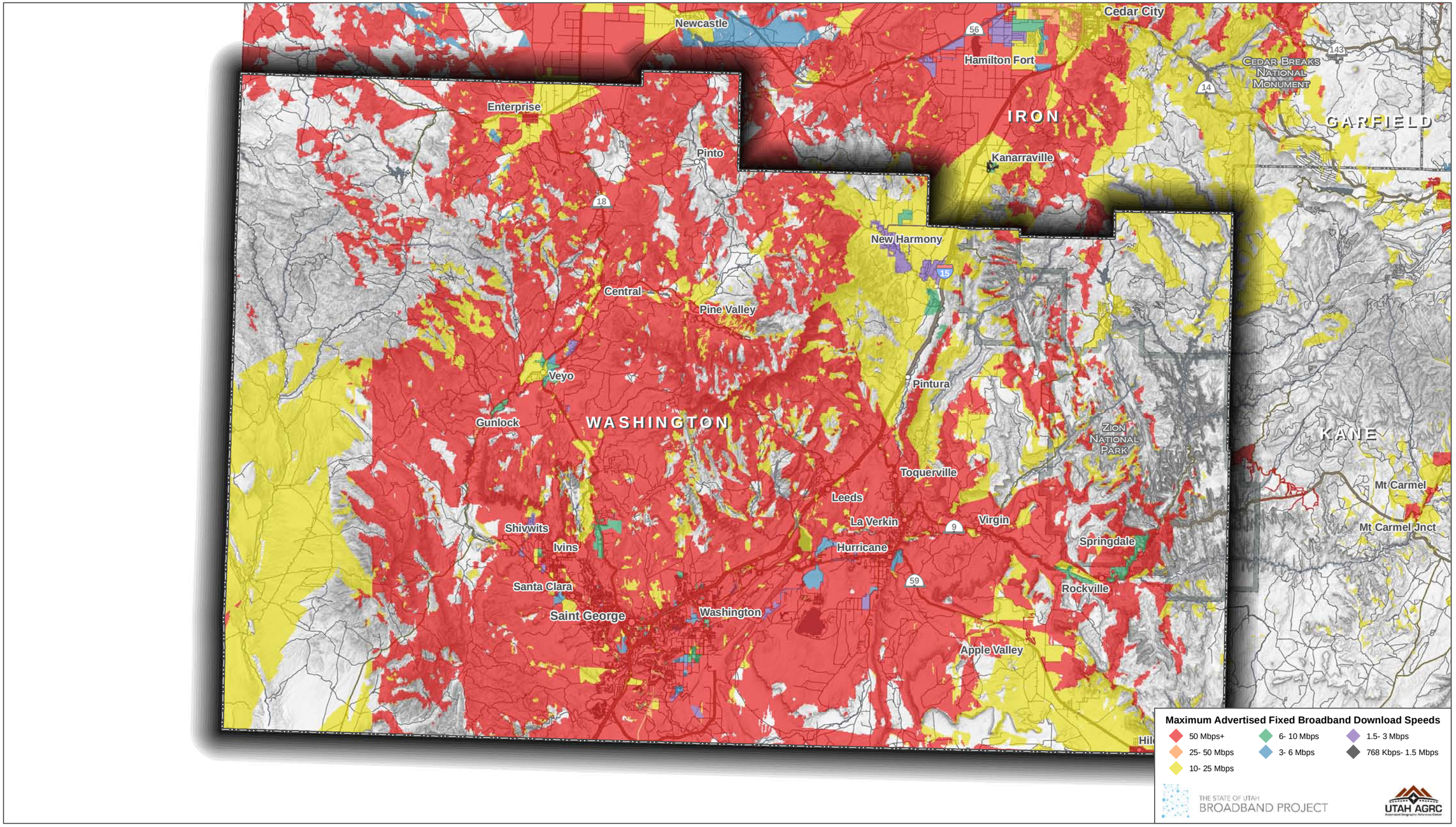
Map 5.3 - Iron County - Maximum Advertised Fixed Broadband Download Speeds



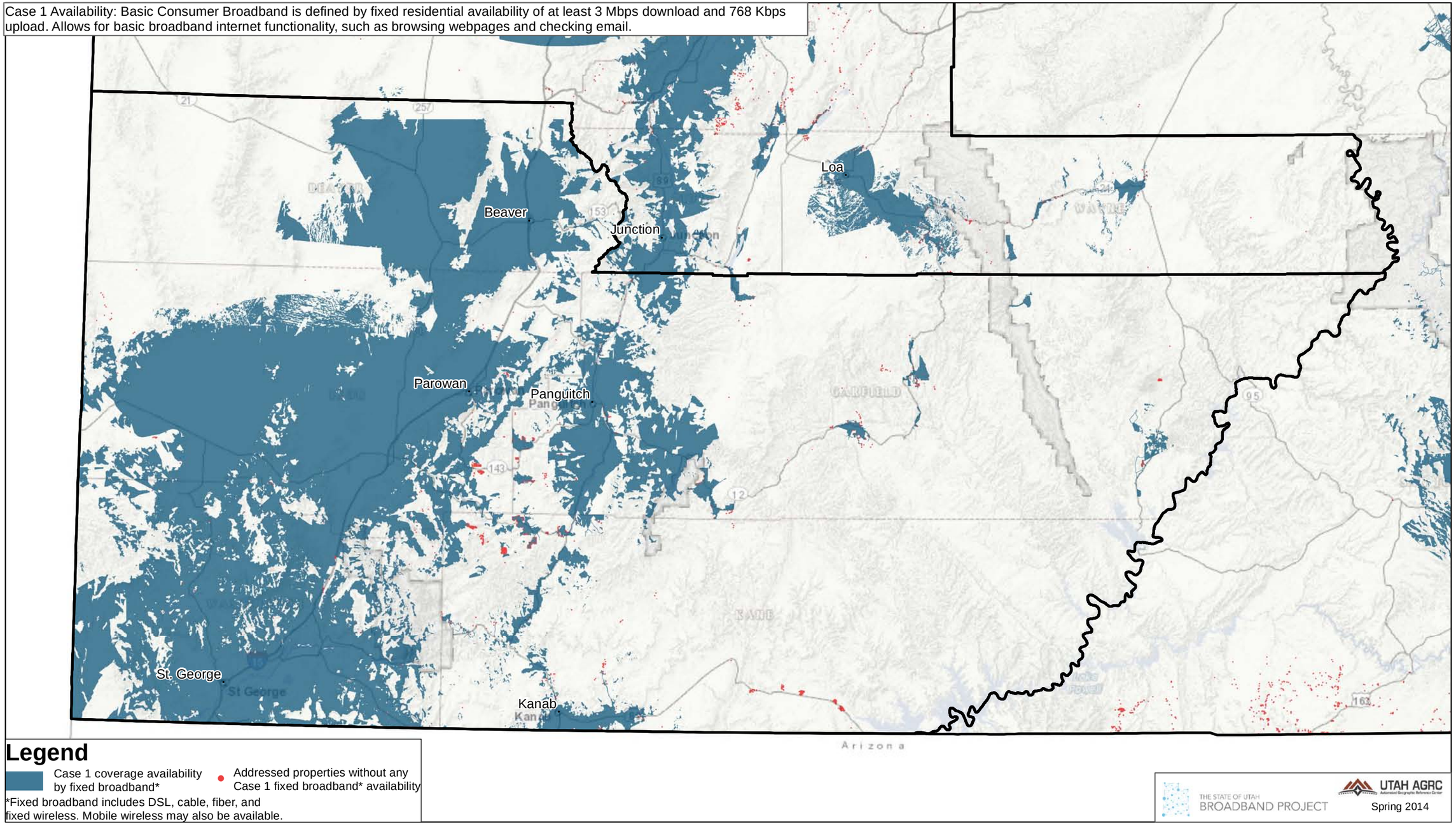
Map 5.4 - Kane County - Maximum Advertised Fixed Broadband Download Speeds



Map 5.5 - Washington County - Maximum Advertised Fixed Broadband Download Speeds

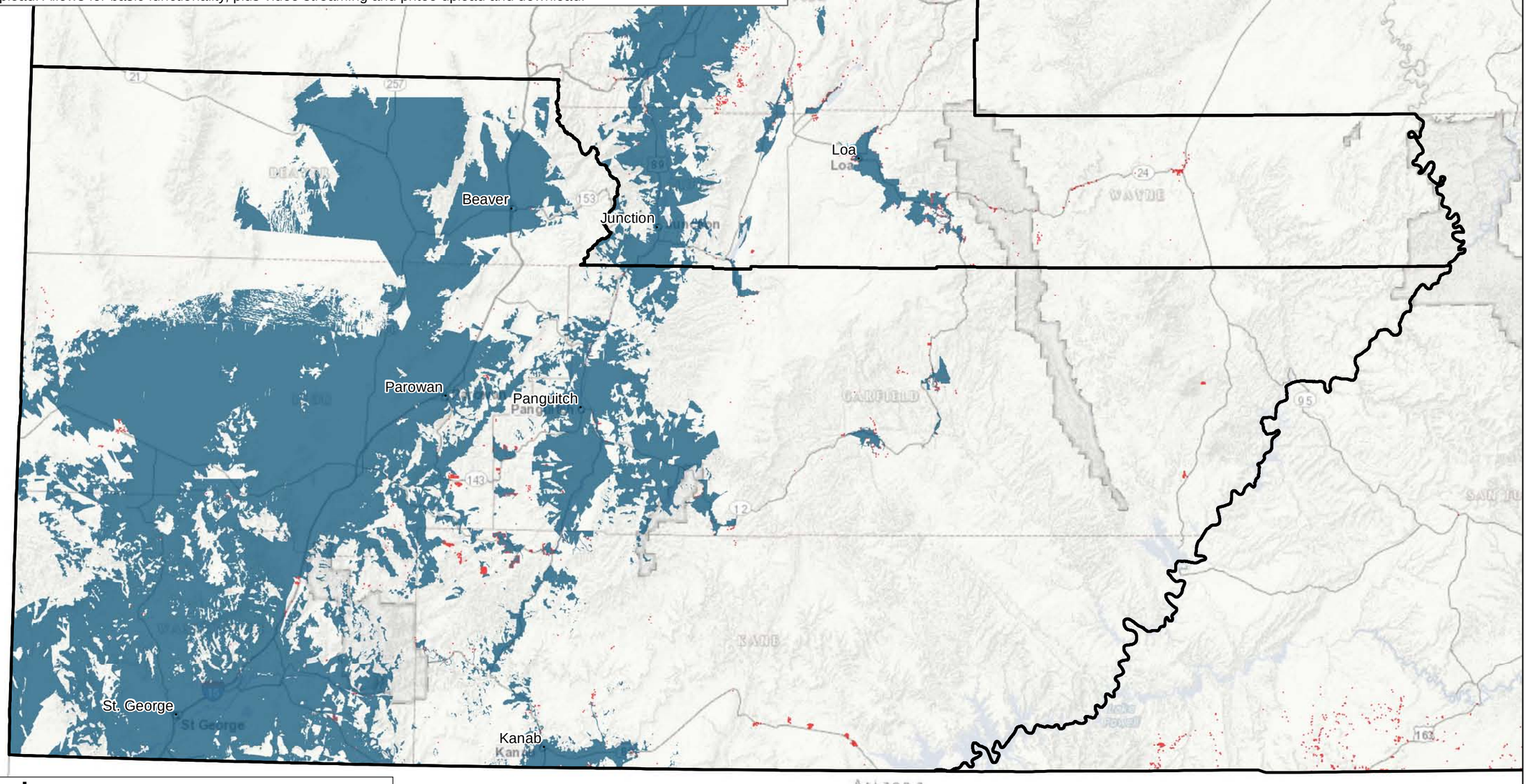


Map 6.1 - Populated Areas Without Basic Consumer Broadband



Map 6.2 - Populated Areas Without Home Office/Education Broadband

Case 2 Availability: Home Office/Education Broadband is defined by fixed residential availability of at least 10 Mbps download and 3 Mbps Upload. Allows for basic functionality, plus video streaming and phtoo upload and download.



Legend

Case 2 coverage availability by fixed broadband*

Addressed properties without any Case 2 fixed broadband* availability

*Fixed broadband includes DSL, cable, fiber, and fixed wireless. Mobile wireless may also be available.

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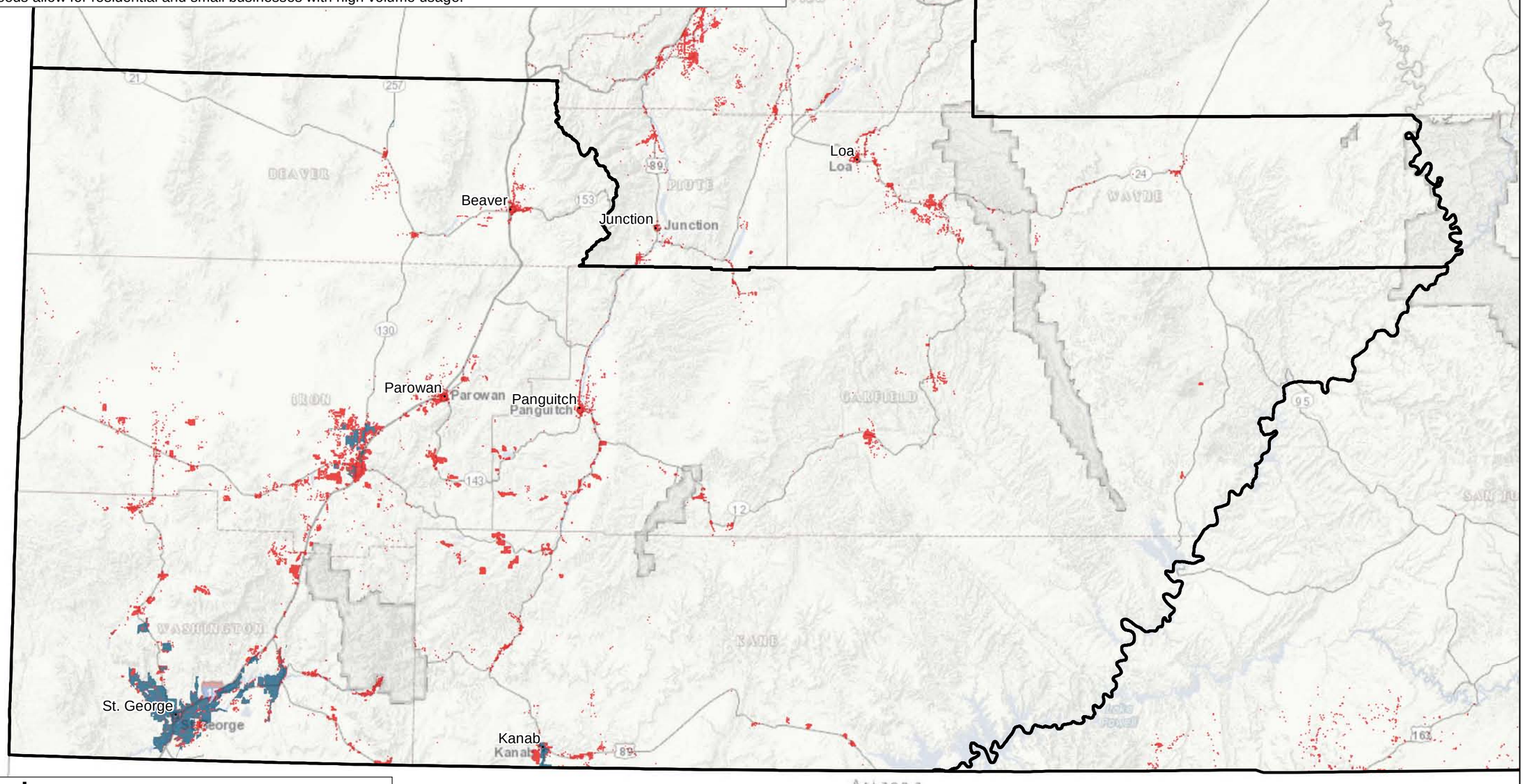
Map 6.3 - Populated Areas without High Capacity Broadband

Case 3 Availability: High Capacity is defined by residential fixed availability of at least 25 Mbps download and 6 Mbps upload.
These speeds allow for residential and small businesses with high volume usage.



Legend

Case 3 coverage availability by fixed broadband*

Addressed properties without any Case 3 fixed broadband* availability

*Fixed broadband includes DSL, cable, fiber, and fixed wireless. Mobile wireless may also be available.

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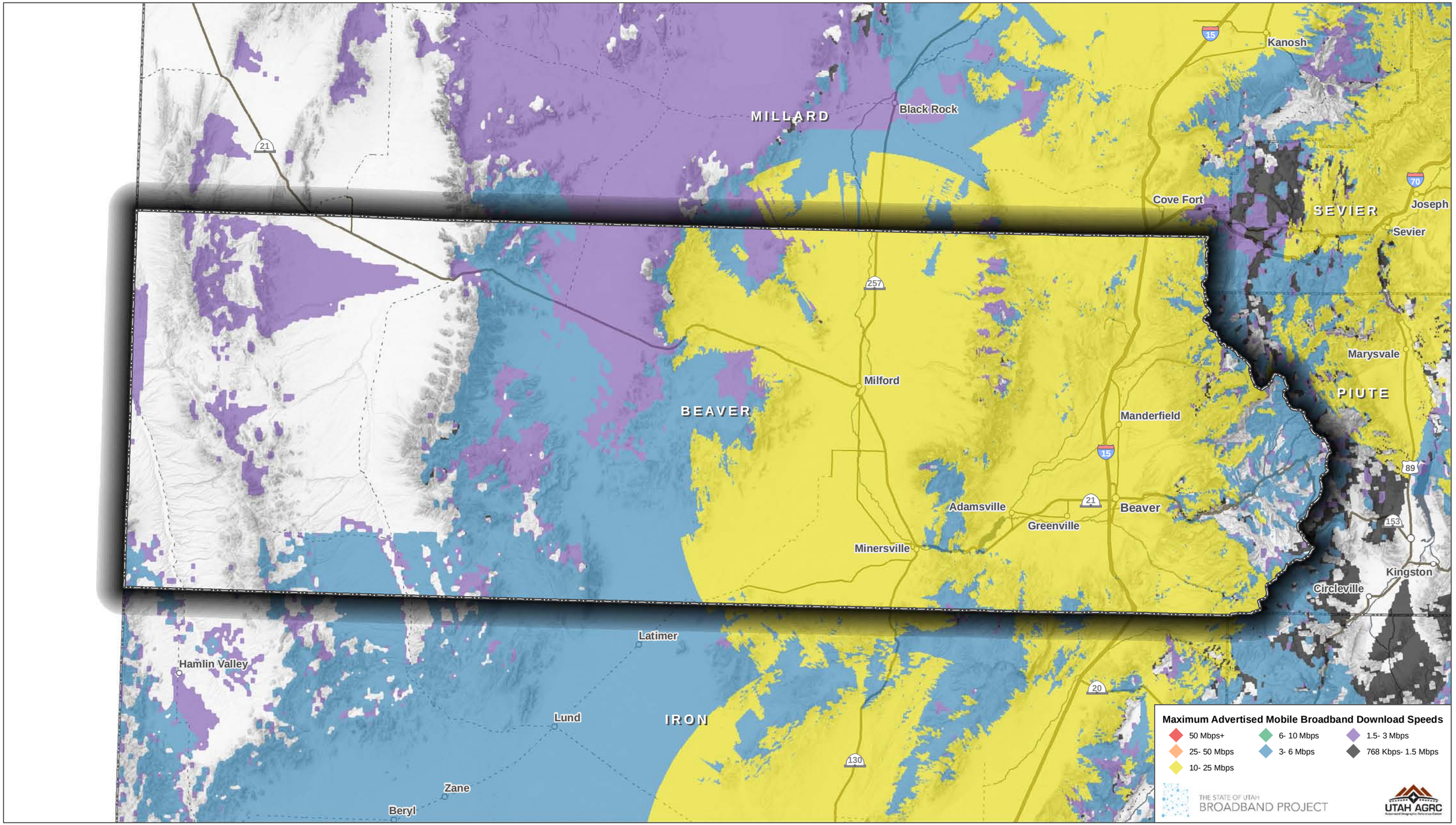
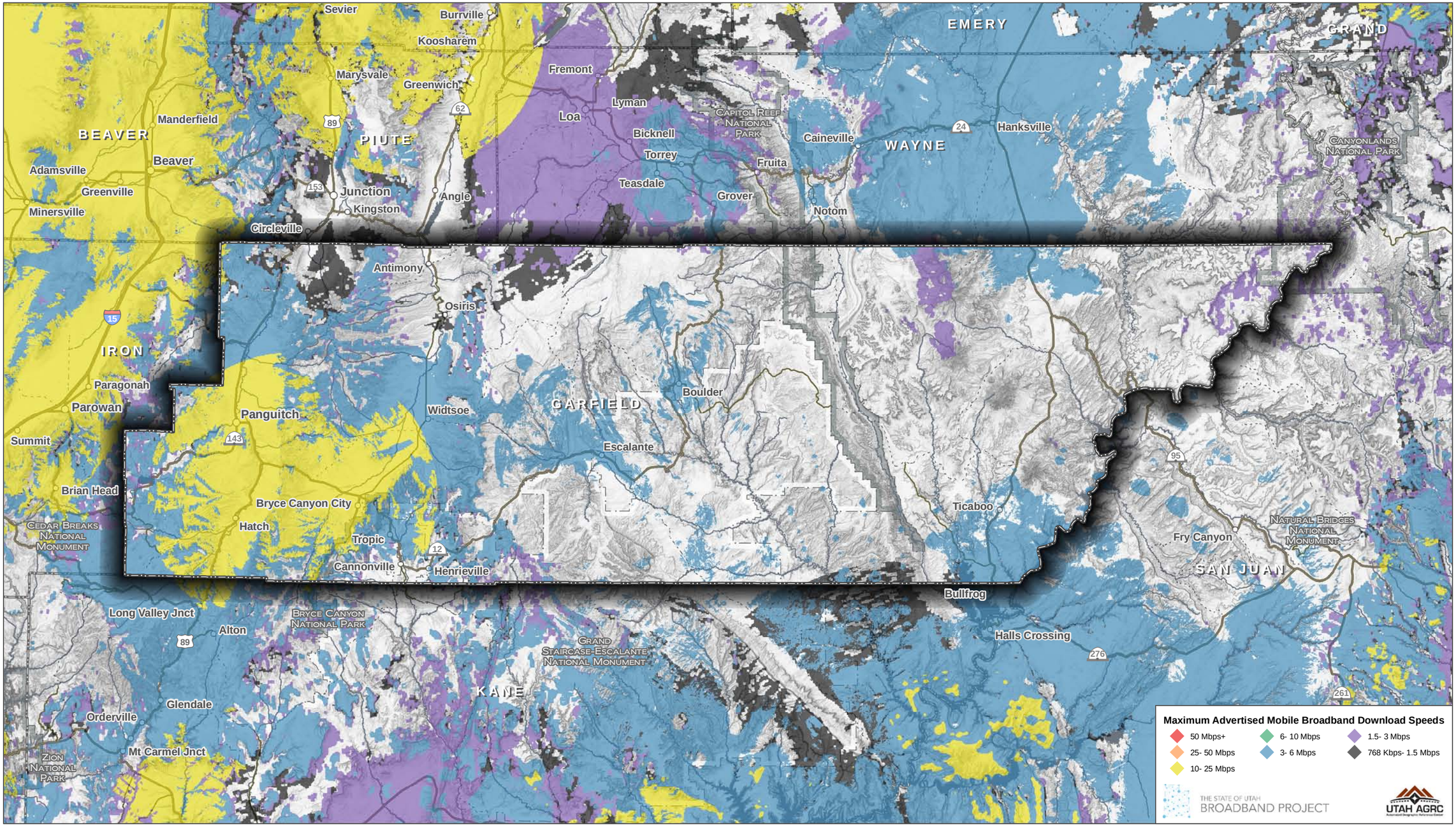
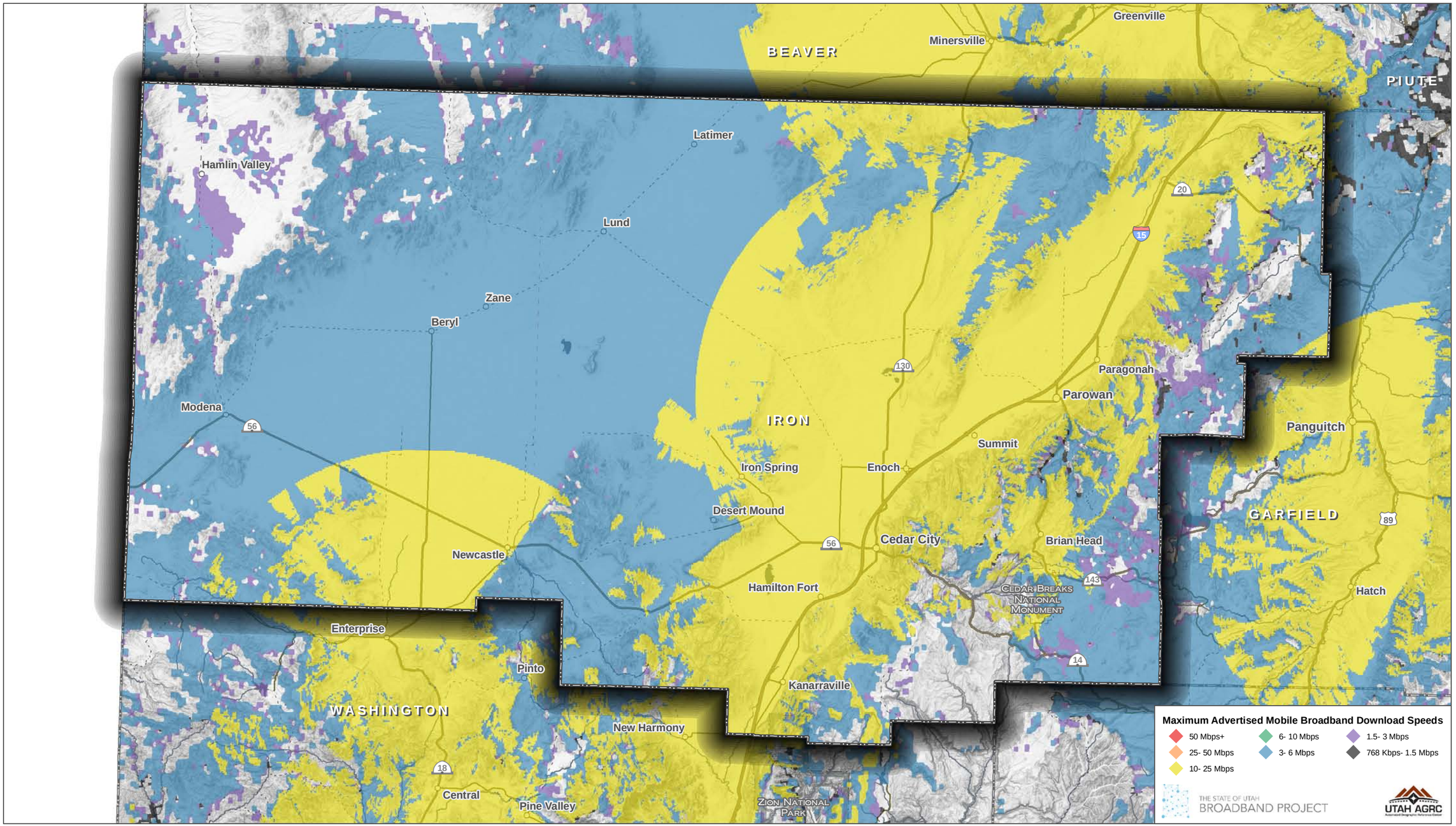
Map 7.1 - Beaver County - Maximum Advertised Mobile Broadband Download Speeds



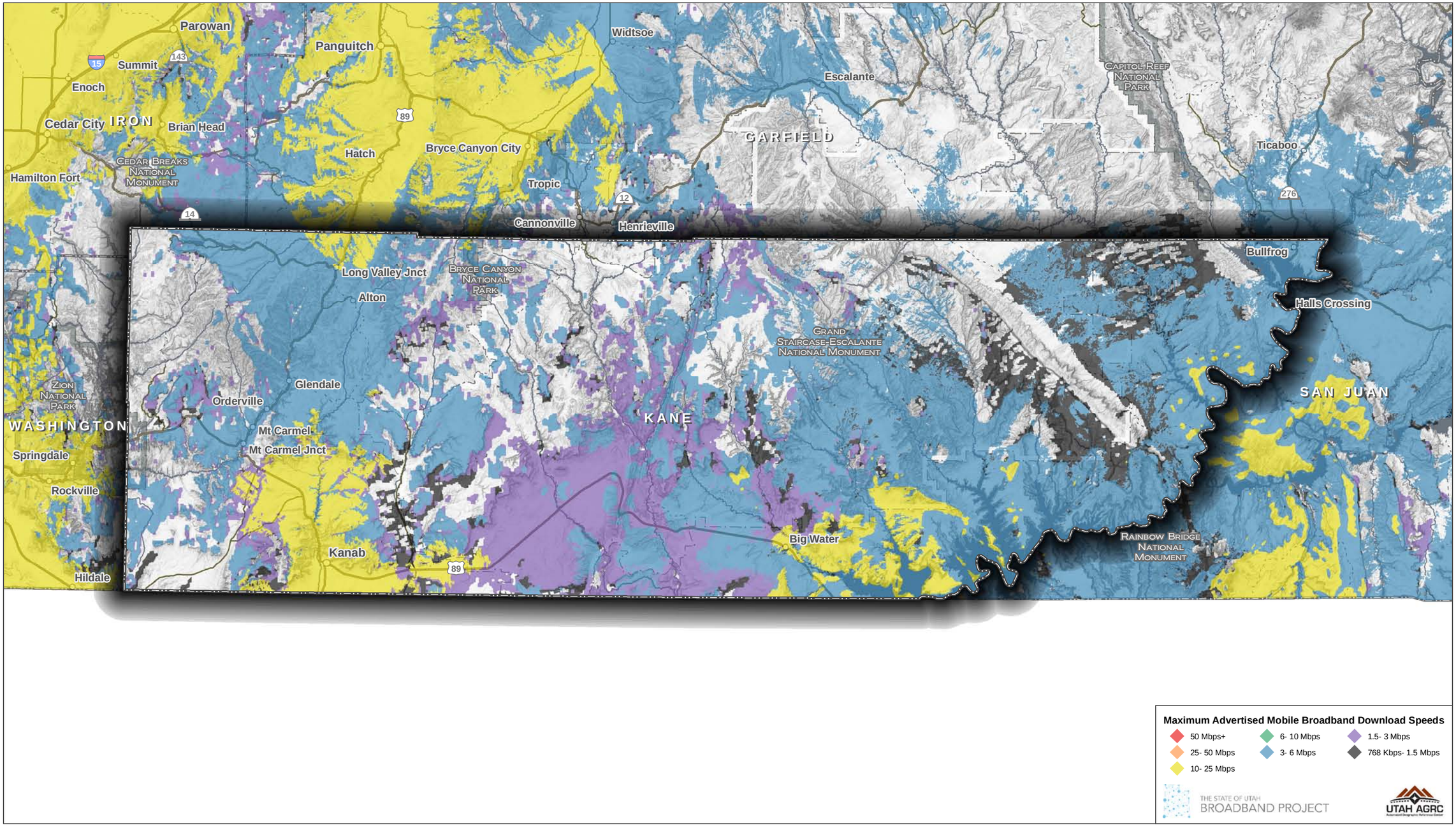
Map 7.2 - Garfield County - Maximum Advertised Mobile Broadband Download Speeds



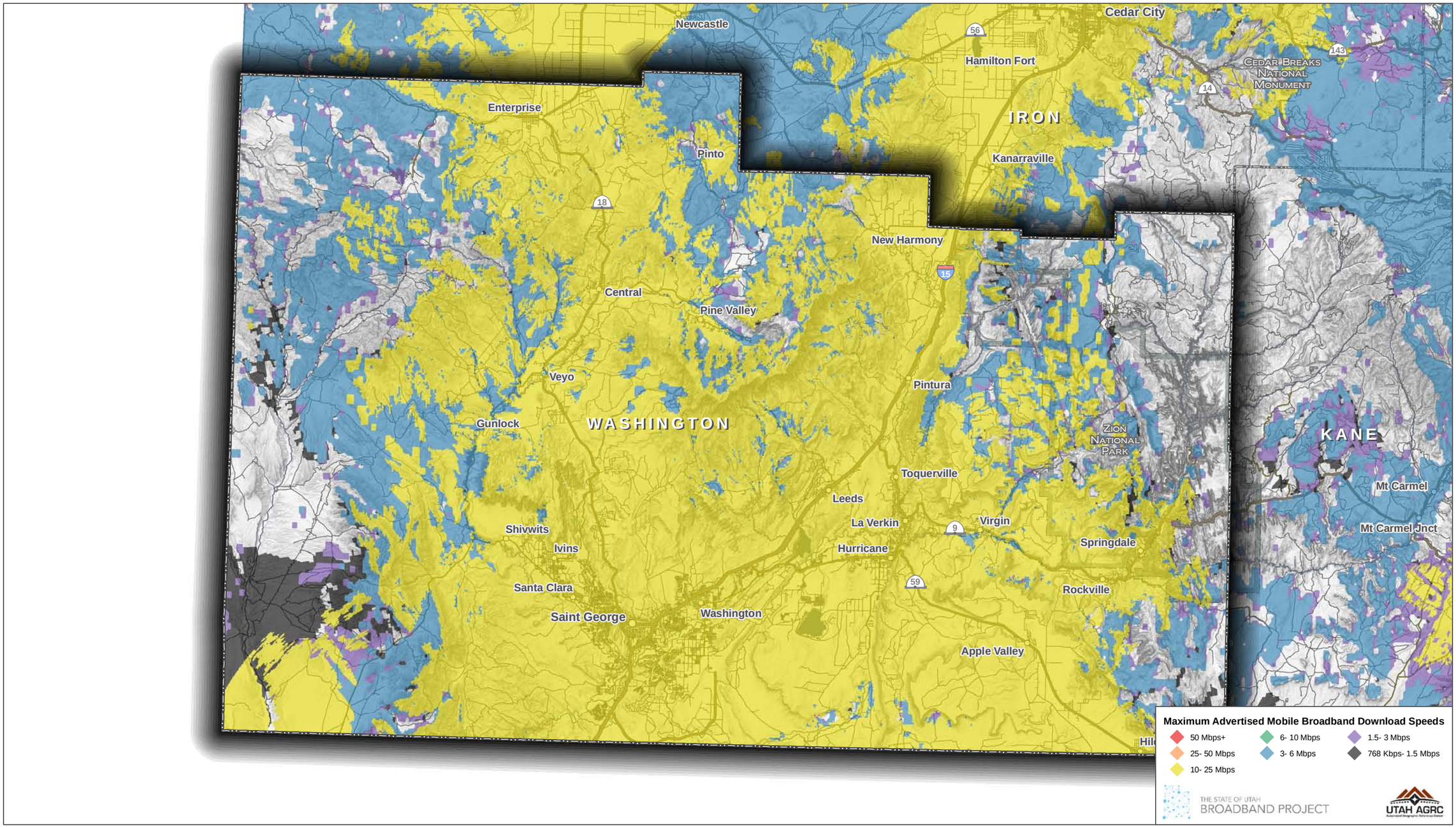
Map 7.3 - Iron County - Maximum Advertised Mobile Broadband Download Speeds



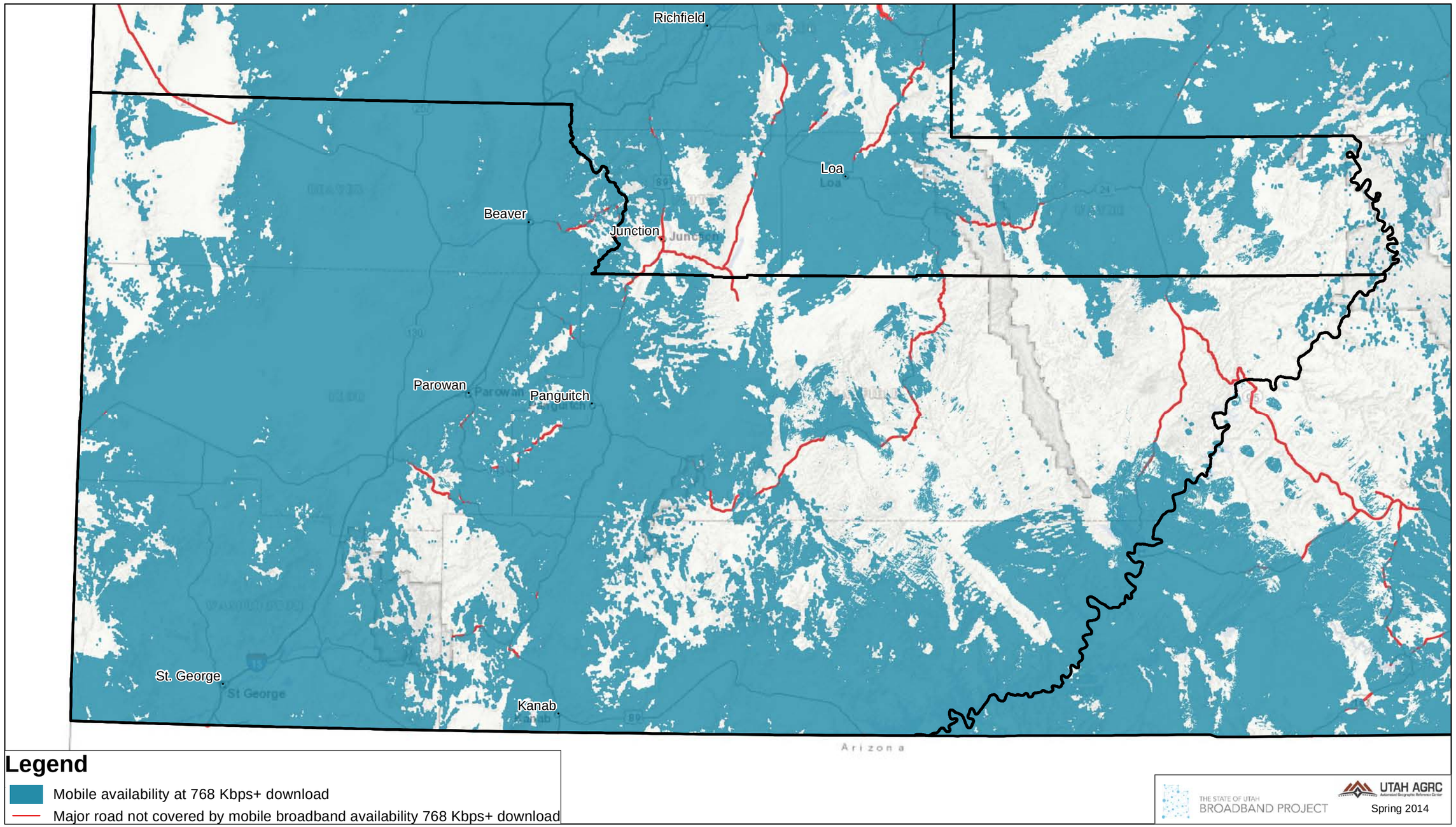
Map 7.4: Kane County - Maximum Advertised Mobile Broadband Download Speeds



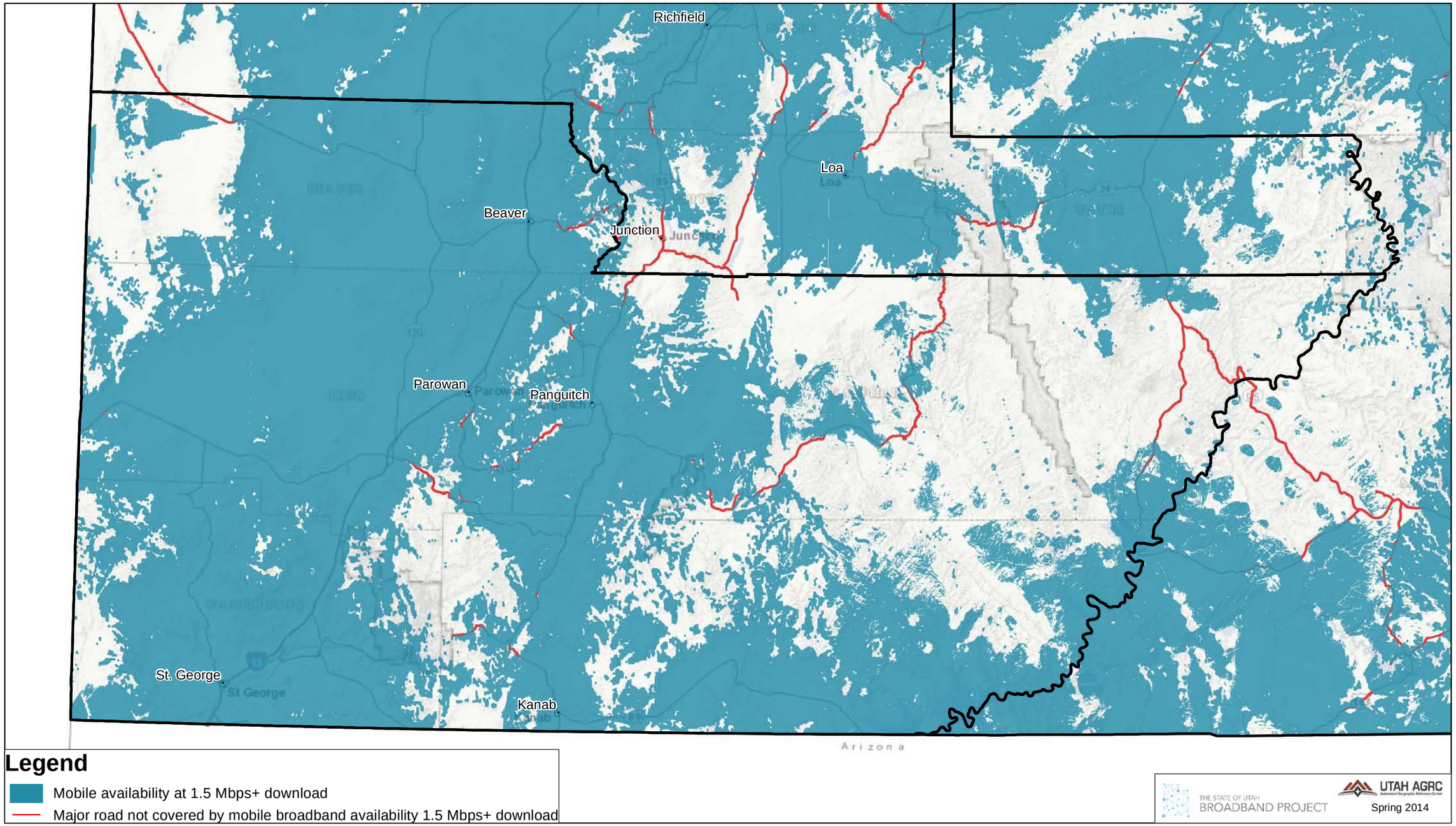
Map 7.5- Washington County - Maximum Advertised Mobile Broadband Download Speeds



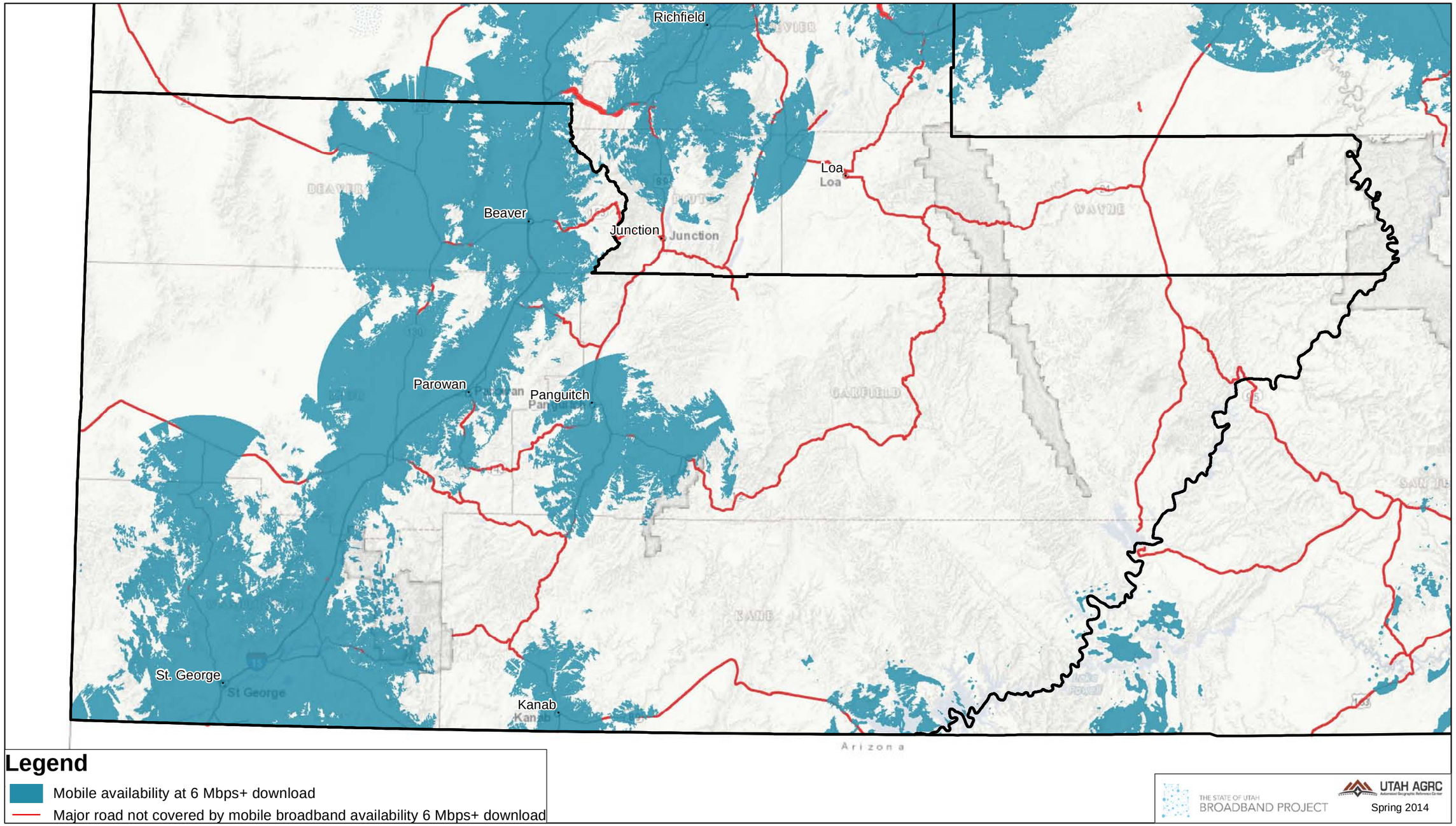
Map 8.1 - Road Segments without Mobile Availability of 768 Kbps+ download



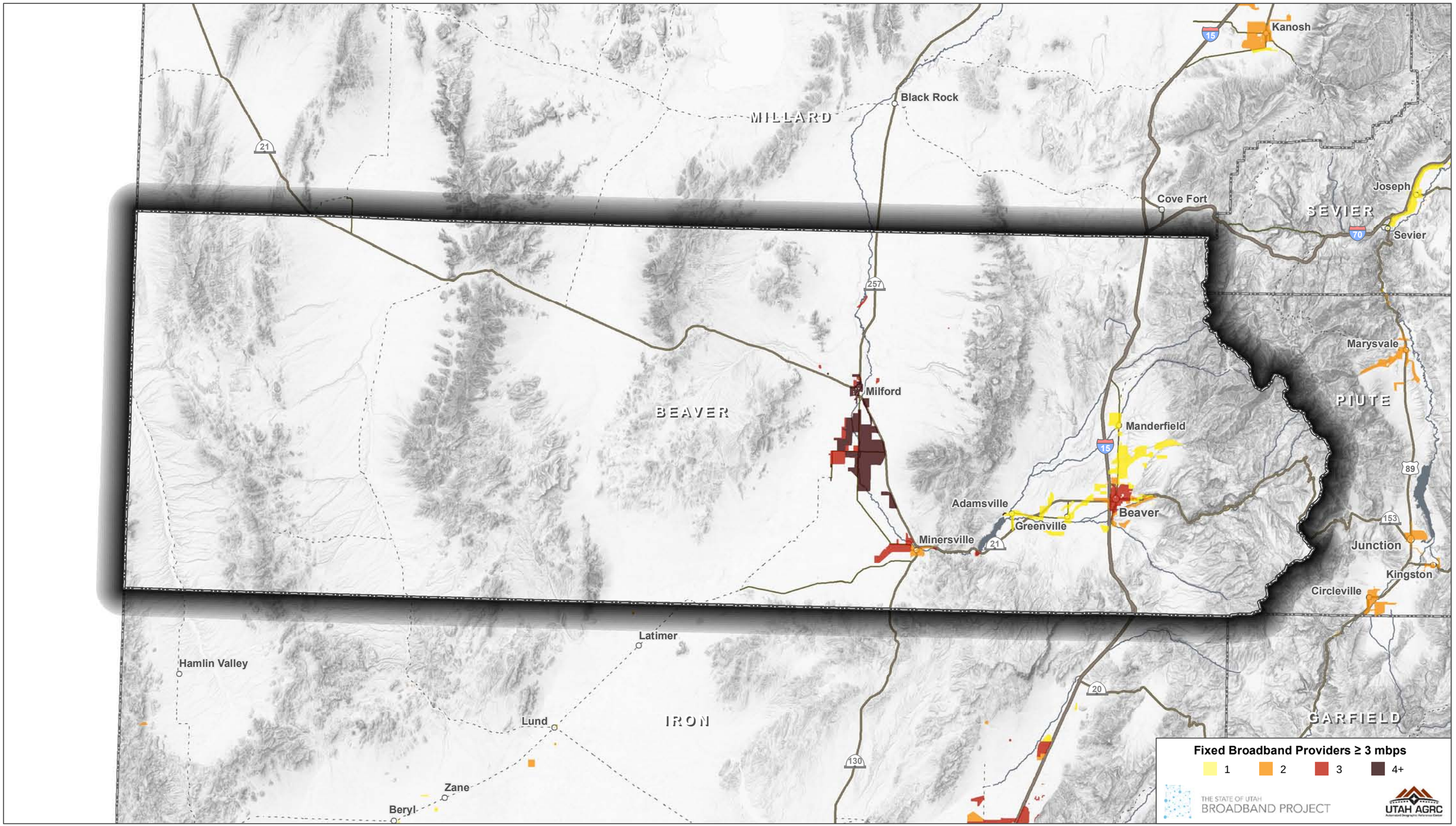
Map 8.2 - Road Segments without Mobile Availability of 1.5 Mbps+ download



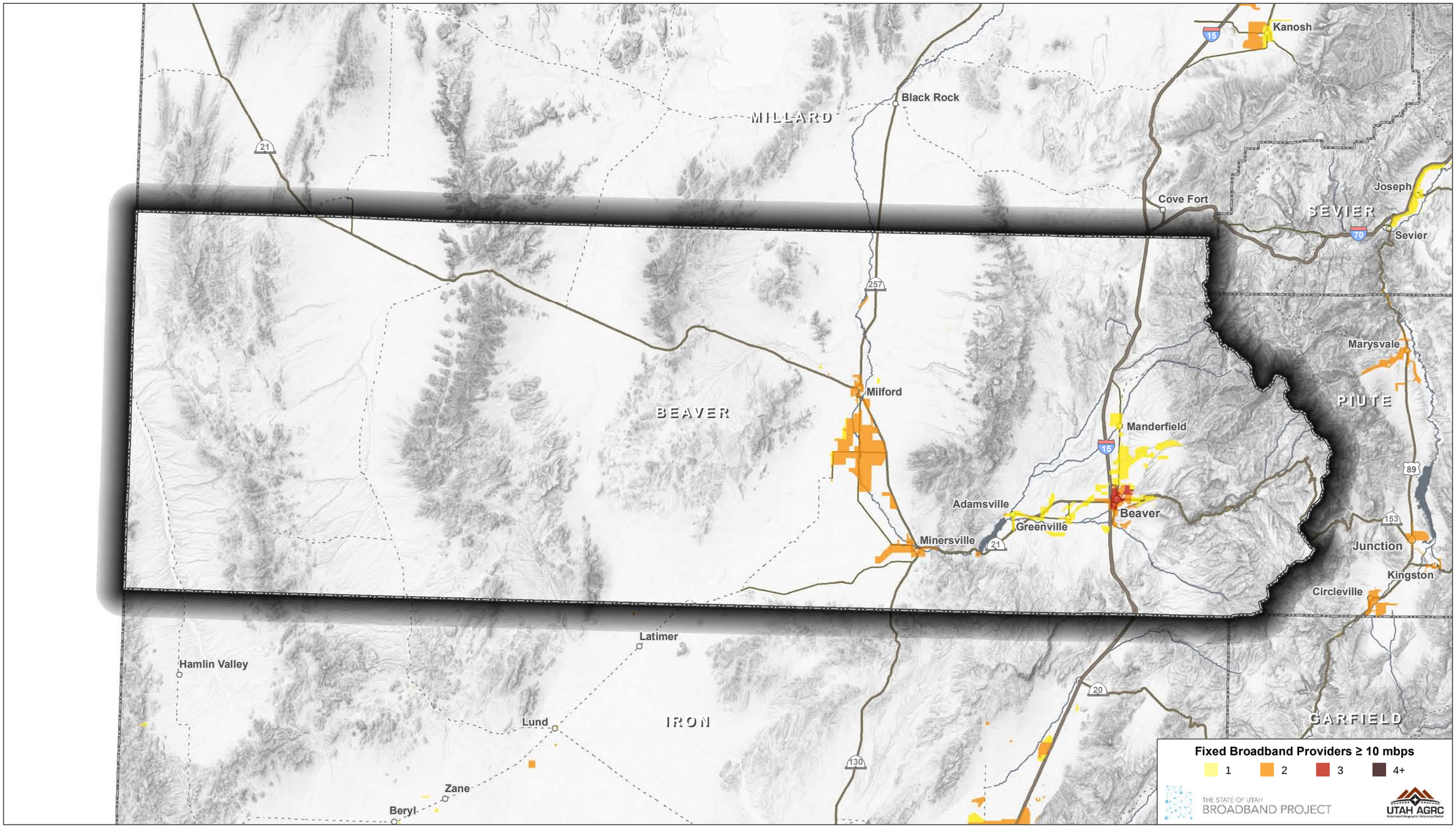
Map 8.3 - Road Segments without Mobile Availability of 6 Mbps+ download



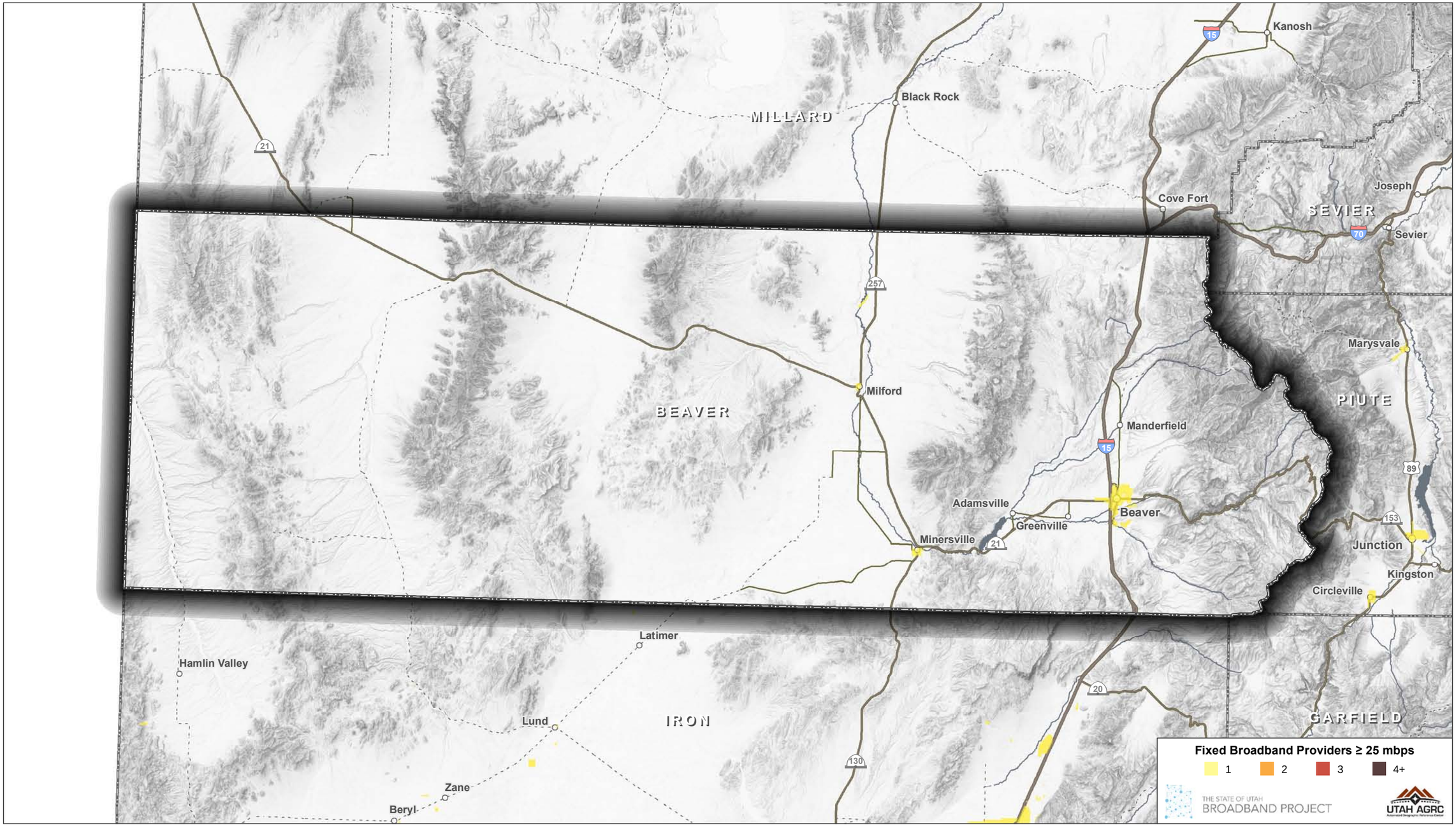
Map 9.1.1 - Beaver County: Number of Fixed Broadband Providers with download speeds of 3 Mbps or greater



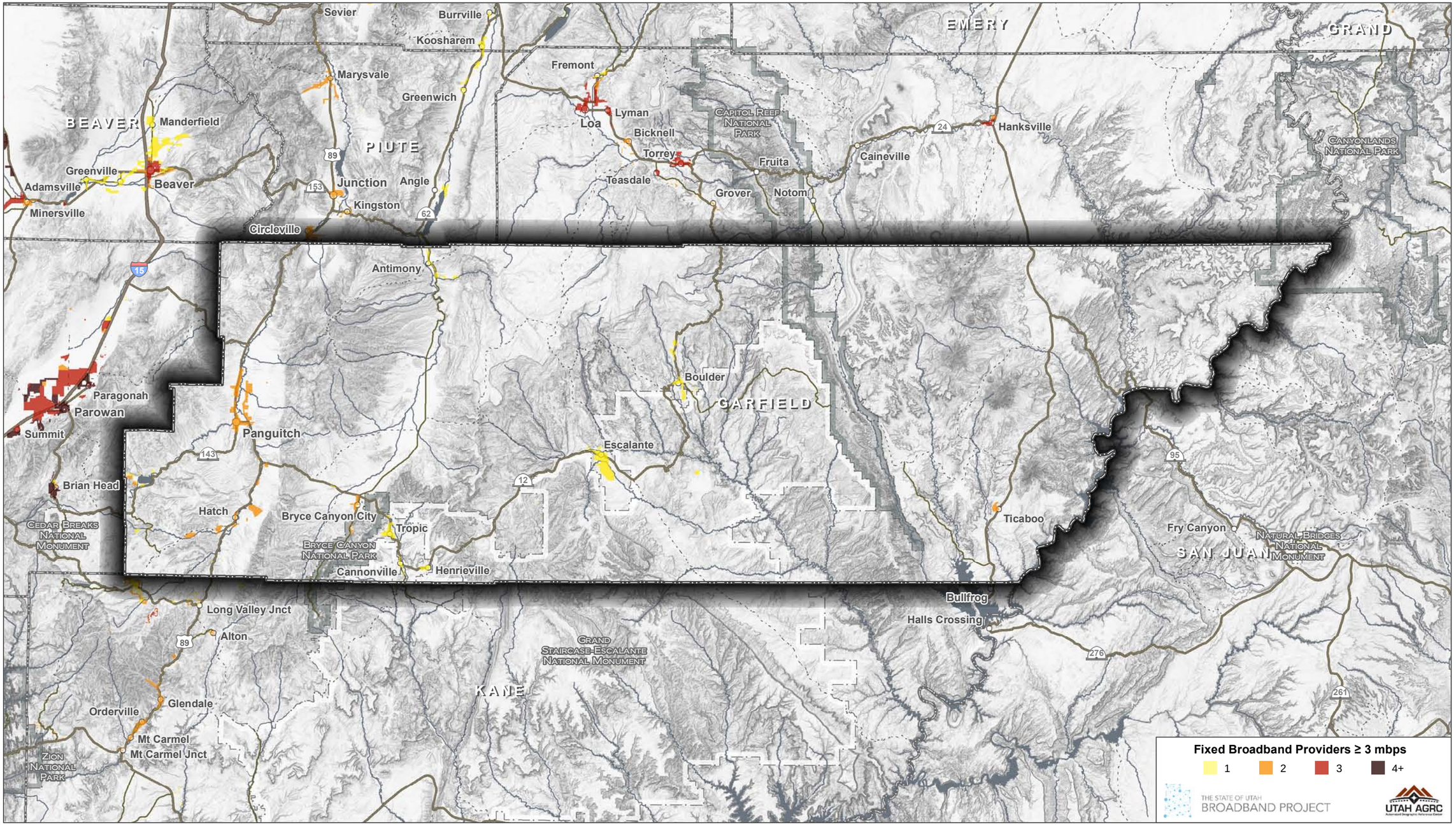
Map 9.1.2 - Beaver County: Number of Fixed Broadband Providers with download speeds of 10 Mbps or greater



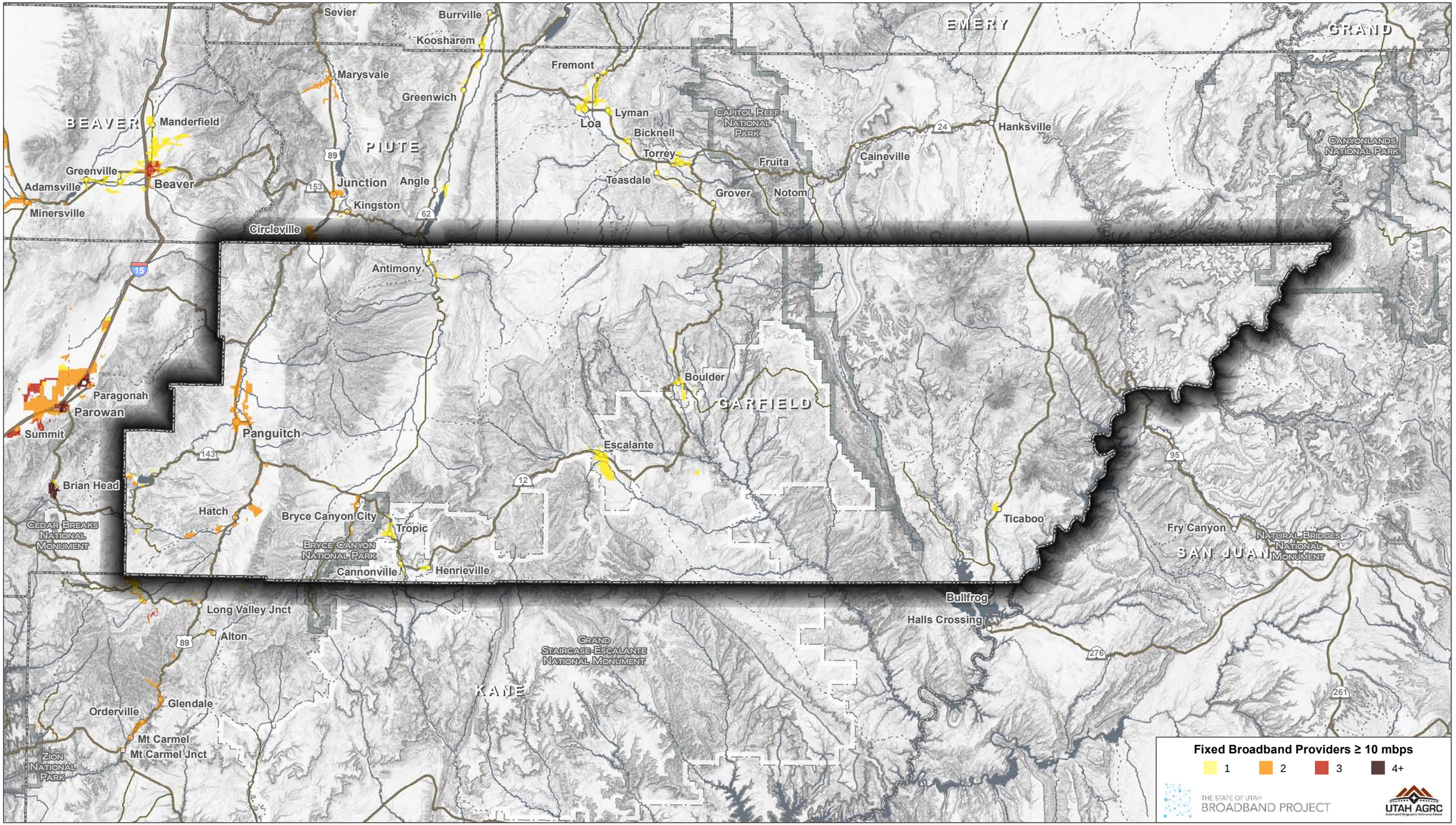
Map 9.1.3 - Beaver County: Number of Fixed Broadband Providers with download speeds of 25 Mbps or greater



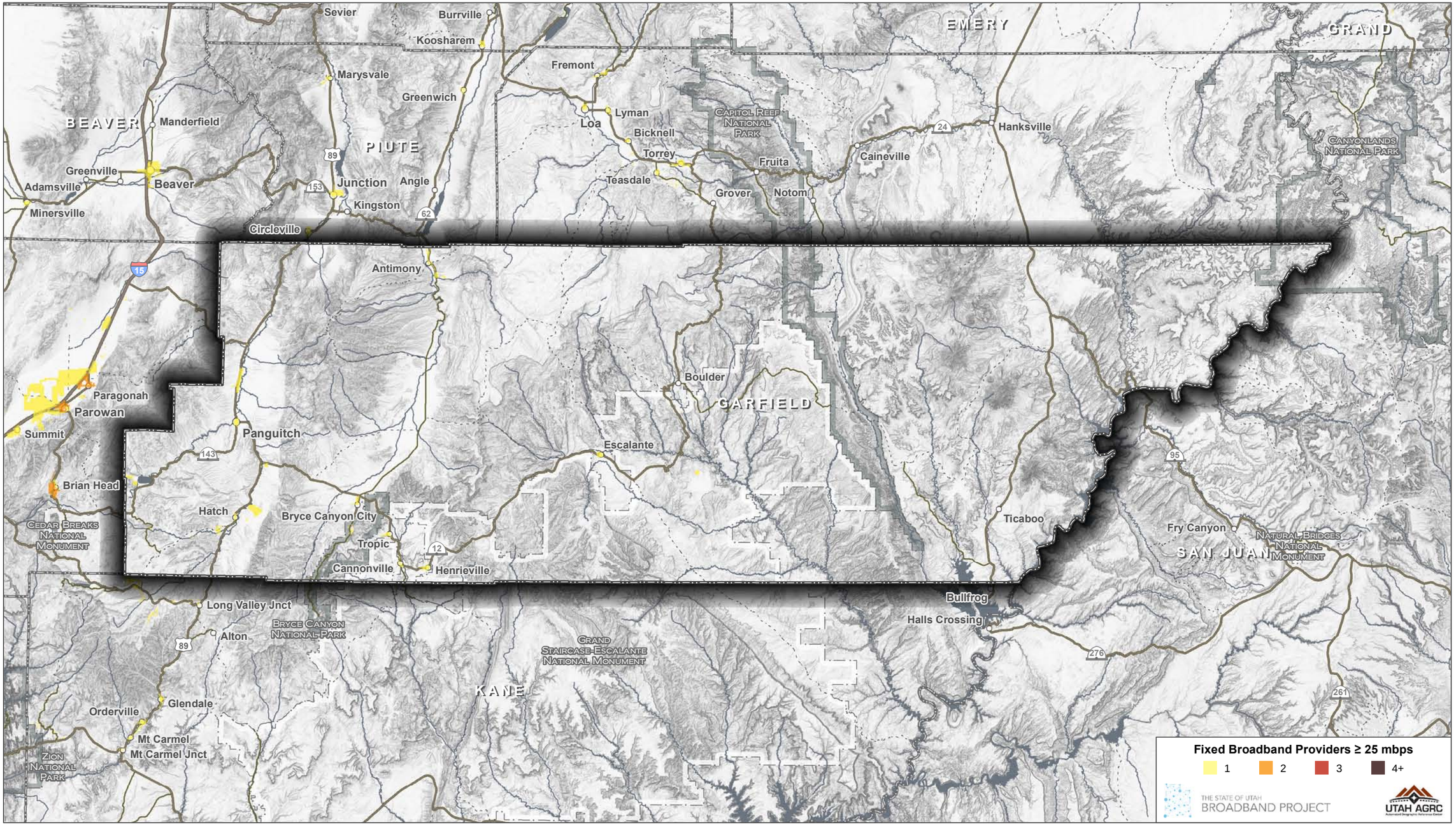
Map 9.2.1 - Garfield County: Number of Fixed Broadband Providers with download speeds of 3 Mbps or greater



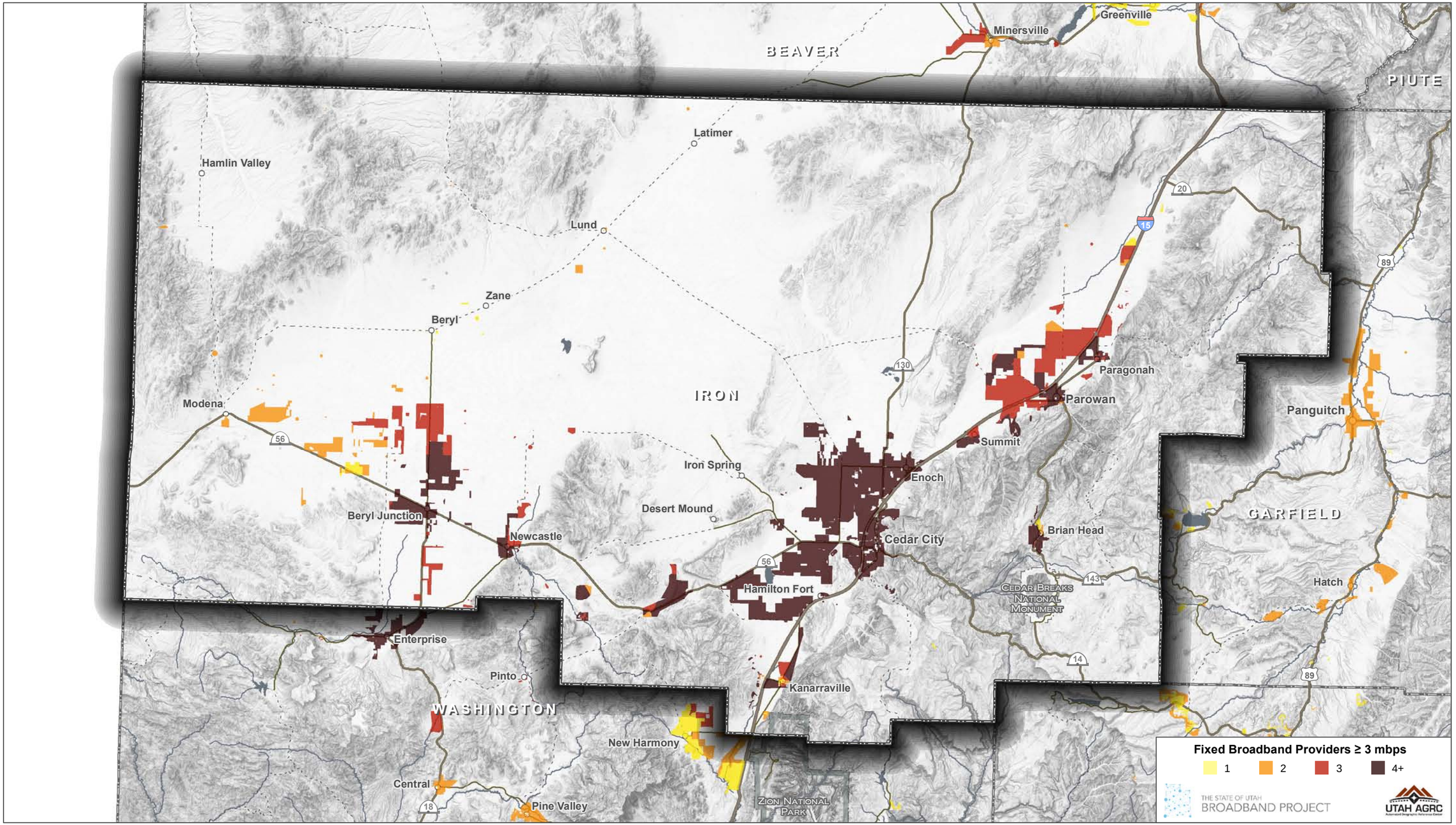
Map 9.2.2 - Garfield County: Number of Fixed Broadband Providers with download speeds of 10 Mbps or greater



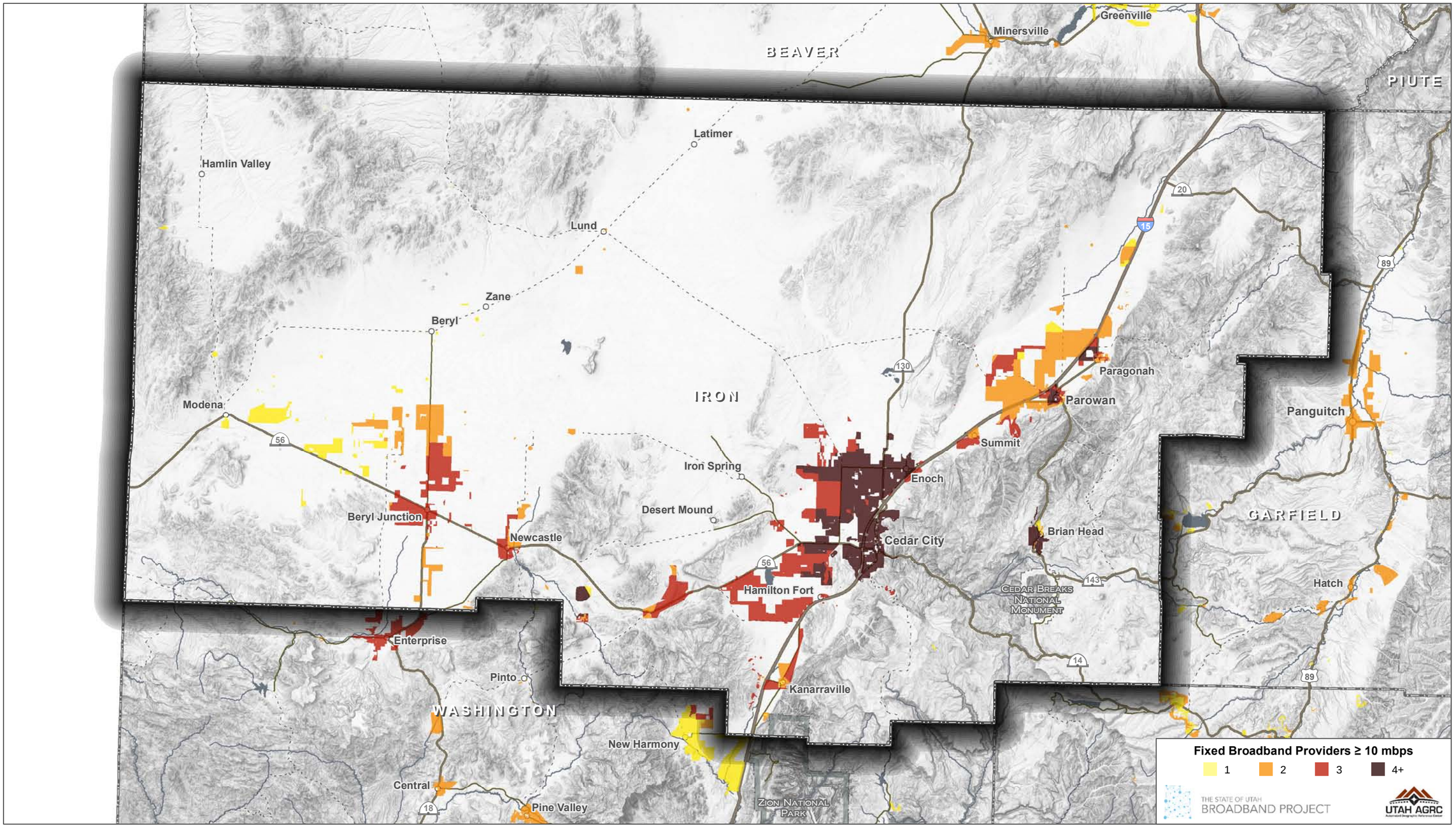
Map 9.2.3 - Garfield County: Number of Fixed Broadband Providers with download speeds of 25 Mbps or greater



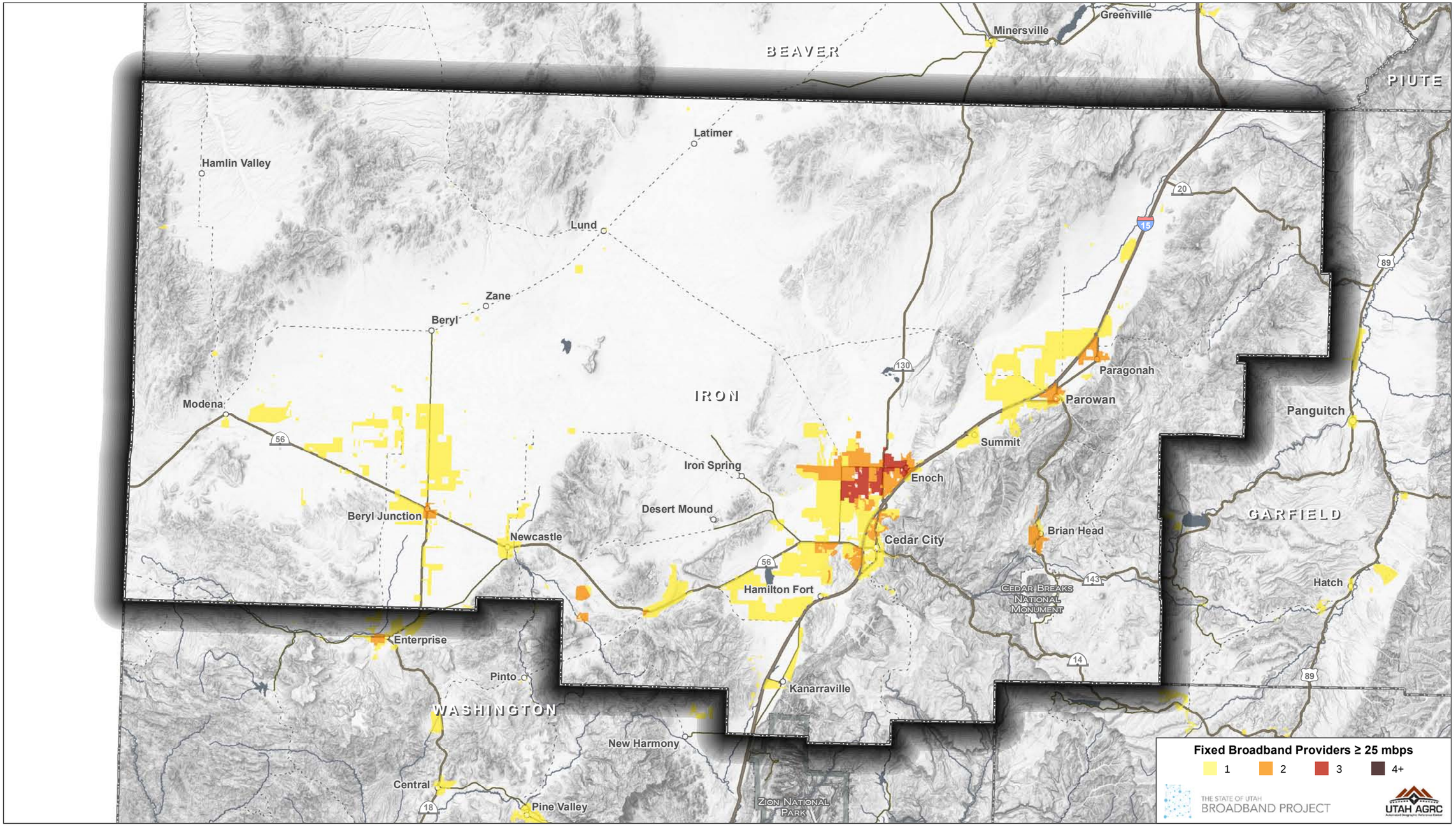
Map 9.3.1 - Iron County: Number of Fixed Broadband Providers with download speeds of 3 Mbps or greater



Map 9.3.2 - Iron County: Number of Fixed Broadband Providers with download speeds of 10 Mbps or greater



Map 9.3.3 - Iron County: Number of Fixed Broadband Providers with download speeds of 25 Mbps or greater

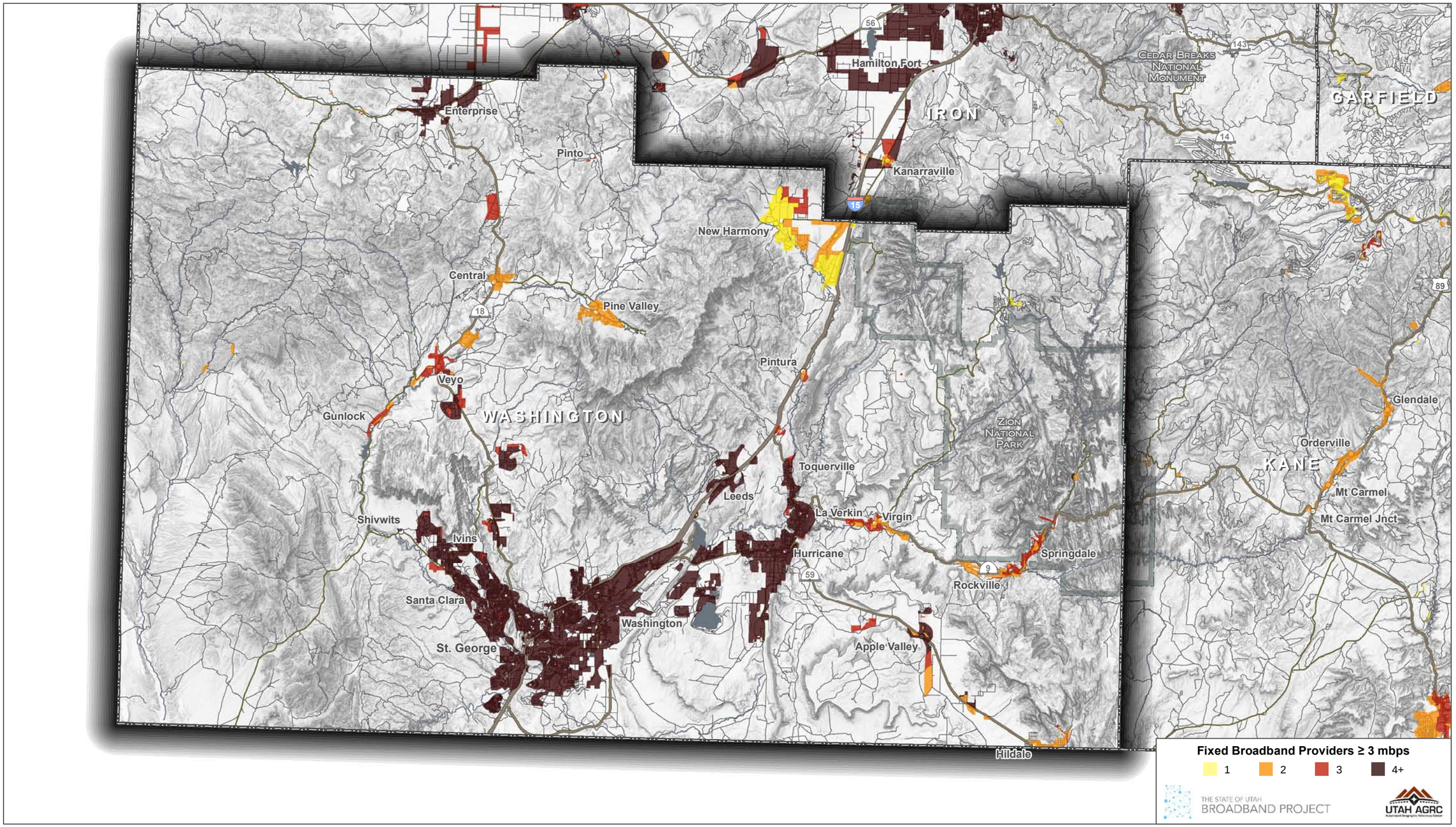


Map 9.4.1 - Kane County: Number of Fixed Broadband Providers with download speeds of 3 Mbps or greater

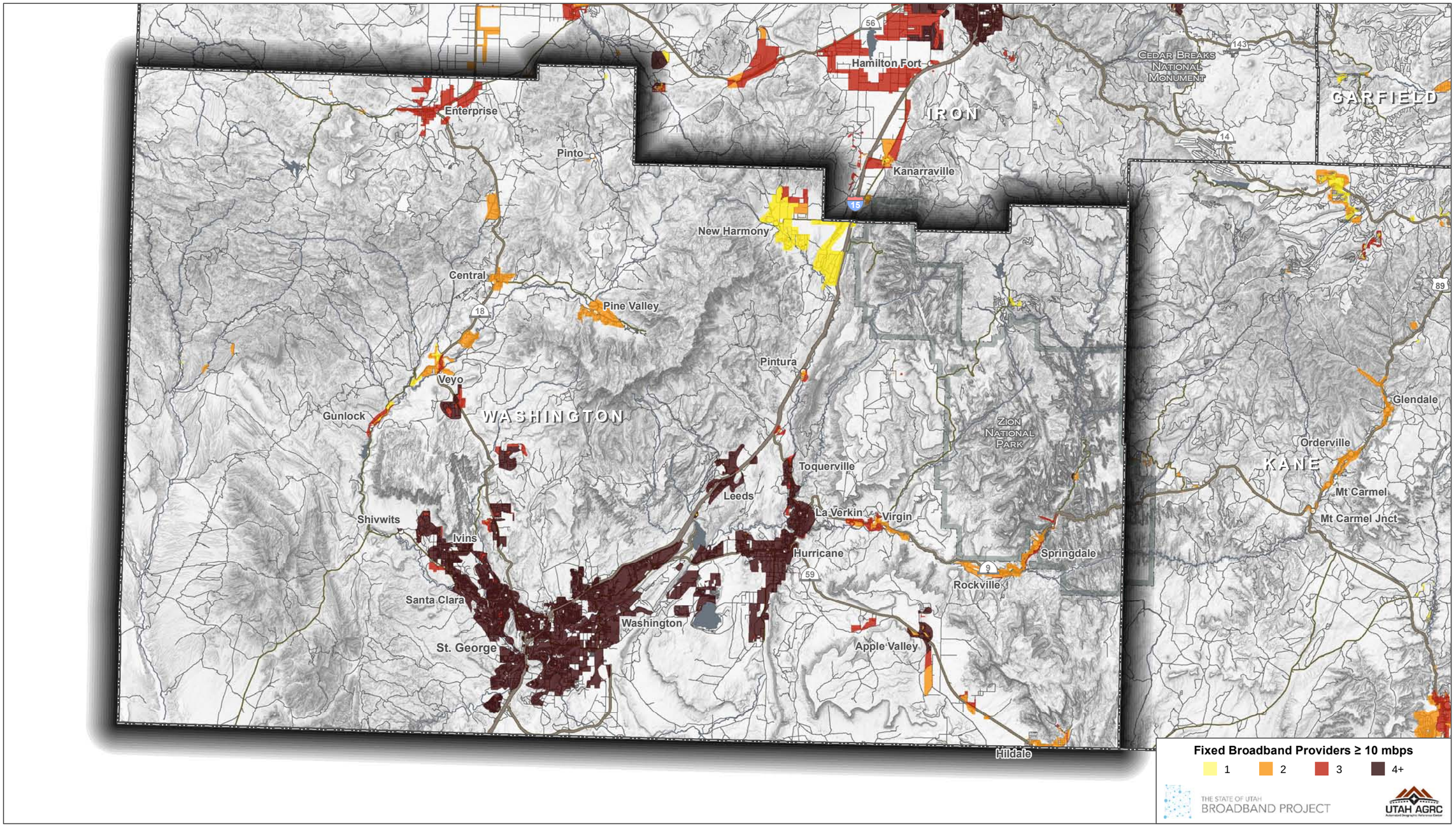
Map 9.4.2 - Kane County: Number of Fixed Broadband Providers with download speeds of 10 Mbps or greater

Map 9.4.3 - Kane County: Number of Fixed Broadband Providers with download speeds of 25 Mbps or greater

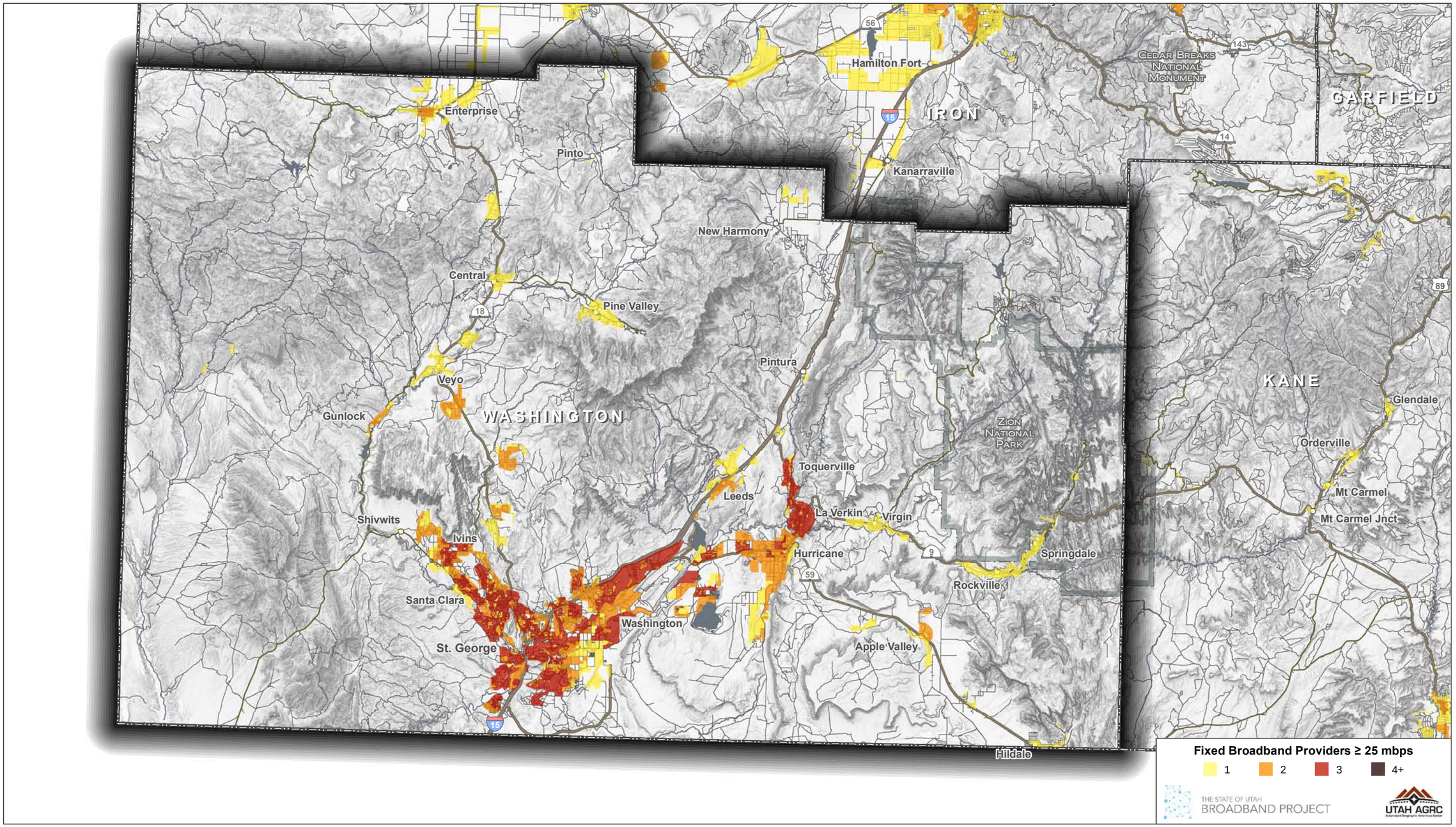
Map 9.5.1 - Washington County: Number of Fixed Broadband Providers with download speeds of 3 Mbps or greater



Map 9.5.2 - Washington County: Number of Fixed Broadband Providers with download speeds of 10 Mbps or greater



Map 9.5.3 - Washington County: Number of Fixed Broadband Providers with download speeds of 25 Mbps or greater



Appendix 1

Sample Dig Once Policy

From Sandy, Washington

12.20.010 Franchise or permit required.

It is unlawful for any person, company or corporation to excavate for, place or string any telegraph, telephone, electric light or power pole or poles or wire or wires in, upon or over any street, avenue or alley of the city by any person, company or corporation who has not obtained a franchise or a permit from the said city so to do. (Ord. 436 § 1, 1915).

12.20.015 Construction standards for the regulation of use of public rights-of-way and public property.

All developments shall be required to construct and install telecommunications conduit on all streets that are affected, disturbed, constructed and/or improved by development unless otherwise approved, pending a review by the city engineer. This conduit shall be for the purpose of installing telecommunications cable, fiber optic wiring or other infrastructure as necessary.

This conduit shall be placed at horizontal and vertical locations as determined by the city engineer. The conduit shall conform to the size, shape and characteristics as determined by the city engineer based on industry standards. Once installed and accepted by the city, the conduit shall become the property of the city of Mount Vernon.

Development as defined in this section shall mean the construction of improvements such as buildings, homes, subdivisions, streets, and utilities. (Ord. 2927, 1999).

12.20.020 Violation – Penalty.

Any person, company or corporation violating any of the provisions of this chapter shall be subject to the enforcement provisions contained in MVMC Title 19

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UTAH BROADBAND NONADOPTERS

REGIONAL REPORT: FIVE COUNTY ASSOCIATION OF GOVERNMENTS REGION

NONADOPTERS OF BROADBAND:

FIVE COUNTY ASSOCIATION OF GOVERNMENTS REGION

THE STATE OF UTAH
BROADBAND PROJECT
BROADBAND.UTAH.GOV

Regional Report
June 2014

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FIVE COUNTY ASSOCIATION OF GOVERNMENTS REGIONAL REPORT

UNDERSTANDING NONADOPTION

Beginning with the passage of the Telecommunications Act of 1996, which directed the Federal Communications Commission (FCC) and state commissions to promote the universal deployment of both basic and advanced telecommunications capability, national policy has evolved to where universal Internet availability has become a stated national goal. Subsequent acts and directives from successive presidents have more specifically directed several agencies to encourage expanded broadband deployment and to increase their efforts aimed at promoting broadband adoption. For example, in 2004, a directive was issued from then President Bush for universal affordable broadband technology by 2007. These efforts have intensified under the current administration as programs funded under both the Universal Service Fund (USF) programs and the American Recovery and Reinvestment Act have contributed to increased infrastructure and promotion. [1]

Universal access to and use of broadband speed Internet is seen as a critical economic development factor, and one of the primary drivers of improved and enhanced employment and learning opportunities, medical services and a wider scope of entertainment and recreation.

The Pew Research Center's Internet and American Life Project has tracked the expansion of Internet use in the United States across time, space and among traditionally lower use groups. Despite this work, relatively little has been done to thoroughly examine those who continue to choose not to adopt despite widespread availability and ongoing reductions in relative cost.

In this study we explore only those who report not having broadband speed Internet, which we found is better described as high-speed Internet, available in their home. These 'nonadopters' represent the remaining part of the broadband gap that had been explored in our earlier work and in a plethora of previous literature on broadband adoption. This survey, in fact, was a direct result of our earlier work which along

with the U.S. Census's work, failed to find a substantial rural urban broadband gap in Utah.

The purpose of this exploration is to better understand the nonadopter, who they are, their reason(s) for nonadoption, what skills and experience in using the Internet they have, and what would influence them to become an adopter of high-speed Internet. The answers to these questions will provide the information policymakers and broadband providers need to consider as they grapple with the issue of if and how nonadopters can become adopters.

What Influences Broadband Nonadoption

Literature exploring Internet adoption rates has generally advanced four theories for why individuals do not have in-home high-speed Internet service. These four theories present substantially different public policy prescriptions for correcting the problem. For policymakers, determining which of the competing theories (or which combination of them) best explains consumer behavior has substantial real-world policy impacts. The survey questions and the analysis of respondent's answers builds from these theories.

Questions of Price

The first and most common explanation of nonadoption is that of price sensitivity on the part of consumers. The literature on this subject asserts that due to relatively high, though falling, prices for these services, many consumers are simply unable to afford in-home high-speed Internet.

The usual policy prescriptions suggested by advocates of this theory are relatively straightforward and begin with the ex ante expectation that a reduction in price is necessary. A possible but controversial policy alternative that follows from this assumption would consider subsidizing either (or both) the development costs for deployment and the end user's cost.

Questions of Availability

The second, and formerly the most common theory that spurred our earlier work on this subject is that of availability. This theory suggests that nonadoption is a result

of lack of deployment and availability and that most nonadopters will be clustered where deployment has not yet or will not occur because of questions of scale and profitability. For example, in one estimate Jon Peha of Carnegie Mellon University finds that "roughly one-third of households in rural America cannot subscribe to broadband Internet services at any price."[2]

Again possible policy prescriptions from this theory are relatively straightforward, incentivizing and subsidizing deployment. One policy approach that is commonly advocated by proponents of this theory mimics the goals if not the approach of the rural telecommunications and electrification policy that brought these services to rural areas through subsidies and incentives paid for through surcharges on existing service.

Questions of Knowledge and Expertise

Unlike the first two theories of nonadoption, some have advanced the idea that the primary problem facing nonadopters is a lack of knowledge and skill on the part of the nonadopter in using and experiencing high-speed Internet and computing in general. Proponents of this approach point to lower levels of adoption among senior citizens and the increase in adoption after training or experience as evidence of its efficacy.

Here the policy prescriptions are more complex and are focused on education, outreach and individual assistance to push forward adoption by those who lack the skills. These programs are costly both in terms of fiscal and human resources. Those who advocate them have often suggested that partnerships between the public sector and non-profits could provide these nonadopters with skill training and assistance and look to the programs deployed at senior centers as prototypes for how these programs might be designed.

Questions of Demand and Preference

The fourth theory of nonadoption suggests that rather than structural impediments to adoption, like price, availability or knowledge and expertise issues, there are those whose consumer preferences simply align away from a desire to adopt. In fact the Pew Research Center, which has conducted numerous surveys about adoption, found that in the United States, 15 percent of American adults do not use the Internet.

They found that a third of those non-users (34 percent) "think the Internet is just not relevant to them," and expressed a lack of interest or need in getting online. Of Internet non-users, 92 percent are not interested in starting to use the Internet or email in the future.[3]

Further, both a study from the Government Accounting Office completed in 2010 and one by Gregg LaRose[4] suggest lower income, less educated and elderly individuals are much less likely to want broadband access. These studies suggest that the gap in adoption of service is not an issue of supply; it's an issue of demand.

Here the policy implications are both clear and disheartening to the policymaker wishing to increase adoption. If individuals have no interest in a product it is nearly impossible to create demand absent some coercive requirement to purchase.

Expanding access to information, education, medical reference and employment is in the interest of public welfare. While these are compelling reasons for providing universal access to broadband Internet in the U.S., understanding why nonadopters don't adopt is of critical importance. If price is simply too high or service is simply not available, clear though controversial policy alternatives exist. If individuals lack knowledge or expertise training programs can be provided, but if there simply is no demand, these high-cost programs and subsidies will do little to sway nonadopters. Even in these cases if the driving purpose of broadband deployment to a given group is enhancement of educational goals or increased access to medical information, broadband community anchor institutions such as public schools, libraries or medical centers could be provided more cost effectively than community-wide deployment.

In the following analysis, we provide the results of the survey described earlier and explore which of the theories we find evidence for from our interviews with nonadopters across the state.

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NONADOPTERS OF BROADBAND IN THE FIVE COUNTY ASSOCIATION OF GOVERNMENTS REGION

The Five County Association of Governments region, which includes Beaver, Iron, Garfield, Washington and Kane Counties, is located in the southwest corner of the state with a population of 203,204.[5] The bulk of the population is located in and around the Iron and Washington County areas including St. George and Cedar City.

The Five County region is older and has a lower income than the state average.

The average age of respondents in the region is 58.5 years, slightly older than the state average of 56.2. The region had a higher rate of retired respondents (48.4 percent) compared to the state average of 42.8 percent. Respondents in the Five County region make, on average, $36,343 per year in total household income, which is much lower than the state average of $51,347.

Nonadopters of broadband in the Five County region access the Internet infrequently.

About how often do you access the Internet?

Several Times	27.4%
Once a Day	1.6%
3-5 Days a Week	14.5%
1-2 Days a Week	0.0%
Every Few Weeks	33.9%
Do Not Access	22.6%

Key Findings: Reasons for Nonadoption

1. Lack of Interest or Need

The key reason for nonadoption in the Five County region was a lack of interest or need. In the region, 45.8 percent of respondents said they did not need high-speed Internet or were not interested in getting it.

What is the main reason you do not have high-speed Internet access at home?

Don't Need It/Not Interested	45.8%
Too Expensive	22.6%
Can Use it Elsewhere	11.3%
Not Available in my Area	8.1%
Computer is Inadequate	8.1%
Other	4.8%

2. Knowledge and Expertise

A large majority of nonadopters in the Five County region believe they are not highly skilled in terms of computer and Internet use. This lack of skills or lack of perceived skills is most likely contributing to nonadoption of high-speed Internet in the Five County region.

What would make you more likely to have high-speed Internet access in your home?

Training on the Computer/Internet	56.5%
Having it Available	40.3%
More Options	37.1%
Lower Price	33.9%
Other	32.3%

3. High Cost

When asked what is the main reason they do not have broadband in their homes, 22.6 percent of respondents in the Five County region said that it is too expensive. When respondents were asked what would make them more likely to have high-speed Internet in their homes, 33.9 percent said a lower price for services.

4. Lack of Availability and Knowledge

Just over 29 percent of respondents reported that they had computer equipment in their homes, while 30.7 reported that they did not. Limited broadband coverage may also be limiting adoption, especially in Garfield County. Washington, Iron, Kane and

Beaver Counties were the only counties in the region to have high-speed Internet coverage at download speeds of 25 Mbps or more for a majority of its households.

Conclusion: The key reason for nonadoption in the Five County region is that nonadopters express a lack of interest or need for having in-home access to high-speed Internet.

THE FIVE COUNTY REGION

The Five County Association of Governments region is located in the southwest corner of the state and includes Beaver, Iron, Garfield, Washington and Kane Counties with a combined estimated population of 203,204.[6] This region is dominated by public lands issues, with the bulk of the population located in and around the Iron and Washington County areas. St. George and Cedar City are the largest municipalities in the region and have traditionally been the region's dominate areas. However, increased growth in the more rural areas has substantially increased the visibility and influence of those areas.

Demographic Picture

The Five County region's nonadopters were similar to the state average in terms of most demographic information. A higher proportion of the region's respondents were female (58.1 percent) than the state average of only 47.6 percent. Respondents in the Five County region were also slightly older, with an average age of 58.5 compared to the state average of 56.2 years. Both the region and the state as a whole saw a wide distribution of age for respondents. Most of the region's nonadopters were either married (43.6 percent) or widowed (29 percent) which makes sense due to the region's older population.

Many older people move to St. George and the surrounding communities to retire. The data support this, as 48.4 percent of respondents in the region were retired, higher than the state average of 42.8 percent. The region's unemployment rate among respondents was similar to the state average of nearly 10 percent at the time the survey was completed. Respondents in the Five County region make, on average, $36,343 per year in total household income, which is much lower than the state average of $51,347.

About 80 percent of the region's respondents were white, which corresponds closely with the state average. In terms of education, the Five County region's nonadopters had fewer bachelor's degrees than the state average. Almost 13 percent of respondents in the region had completed a four-year degree, compared to the state average of 16.8 percent. The region's respondents, however, had a higher rate of completing two-year

tech degrees (24.2 percent), and some college (27.4 percent) than the state average for those levels of education.

Low Internet Access Rates Among Nonadopters

Respondents were asked how often they access the Internet, and 22.6 percent said they never get online. Nearly 40 percent said they access the Internet once every few weeks, and 14.5 percent said they access it three to five days a week. Those numbers are similar to the state breakdown for Internet access. This means a large segment of nonadopters are not regularly getting online. Despite these numbers, the region has a higher than average percentage of nonadopters who get online several times a day, 27.4 percent compared to just 14.8 percent statewide. In seeking to understand why people in the Five County region do not get online or do not use the Internet more frequently, it is not clear whether that is due to lack of interest or desire to access the Internet, limited computer skills, the high cost of Internet access or limited access to technology. All of these are likely playing a role, although probably not with equal influence. We examine the role of each of them below.

Reasons for Nonadoption: Lack of Interest or Need

The key reason found for nonadoption at both the state level and in the Five County region was a lack of interest or need. Although other factors are also contributing to nonadoption, this was found to be the strongest influence for nonadopters. When asked what the main reason is for nonadoption, 45.8 percent of respondents in the Five County region said that they don't need high-speed Internet or are not interested in getting it. That is similar, but slightly higher than the state average of 44 percent.

Respondents were also asked if they are interested in obtaining a faster connection, and lack of interest was expressed once again. Of the region's respondents, 67.7 percent said they were not interested in obtaining a faster connection. That number was similar, although higher, than the state average of 61.4 percent. This means well over half of respondents both at the regional and state level are not interested in obtaining high-speed Internet.

With these results, little can be done to increase adoption rates for broadband if lack of interest is the root of the problem. Interestingly, despite the low level of

interest, nonadopters in the region said they would see benefits from access to high-speed home Internet service in terms of work productivity (48.4 percent), children's education (37.1 percent), their own education (33.9 percent) and online shopping (35.5 percent). These perceived benefits, however, have not translated into interest in obtaining access to high-speed Internet. Because increasing demand is difficult, we turn to other reasons for nonadoption that policymakers may be able to more effectively address.

Reasons for Nonadoption: Knowledge and Expertise

When respondents were asked about their computer use and expertise, results found evidence that a lack of expertise about computers in general, and the Internet specifically, is likely playing a key role in nonadoption both in the Five County region and in the state as a whole.

Respondents were asked to rate their computer skills on a scale of zero to 10, with zero being no computer skills and 10 being very highly skilled. Over 67 percent of respondents in the region ranked their computer skills at a five or below. That means a large majority of the nonadopters in the Five County region believe they are not highly skilled. This lack of skills or lack of perceived skills is most likely contributing to nonadoption of high-speed Internet in the Five County region.

When respondents were asked what would make them more likely to have high-speed Internet in their homes, 56.5 percent of respondents in the region said training on computer and Internet use. These results indicate that providing training and educational programs geared toward increasing computer literacy and Internet skills may be one of the most effective ways to increase adoption rates for broadband.

Reasons for Nonadoption: Price

Another key reason cited for nonadoption at both the state and regional level is that high-speed Internet services are too expensive. When asked what is the main reason they do not have broadband in their homes, 22.6 percent of respondents in

the Five County region said that it is too expensive. That number is similar to the state average.

Respondents were asked how much high-speed Internet costs, and their responses were widely distributed: 27.6 percent said under $25 per month, 10.3 percent said between $26 and $35 per month, 17.2 percent said between $36 and $45. Only 10.5 percent believed high-speed Internet costs over $90 per month. A 2011 study by Ryan Yonk and Randy Simmons, at Southern Utah University and Utah State University respectively, found that broadband customers statewide were actually paying, on average, between $42 and $43 per month for high-speed Internet service.[7]

Respondents were also asked what a reasonable monthly price for high-speed Internet would be, and over half said less than $25 per month. That number is similar to the state average. Yonk and Simmons also found that rural respondents in Utah were willing to pay an average of $33.13 per month for high-speed Internet services compared to non-rural respondents who were willing to pay $34.75.[8] Although that result was not statistically significant, the results of this study show that nonadopters of broadband think that high-speed Internet services are too expensive.

When respondents were asked what would make them more likely to have high-speed Internet in their homes, 33.9 percent said a lower price for services. Reducing the cost of high-speed Internet services may be necessary to increase adoption rates. Although it would not be recommended, subsidizing either the supply or the demand side of the high-speed Internet market may be one way to achieve this.

Reasons for Nonadoption: Not Available

Another reason found for nonadoption is that the technology necessary to access high-speed Internet may not be available. Respondents were asked whether they have computer equipment in their homes. Just over 29 percent of respondents reported that they had computer equipment in their homes, while 30.7 reported that they did not. The remaining 40 percent did not respond. Statewide, over two-thirds of respondents had a computer in their home. It is not surprising that the Five County region would have a lower rate of home computers because of the comparatively lower incomes and older population of the region's respondents. The relatively low

rate of computers in homes is likely contributing to nonadoption since computers are the most common type of hardware used to access high-speed Internet.

In examining reasons for nonadoption, respondents seem to suffer from a lack of knowledge. The Five County region had 48.4 percent of respondents answer that high-speed Internet is not available in their area. This information is most likely inaccurate, however, because about 85 percent of respondents in both the region and the state did not know how many providers were available in their area. This means there may be providers of high-speed Internet available that respondents simply did not know about. Clearly, there is a perception of limited availability.

Data for broadband availability show that all five counties included in the region (Beaver, Iron, Garfield, Washington and Kane) have broadband coverage at download speeds of 10 Mbps or higher for 92 percent or more of households. Coverage is much more variable at download speeds of 25 Mbps or greater: Iron and Washington Counties have 98 percent of household coverage at this download speed, while Kane has coverage for 60 percent of households and Beaver for 63 percent at this download speed. Garfield County has only 46.67 percent of household coverage at 25 Mbps. This analysis did not evaluate specific upload speeds by county, which was done in order to facilitate an enhanced evaluation of download speeds by county and shows that broadband availability in the region is varied.

As far as availability goes, policymakers could help solve the knowledge problem by educating people about the high-speed Internet options available in their area. As for the lack computers in the home, this is a more difficult policy question to solve because it is not clear if people are not purchasing computers because they cannot afford them, because they don't know how to use them, or because they are simply not interested in using them. As for the lack of broadband coverage, Kane, Garfield, Beaver and Iron Counties could consider policies that would promote increased broadband coverage.

Endnotes

1 In the US, a broadband Internet connection is defined as a connection with capabilities of at least 768 kbps. Other countries have different definitions. Canada uses 1.5 Mbps.

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