Black Butte School District

Community Broadband Needs Assessment

SEPTEMBER 2021

Prepared by the Central Oregon Intergovernmental Council (COIC)

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Acknowledgements

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Executive Summary

The impetus for a broadband needs assessment specific to the Black Butte School District (BBSD) arose in early 2021. Both Black Butte School and COIC staff were invited to participate in the Jefferson County Broadband Access Team (BAT), which had begun the process of applying for grants to support a county-wide broadband needs assessment. Following a meeting of the Jefferson County BAT, Black Butte School staff reached out to COIC to inquire about assistance with conducting a Camp Sherman area community needs assessment, with the goal of ensuring that the unique conditions and needs of Camp Sherman residents were well represented in any future county-wide study. The geographic isolation, heavy tree coverage, and unique topographical features of the Camp Sherman area sets this community apart from the other population centers in Jefferson County, which are largely concentrated along the highway 97 corridor. Therefore, the primary goal of this needs assessment is to serve as a supplemental report to be incorporated into the future county-wide broadband assessment and feasibility study. A secondary goal is to utilize this assessment to support future Camp Sherman-specific grant applications or partnerships with internet service providers who may be prepared to make an investment in expanding access to the Camp Sherman community before the Jefferson County work has been completed.

COIC staff launched an online survey in April 2021 which was sent initially to twenty-four BBSD families, all five school board members, and all nine BBSD staff members, and later made available to the community at large in both paper and web-based options. A total of 151 Camp Sherman community members participated in the survey. COIC complemented the survey with one-on-one phone interviews with key district stakeholders, as identified by Black Butte School staff. Finally, COIC hosted three focus groups in late May and early June; two in-person at Black Butte School and one virtual for second-home owners currently residing outside of the region.

The only broadband technologies currently available in Camp Sherman are fixed wireless and satellite; no fiber infrastructure has yet to be installed by any provider. The vast majority of respondents reported dissatisfaction with the quality of their internet, regardless of whether their internet service provider (ISP) was wireless or satellite-based. Primary reasons given for this dissatisfaction were poor speed/bandwidth and consistency of service. For most respondents, cost of service is not a major limiting factor. Were an ISP able to meet their bandwidth needs consistently, most respondents indicated that they would be willing to pay over $100 per month. Many respondents report that they currently "double up" on ISPs – in many cases, using both wireless and satellite service to piece together enough bandwidth to meet their needs, and paying significantly more than they would like in the process.

A majority of respondents indicated that they use the internet for both home (residential) and business needs. Many are remote workers, a demographic of the community that has grown significantly during the COVID-19 pandemic. Others are small business owners, either of a home-based business or a local brick-and-mortar storefront. Residential and business users reported similar types of uses, although the most common types of business uses typically require higher bandwidth than residential uses. Respondents also noted the impact of unreliable broadband connectivity on the tourism sector- a primary local economic driver- as more tourists expect streaming services and other online entertainment. This leads to severely constricted available bandwidth for tourists and residents alike on busy evenings, weekends, and holidays. To provide sufficient bandwidth to meet the most requested types of use, a minimum of 25 Mbps, consistently available, is required.

COIC interviewed two of the most utilized ISPs currently serving the Camp Sherman area: Century Link and Sureline. Century Link has been operating in the area longer than any other provider, while Sureline only entered the market in fall of 2020. Both recognize that Camp Sherman remains underserved, and are discussing potential opportunities to bring fiber infrastructure to the area in the future. Partnering with one of these ISPs to expedite fiber installation is likely the fastest route to improve connectivity in the community, and BBSD may want to begin exploring options for supplemental grant funding to offset the cost of installation right away, or wait to see if additional funding might become available after completion of the Jefferson County study. The American Rescue Plan prioritizes broadband, as has the State of Oregon, as a vital investment for economic recovery from the COVID-19 pandemic. As a result, a historic flow of resources is likely to become available throughout 2021 and early 2022. We have included a short list of available funding sources in the appendix of this report, with the recognition that additional sources are likely to be announced in the future.

Introduction

The Black Butte School District 41 encompasses a geographic region in the far southwest corner of Jefferson County, OR. Nestled in the heart of the Metolius Basin, Black Butte School is a public K-8 school located in the unincorporated community of Camp Sherman. In addition to Camp Sherman, the school also draws students from the nearby communities of Suttle Lake and Sisters. The area is geographically isolated from all the other communities of Jefferson County, with travel to the county seat of Madras taking over an hour one way. Camp Sherman is located in a heavily treed, high elevation ponderosa pine forest in the high foothills of the Cascade mountains, very different from the "Canyon Country" of the Highway 97 corridor where most of the communities of Jefferson County are located. Historically, Camp Sherman has been a tourism and recreation center with a high percentage of vacation homes and short-term rentals, and more part-time/seasonal residents and businesses as result. In recent years, Camp Sherman has seen an increase in younger residents, a trend that was likely accelerated by the COVID-19 pandemic and may or may not persist. With more full-time working age residents in the community, the demand for reliable broadband has also increased.

The Central Oregon Intergovernmental Council (COIC) is a regional Council of Governments, first organized in 1972. COIC provides a wide array of services within the counties of Crook, Deschutes, and Jefferson, including: employment and training, alternative high school education, business loans, transportation, and community and economic development. COIC is also the federally designated Economic Development District for Central Oregon. Like other EDDs in Oregon, COIC received a CARES Act supplemental grant in 2020, which provided funding for economic recovery efforts in the region. COIC was able to utilize some of this funding to support this assessment, in recognition of the importance of improving broadband connectivity to underserved parts of our region as a priority for economic recovery and resilience to future shocks.

In January of 2021, COIC and the Black Butte School District were both invited to participate in a Jefferson County Broadband Action Team meeting, to discuss a pending application to the Economic Development Administration (EDA) for a county-wide Broadband Needs Assessment. Although the proposed scope of work for this county-wide project included outreach to Camp Sherman, it was minimal in scope and breadth, and relied on the willingness of Camp Sherman residents to travel to Madras to participate in scheduled meetings. To ensure that the unique needs and barriers of the Camp Sherman area were well represented, the Black Butte School District decided to pursue a local Community Needs Assessment, with the goal of folding the results of this report into the county-wide assessment if funded, or to pursue funding for solutions independently if not. Fortunately, at the time of this report, the Jefferson County Assessment has been funded and is estimated to be completed in 2022.

The primary purpose of this report is to document the broadband needs of two primary population groups within the Black Butte School District: home/residential users and business/commercial users. The primary audience for this report is the Jefferson County Broadband Action Team and the future consultant retained to conduct the county-wide assessment, Internet Service Providers, local or statewide government entities, and potential funding partners, all of whom may play a role in meeting the needs identified in this report.

Community Context

Camp Sherman is a census designated place (CDP) in Jefferson County that closely borders the Deschutes County Line. The closest incorporated community is Sisters, located approximately 15 miles away in Deschutes County. Suttle Lake is also located within the District Boundaries, and is a private resort community with primarily part-time residents. Black Butte Ranch, a larger resort community, lies just beyond district borders. Some outlying, unincorporated neighborhoods near Sisters also fall within district boundaries. For the purposes of this report, we utilized data on the Camp Sherman CDP to establish a demographic and economic profile of the district. However, it is important to note that this data may not provide a complete picture of all district residents. At the time of this report, 2020 census data had not yet been made available, so we have utilized the American Community Survey 5 Year Estimates as our primary data source.
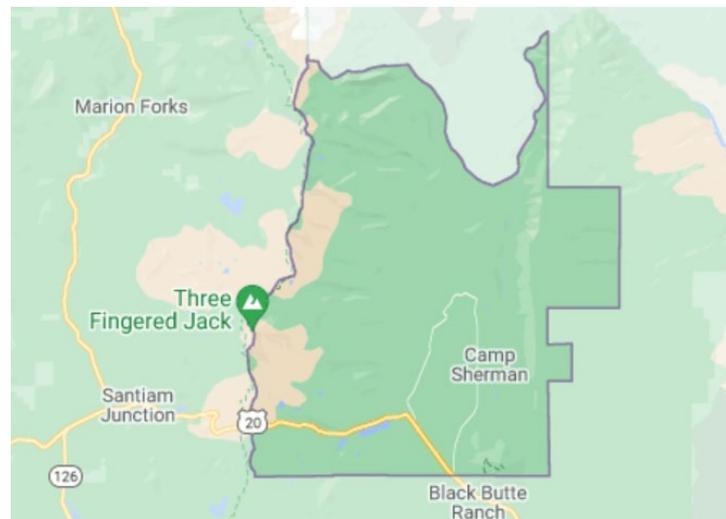
Black Butte School District 41 Boundaries

Demographic Profile

Camp Sherman CDP has 215 residents *(2015-2019 American Community Survey 5 Year Estimates).* Of these residents, just 64 are under the age of 50, and nearly half of those are under the age of 18. With a median age of 61.5 years compared to 39.7 for the State of Oregon, Camp Sherman CDP is still predominately a retirement community. For older community members, broadband connectivity can

be a vital link to family out of the area, telehealth services, social activities, and many other important resources. For working-age residents and families with young children, broadband connectivity can also increase access to remote work and educational opportunities. Anecdotal evidence points to a shift in age demographics as a result of the increased remote work opportunities during the COIVD-19 pandemic. As more working age adults, including new renters and second-home owners, relocated to the area during the COVID-19 pandemic, the demand for broadband access reached a new high.

The residents of Camp Sherman are not very racially diverse, with 210 of the 215 residents identifying as white alone, and just two as American Indian/Alaska Native. Ethnic diversity is also low, with just two residents identifying as "other Hispanic or Latino" *(2015-2019 American Community Survey 5 Year Estimates)*. There is no clear evidence to indicate that racial and ethnic diversity is increasing in Camp Sherman CDP, as these numbers have remained fairly consistent through the two most recent censuses.

The Black Butte School student body is more diverse than census statistics for the community as a whole; this may reflect a diversifying population trend that could be confirmed by the 2020 census numbers. Out of 25 students enrolled in the 2020-21 school year, 15 (68%) identified as white alone. Five students (22%) identified as American Indian/Alaska Native, 4 (18%) as Hispanic/Latino, and 2 (9%) as "unknown". Twenty of the 25 students lived in Camp Sherman, 3 lived in Sisters, and 1 lived in Suttle Lake.

Economic Profile

Camp Sherman CDP enjoys median household incomes (MHI) that are well above Oregon's state median income. While the MHI in Oregon is $62,818, in the Camp Sherman CDP it is $77,500, with just 0.5% of the Camp Sherman CDP population living below the poverty line. This relative affluence is reflected in the rate of educational attainment, with 99.5% of residents holding a high school degree or higher. Housing prices in Camp Sherman CDP are also higher than the state average: $451,900 compared to $312,200. Of the 388 housing units, 93.9% have some type of broadband internet subscription *(2015-2019 American Community Survey 5 Year Estimates)*.

Households in the Camp Sherman CDP are predominantly owner-occupied (78.6%), with just 21.4% occupied by long-term renters *(2015-2019 American Community Survey 5 Year Estimates)*. However, this data does not account for the large number of active short-term or vacation rental units within the CDP. Based upon reviews of both AirB&B.com and VRBO.com, there are at least twenty short-term rentals in the Camp Sherman CDP, which accounts for approximately 5% of all housing units. Whether these housing units were purchased to be utilized exclusively as short-term rentals, or are owner-occupied and rented only when the residents are absent is unknown from available data sources.

Broadband Needs

Methodology

To understand the needs of the Camp Sherman community, COIC utilized a three-pronged outreach approach. First, we developed a survey, available digitally and in a paper format at Black Butte School. The survey contained a total of 15 questions, and was circulated first to Black Butte School District board members, staff, and families of current students. This initial request for participation came directly from the Black Butte School head teacher. Next, the survey link, along with an informational flyer, were sent via email to community members not directly affiliated with the school. To assist with this community-wide outreach, we asked key community stakeholders to make direct requests for participation to their personal and professional networks. This included home owner associations, who were effective in reaching part-time homeowners currently living out of the area. Finally, we utilized county business license records to develop a contact list of local business owners, supplementing this public data with additional contacts supplied by key stakeholders. The survey link and flyer were then sent to this final business contact list.

Second, we hosted a series of local focus groups. Participants indicated their interest in joining a focus group via question 15 on the survey, or were directly invited by friends and neighbors who had already participated in the survey. A total of three focus groups were held: two in-person sessions and one virtual session hosted via zoom. While the in-person sessions primarily drew full-time residents, the virtual session was specifically focused on part-time homeowners currently residing in other areas.

Third, we cross-referenced survey respondents with our community and business contact lists, and scheduled a number of one-on-one phone interviews. A total of nine phone interviews were conducted in this manner, to ensure that key community and business stakeholders were represented in our data. In some cases, these individuals declined an interview but elected to participate in the survey after this direct contact.

This three-pronged outreach approach resulted in a mix of quantitative (survey) data, and qualitative (focus group and phone interview) data. In the following sections, we will present this data side-by-side to add deeper context to the quantitative data. To better capture the differing needs and trends in broadband use, we have divided all data into two sections: community/residential and business needs. However, it is important to note that many respondents live *and* work in the Camp Sherman area, so there is significant overlap.

The questions in the survey were modeled on surveys conducted for other community needs assessments in Oregon, namely the Maupin-area assessment conducted by the Mid-Columbia

Economic Development District (MCED). Survey questions were designed to assess trends and gaps between current broadband use and cost, and desired use and cost. The survey also asked respondents for minimal demographic data, primarily to identify distinct user groups for the purpose of data analysis.

A total of 151 respondents participated in the survey. However, because there were no required questions, all respondents did not answer all 15 questions. In the following section, we will first give a summary of the survey results that applied to all respondents. We then provide an overview of the survey results focused on those respondents who indicated they primarily use broadband for residential/home needs. In Section 2, we will focus on those respondents who indicated they also use broadband for business/commercial needs.

Survey Results

Respondent Demographics
The first question on the survey asked respondents to identify themselves as part-time, full-time, or "other" community members. Of the 151 total respondents, 54 (36%) identified themselves as full-time residents of Camp Sherman. Seventy respondents (46.7%) identified as part-time or seasonal residents. This closely mirrors the whole community demographics, as verified by Black Butte School staff.

Nearly half of the respondents are part-time or seasonal residents

46.7%
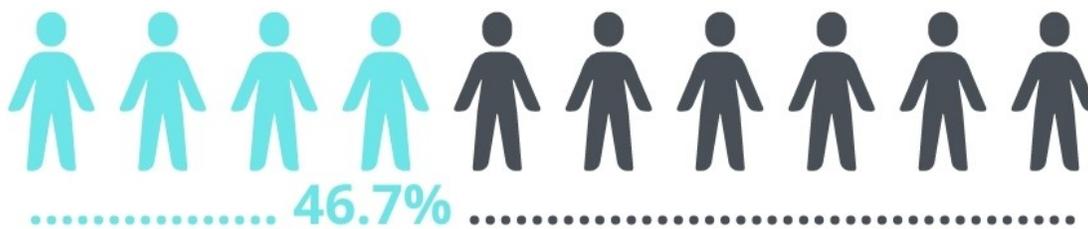
Eighteen respondents (12%) indicated that they own a home/property in Camp Sherman, but do not necessarily reside there at any point in the year. These respondents are most likely to participate in the short-term/vacation rental economy. Eight (5%) do not live or own property in Camp Sherman. Some of these respondents live in the surrounding communities also included in the Black Butte School District boundaries, including 2 from Suttle Lake. Three respondents live in nearby Sisters, and the other three live out of the area (Tualatin) or out of the state (Washington). Those who live in nearby communities are likely to either be a parent of a student enrolled at Black Butte School, or to be employed in Camp Sherman (including school staff).
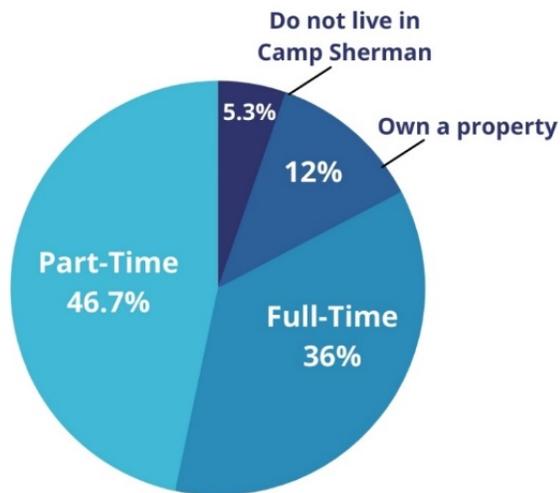
Type of Service and Providers

Question two asked respondents about the type of broadband connection they currently have. The greatest share of respondents used one of two types: DSL (28.9%) and Satellite (28.2%). Notably, thirty-one respondents (20.1%) do not currently have any internet connection. Next most popular was wireless (12.1%), followed by fixed wireless (4%) and mobile hot spots (3.4%). Just a single respondent uses dialup, and three respondents said they weren't sure or didn't know.

What type of internet connection do you have at home?
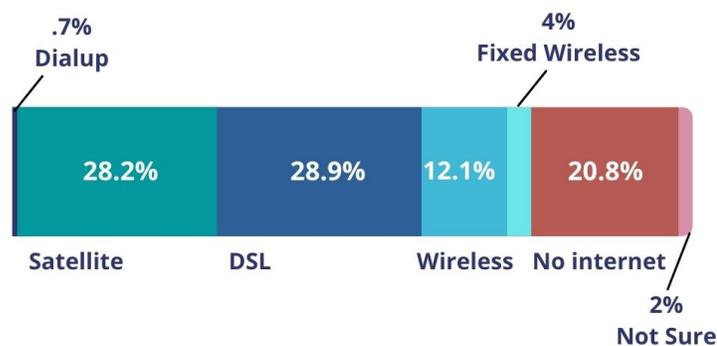
There are only a handful of Internet Service Providers (ISP) currently serving the Camp Sherman area. Some providers have been there for decades, while others are new to the market. Century Link was the most popular provider by quantity at 41%. This primarily represents DSL customers. Next most popular is Viasat (20%), a satellite service provider.

## Which company provides your internet service?
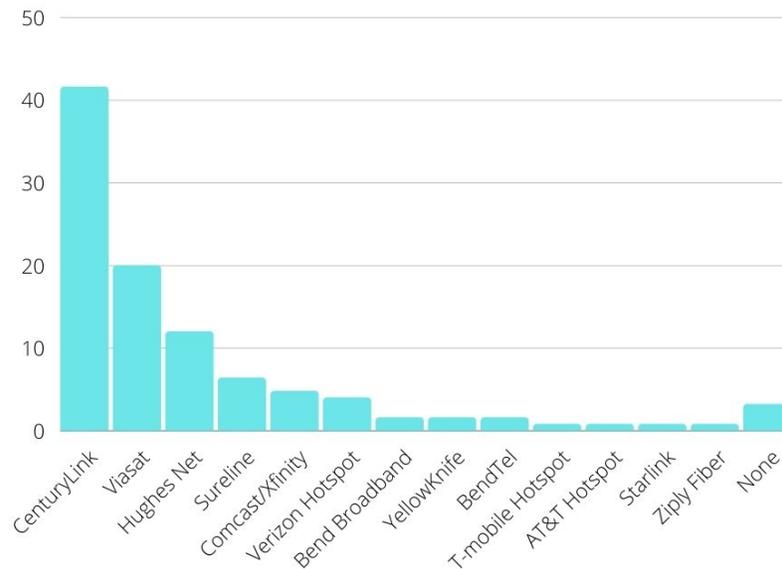
Section 1: Community Needs

Almost all respondents use the internet for home/residential use, although there was a subset of respondents who indicated that they currently have no broadband connection at all. Most of these respondents, 31 total, skipped most of the remaining questions in the survey, although some weighed in on select questions anyway. It is not clear if they answered these questions from an aspirational viewpoint (what they would like to use the internet for, if they had it), but the more likely explanation is that they represent a portion of the respondents who do not reside in Camp Sherman, and therefore answered based on how they use the internet at their primary residence.

Types of Use

Respondents use broadband for a variety of common uses at home. Of the 129 respondents to this question, over 90% use broadband for communication. Said one respondent, "I use email and Facebook to keep in touch with family and friends who live out of state. It seems like I've been using both a lot more during the pandemic." Other very popular uses were general info/research (78.3%) and Entertainment (69.8%). Telework (40%) and home-based business (37.2%) were also high on the list, but these uses will be covered in more depth in the following section. Education was another important and popular use, with 28.7% using broadband for adult learning activities, and another 17% using it for homeschooling. Even during the height of the pandemic, Black Butte School opted not to pursue digital/virtual learning due in part to the known bandwidth constraints of their students.

What are the primary reasons you use the internet at home?
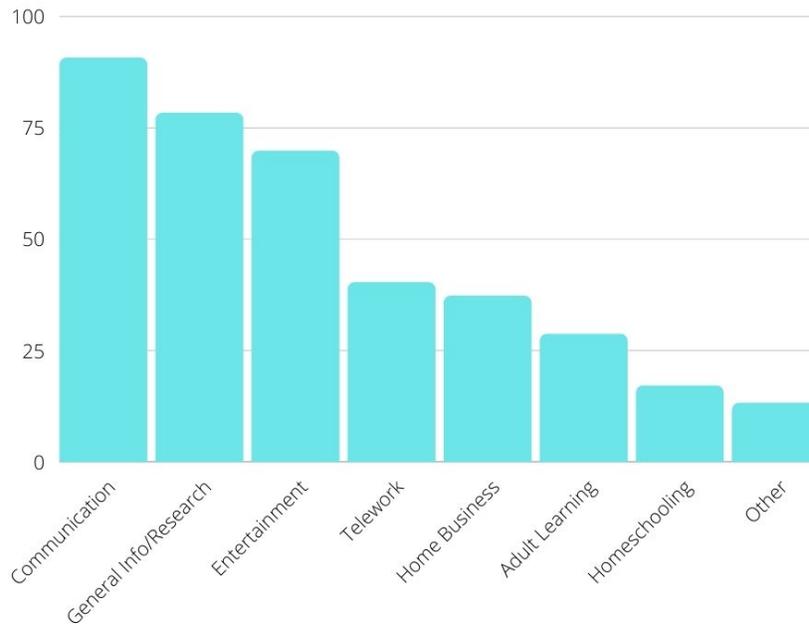
Level of Satisfaction

The majority of respondents are not satisfied with their current broadband service. Of 127 total respondents, fully 78% said they are not happy with their current service, while just 22% said their needs are being met.

Are you satisfied with your current home internet service?

YES 22%

NO 78%
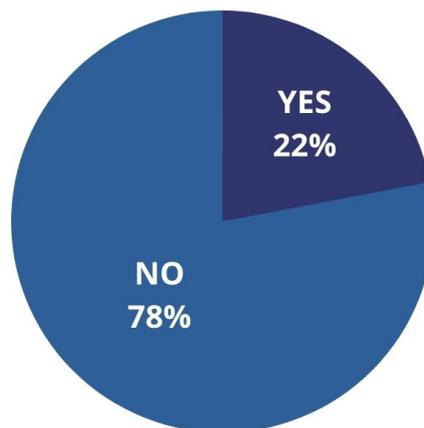
Twenty-four survey respondents gave additional information about why they aren't satisfied, with the majority of these comments focused on slow speeds:

- "Incredibly slow, sometimes to the point of not being functional at all!"
- "Speed not as advertised, unable to stream video content"

- "Speed is extremely slow, we spend a lot of time watching the clock go round and round."
- "Slow speeds in the evenings and holiday weekends"
- "The signal is not strong enough"
- "Sometimes lacks the strength to perform tasks"

Other respondents focused on the high cost of connectivity:
- "We pay for high-speed internet, but it is NOT high speed"
- "Satellite speed and service is good, but expensive!"

Focus group participants echoed the same themes as survey respondents:
- "It would be nice to watch videos that are sent to me by friends and family without having to think about rationing data."
- "CenturyLink is painfully slow. I use cell reception and a hot spot for important [work] conferences, or I come into Sisters to work at a co-working space."
- "We can't use multiple devices, and we can't make phone calls if someone is using the internet."

Others expressed that they do not have service at all, but would very much like to be connected, while some shared stories of the inconvenience of trying to find a signal: "Can't get signal at my cabin, need to drive to highway junction for a call, and the Camp Sherman Store for wifi", one survey respondent shared. Satellite internet users also expressed frustration with data caps which constrain some types of use, especially streaming services.

Those who are satisfied primarily include customers of the two newest providers in the area: Sureline Broadband and Starlink. Sureline customers, who utilize a fixed wireless connection, shared they were happy with the improved speed and functionality, but mentioned that winter storms had knocked out their signal several times:
- "Happy with the faster service, but not the interruptions in service due to weather"
- "Most of the time it works fine, but snowstorms sometimes knock out our internet"

Black Butte School staff were also more satisfied with their current service than respondents overall:
- "We're pretty happy with how much the internet services have progressed: from a satellite dish to T1 lines to the current shared Yellowknife system."

Starlink only just became available in Camp Sherman at the time of this report, and relatively few respondents (0.8%) were using it. However, those who were expressed a high level of satisfaction, or at least expectation of satisfaction:

- "We have signed on to Starlink; service begins mid-June. Expecting much faster speeds, no more data caps, and no throttling"
- "Starlink is a massive gamechanger: the best CenturyLink speed was .8 megabytes per second. So far, the slowest speed from Starlink has been 40 megabytes per second, and it's gotten up to 280 megabytes per second. It's in beta testing, and I'm looking forward to finding out if it's consistent and reliable over the long-term."

By the time we were wrapping up this report, anecdotal evidence showed that Starlink had consistently attracted more and more Camp Sherman residents throughout the summer and early fall of 2021. We followed up with one of the early adopters of this new technology three months after first installation to gather some additional information about the user experience. The interviewee first installed Starlink in May 2021:

"I've had it running since early May 2021. My first dish unit failed after a month (keep in mind their entire system is still a prototype), but they sent a replacement right away at no cost. The second unit has performed flawlessly since June. All told, I've installed five Starlink systems in the Meadows so far, with plans to help several neighbors when their kits arrive."

They were extremely pleased with the bandwidth provided through Starlink, saying that on average over the first three months of use, they experienced download speeds of 80-100 mbps and 8-10 mbps for uploads. Maximum bandwidth topped out at 200/ 25 mbps, with minimum speeds of 30/5 mbps. These speeds easily beat any other current ISPs serving the community.

Starlink has a few potential downsides. First, users must purchase and install their own "kits" which are mailed to them as available. Only a limited number of kits have been made available per geographic area, and some Camp Sherman residents are currently on a waiting list. The kits currently cost $450 (one-time free), plus a $99 deposit for early access. Users will likely need to purchase a few additional components for installation, such as a cable routing kit and satellite mount. After installation, monthly service costs $99.

Speed Requirements for Desired Uses

The following table shows required bandwidth for the top residential uses requested by respondents, according to the FCC Broadband Speed Guide. A minimum of 5-8 mbps is required for streaming video, while 15-25 mbps is necessary to effectively use most education platforms.

Broadband Speeds for Top Residential Needs

A bar chart titled "Broadband Speeds for Top Residential Needs" with the y-axis labeled "Mbps (Megabits per sec)" ranging from 0 to 15. The categories along the x-axis and their approximate values are: Research/General Info (~0.5), Music Streaming (~0.5), Email/Social Media (~1), Gaming (online multiplayer) (~4), Video Streaming (standard) (~4), Video Streaming (HD) (~8), Education/Homeschool (~15).
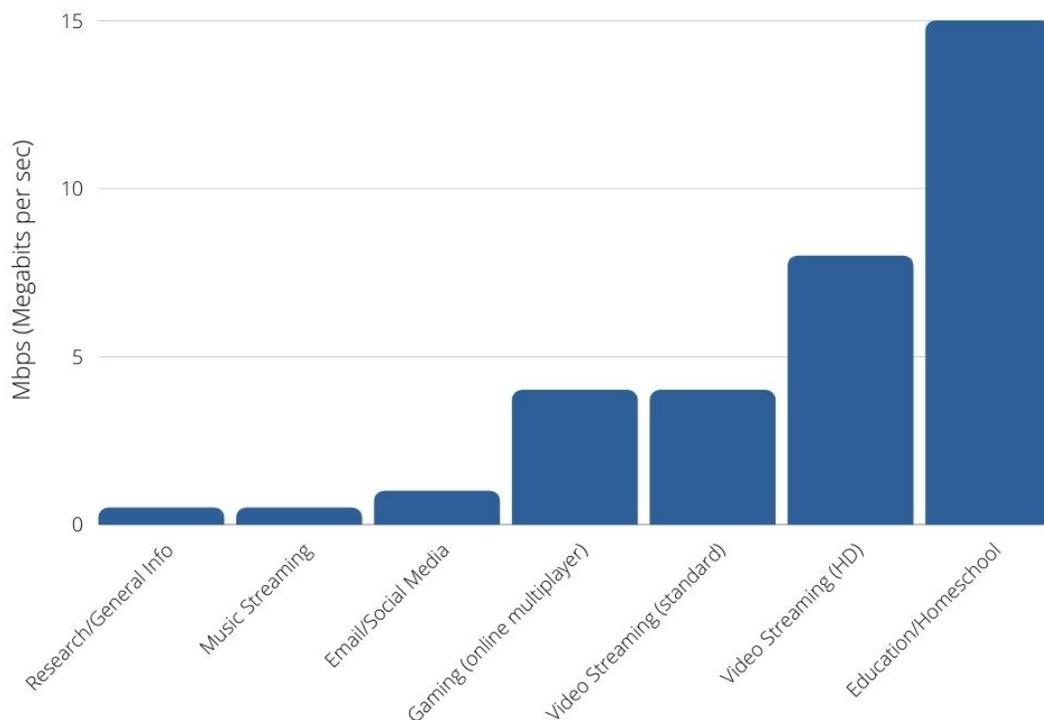
Section 2: Business Needs

Camp Sherman does not have an abundance of local brick and mortar businesses, but more than half of the total respondents also use broadband for some type of business-related needs. This includes a diverse mix of remote employees, home-based business owners, remote business owners, and brick and mortar businesses.

Local businesses with a physical location/storefront within the district include a general store, several restaurants, recreation tourism businesses, and retail. Hospitality is another important sector, as there are several resorts within the district boundaries, including Suttle Lake Resort, Metolius River Resort, and Cold Springs Resort and RV Park. Of 87 respondents who indicated they also use the internet for business, just 12 (13.8%) indicated that they have a physical location within the district boundaries, while 15 (17.2%) said they have a home-based business.

A larger share of the respondents are not business owners, but remote workers. Of these, most work for companies headquartered outside of Central Oregon (43.7%). Just 12% work for companies headquartered in the region, and another 7% work for a non-profit organization. Of the remaining respondents (17%), most indicated that they are retired, but are active volunteers who use the internet to support these unpaid activities. In a community with such a high proportion of retirees, this is worth further consideration, as unpaid work can still very much fall within a viable "business use", requiring the same functionality and bandwidth. Other respondents talked about their freelance work, primarily in the arts sector, such as "freelance film production" and "food photographer/blogger".

If you also use the internet for business, which best describes you?
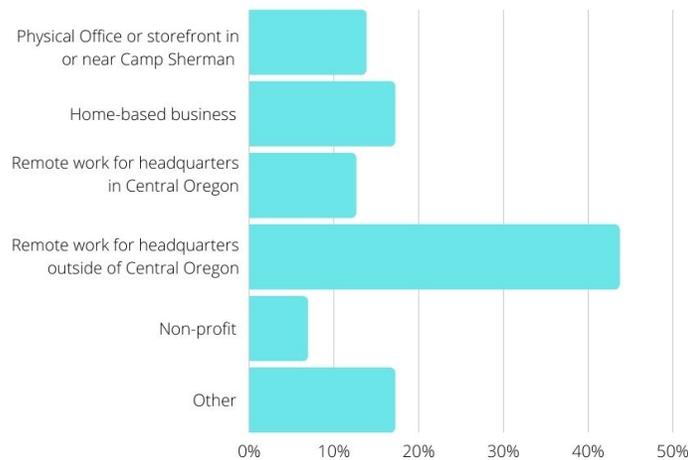

Types of Use

Communication also topped the list of business uses, with 97.6% or 88 out of 91 respondents. This was closely followed by general info/research (83.5%) as we saw with residential use. From here, the types of uses diverged, with many business users indicating they also need broadband for video conferencing, cloud computing, and uploading/downloading large files.

Notably, a relatively small share of respondents (9.9%) said they use point of sale or credit card processing. In part, this is reflective of the small number of physical storefronts, but respondents also shared that the slow speed and unreliability of their current service often makes use of these systems so difficult it is not worth the effort:

- "We call our internet service 'fancy dial-up'. Our cash registers are linked to the internet for credit card processing. There are times when the line at the cash register grows while are watching the clock icon go round and round. There are times when the internet just stops, sometimes in the middle of a rush! We feel that the service is very expensive for what we get."

What are the primary reasons you use the internet in your business?

Communication
General Research
POS/ CC Processing
Steaming video
Video conferencing
Uploading large files
Downloading large files
Cloud computing
Other

0%   25%   50%   75%   100%
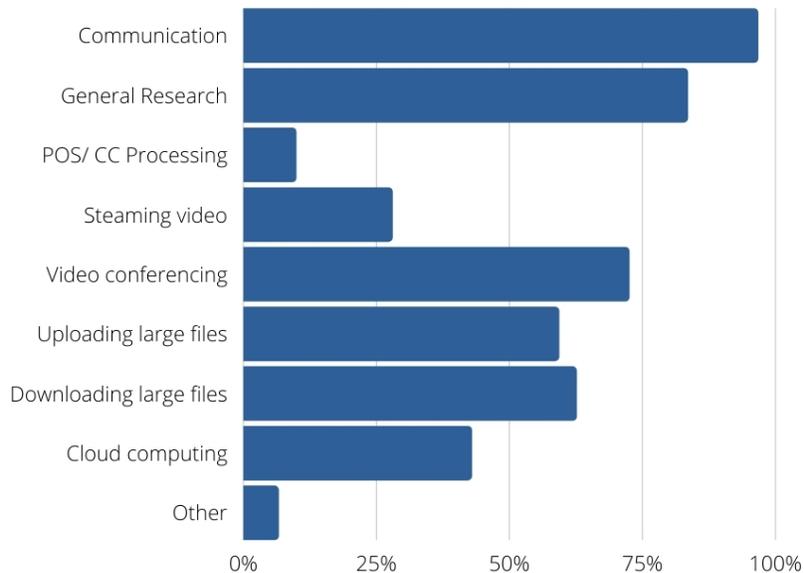
Level of Satisfaction

Like residential users, the majority of business users are dissatisfied with their current service (82%). Many respondents and focus group participants shared their hardships with doing business in Camp Sherman due to the internet challenges:

- "I cannot run a business from my cabin, because I don't have internet"
- "I travel almost daily to Sisters Library"
- "It's too slow when rendering CAD drawings and running Mathcad"
- "I regularly have to seek cell phone hotspots or wifi away from home to perform basic work tasks like participating in meetings or downloading most files"
- "I can't download big files. Additionally, the customer service isn't good. We've had 2-3 days of outages and no one to call to answer questions or provide any actionable information."
- "My wife works as a manager at a resort in Camp Sherman, but she has to do everything from the office or come into Sisters; the internet at home is so slow that it's impossible for her to do any work from home."

Although business users did not mention cost of service as a primary source of dissatisfaction, some mentioned the high cost and inconvenience of needing to "double up" on services to meet their needs:

- "I have DSL, Satellite, *and* Sureline at my home office. Each has its pluses and minuses."

- "We have used CenturyLink and Viasat for 18 months. I only use Viasat for work due to the data cap of ten hours per week. We use CenturyLink around the house for day-to-day stuff."

Are you satisfied with your current business internet service?
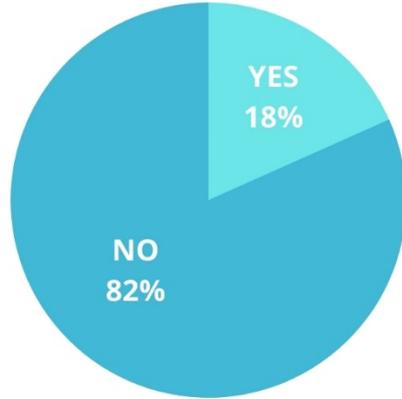
YES 18%

NO 82%

Speed Requirements for Desired Uses

The following table shows required bandwidth for the top business uses requested by respondents, according to the FCC Broadband Speed Guide. A minimum of 10 mbps is required for downloading most files, while 5-25 mbps is needed to effectively telecommute.

Broadband Speeds for Top Business Needs

Mbps (Megabits per sec)

Email/Gen Communication | Research | Videoconferencing | File Up/downloading | Telecommuting
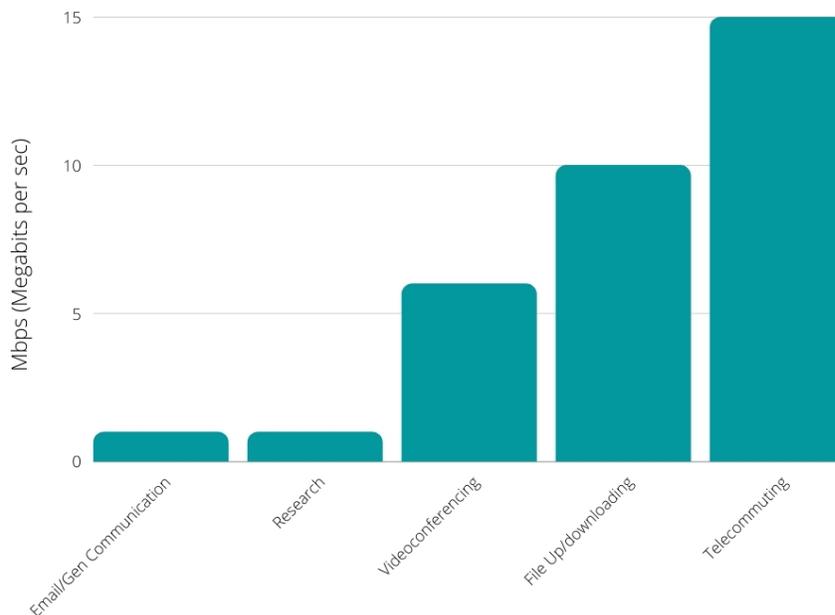
Cost of Service

Perhaps not surprising considering the high levels of dissatisfaction reported above, fully 95% of all survey respondents said they are interested in trying a new or alternative high speed internet service provider.

95%
of respondents
are interested in acquiring a
new high speed internet service
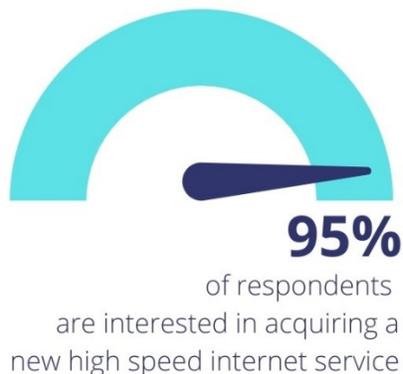
Of these, most said they were willing to pay between $50 and $150 per month for improved service, with some respondents indicating they would be willing to pay up to $250- $300+ per month for service if it provided sufficient bandwidth for all their desired uses. All of the respondents who indicated they would be willing to pay more than $150 per month used broadband for both home and business.

If interested in purchasing new or alternative high speed internet service, how much would you be willing to pay per month?
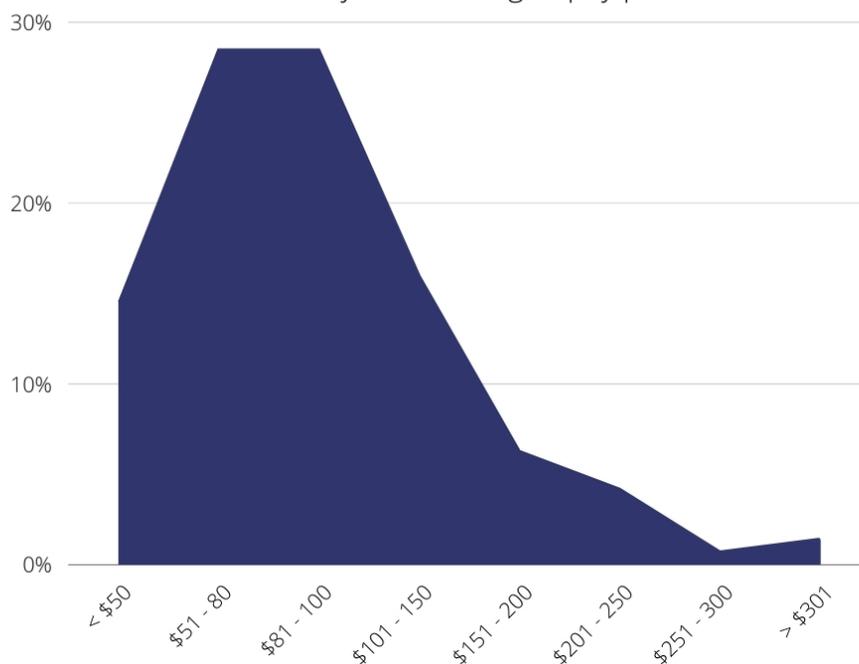
History of Service

Black Butte School has been a leading partner in a series of initiatives to try to improve broadband connectivity in the Camp Sherman area for nearly a decade. Black Butte School first explored applying for ERate funds, but decided that it was not worth the large cost in staff hours to complete the paperwork for an unknown percentage discount. The application process for ERate was estimated to take a year to complete. Around 2013, the School did complete the ERate application process and was deemed eligible, but decided to pursue USDA grant funding instead.

In 2014, Black Butte School applied for a USDA Career and Technical Education Revitalization Grant to install the first fiber connection in the area. Their ISP partner for this proposal was Bend Broadband, who at the time was not yet serving the area and had recently been acquired by TDS (Telephone and Data Systems). Unfortunately, the grant application was not successful; the reason given was that Black Butte School (albeit not the community at large) already met the definition of "high-speed internet" at the time of application.

During the 2017 school year, a number of families reported a decline in their bandwidth from Century Link to school staff. The school joined with community members to create and deliver a petition to Century Link, requesting improved service delivery. The petition was delivered to Century Link, but there was no clear response and no proposed outcome. The petition was followed in 2018 by a direct request to Century Link to install a fiber connection. Century Link responded, saying they could not justify the cost:

> *"The Centurylink planning department has determined there is no viable business case for CenturyLink to upgrade wireline broadband service to Camp Sherman; the cost of the upgrade exceeds the revenues it would generate. So, currently the options for upgrading wireline broadband service are to obtain sufficient government subsidy or a cost sharing arrangement with the benefitting properties."*

After Century Link declined to explore fiber options in 2018, Black Butte School began looking again to partner with other ISPs and explore other types of service models. They contacted Yellowknife to explore the potential to install a fixed wireless radio transmission tower on Black Butte. When Yellowknife declined, they next approached Sureline with the same proposal. Sureline was interested, in part because the owners had a personal connection to area. Sureline agreed to tackle the project.

Sureline established connectivity in Camp Sherman in January of 2021. Their initial investment was funded by an Oregon State grant for COVID relief. As a temporary relief method, Sureline Broadband installed wireless internet to Black Butte School District buildings, select community businesses, and

approximately 30 Camp Sherman homes. As outlined above, this intervention was successful in bringing improved service to the school and some residents, but also suffered from interference during winter storms that knocked out service entirely several times throughout the winter. Realizing this was also not a long-term solution for the community, the school is again looking for other options.

Starlink, as the newest service provider, offers an intriguing possibility for greatly improved service if residents can shoulder the cost to purchase and install the kits. However, the technology has not yet been tested by a harsh Camp Sherman winter, and may suffer from the same challenges as Sureline's fixed wireless service.

Finally, in 2020, local resident and former Black Butte School Board Member Shane Lundgren signed an agreement with AT&T to install a new 5G tower on a parcel of his property near Suttle Lake. The new tower will be a part of the FirstNet emergency response network, but is also expected to greatly improve cell phone service in Camp Sherman. This could result in more use of mobile hot spots as another broadband option.

Trends and Gaps

Based on the data collected through all outreach methods, we can identify some trends in use and specific gaps in coverage between current services and desired services. Through interviews with Internet Service Providers (ISPs) we can also highlight anticipated trends in future service delivery.

Use Trends

The first major use trend worth noting is the increasing demand for telecommuting and remote learning- both adult and youth. This trend has undoubtedly been accelerated due to the COVID-19 pandemic, but it is likely to remain at a higher level of demand post-pandemic, rather than return to pre-pandemic lows. These uses require the highest bandwidth speeds of all desired uses reported by respondents: typically 15-25 mbps according to the FCC. If three or more users are attempting to engage in these activities at the same time, required speeds will exceed 25 mbps. Given the high percentage of remote workers who participated in this assessment and comments from focus group participants, it's clear that many working-age adults in Camp Sherman would prefer to work from home if they had sufficient bandwidth.

The second trend is an increasing desire for streaming services. As more and more people turn to streaming services for entertainment, alternatives such as cable, Dish TV, and other products are becoming more costly, cumbersome to maintain, and less desirable. Many respondents are ready to eliminate these additional bills, but are unable to do so until local bandwidth can consistently provide minimum speeds of at least 5-10 Mbps. For multiple users to access streaming services at the same

time, 25 mbps or higher is required. This trend may be particularly relevant for local resorts, who may struggle to compete with neighboring tourist destinations including Sisters and Bend if they are unable to offer reliable entertainment options to guests.

Finally, the rise in cloud computing and cloud-based point of sale systems will continue to drive demand for reliable internet connection in local businesses. Uploading and downloading medium to large files requires at least 10 Mbps, and no interruptions in service.

Gaps in Service

The scope of this project did not include any infrastructure mapping, but based on respondent feedback it is clear that there is a large degree of variability in broadband access in different parts of the Camp Sherman community, due to the following factors:

- Density of tree coverage
- Topographical features (valleys/low-lying areas)
- Proximity to cell towers (for use of cell phone "hot spots")
- Proximity to anchor institutions (i.e. Black Butte School or Camp Sherman Store)

By far the largest gaps in service revolve around speed and reliability. DSL providers generally struggle to deliver on advertised speeds consistently, while fixed wireless is impacted by winter weather which can wipe out service entirely. Satellite providers often have data use caps or other methods of "throttling" that can significantly reduce speeds and increase costs. On busy evenings, weekends, or holidays, the already limited speed is further reduced by increased users, often rendering it too slow to use streaming services, telecommute, or participate in online education. Based on the desired uses, a minimum of 25 Mbps would need to be available without interruption to satisfy the local demand.

There is also a gap in service for low-income community members, as the cost of service is generally higher across the board in Camp Sherman than neighboring communities in the region. However, Camp Sherman remains a high income community and for most community members, price is not a significant barrier.

Trends in Service Delivery

Internet Service Providers interviewed agreed: fiber is the logical next step for Camp Sherman, and several providers are currently working on proposals to extend fiber from Sisters to Camp Sherman within the next five years. Sureline Broadband, the newest ISP in the community, says they have made a long-term commitment to continue to improve their service, which includes exploring how to fund fiber expansion:

> *It's a significant expense, we shouldered a bit to get in [with fixed wireless], and will shoulder more to bring fiber optic in. But we are in it for the long haul- that's how we justify making that*

investment. The fiber run could be pretty darn expensive, coming from Sisters into Camp Sherman. But, we're just not sure wireless is going to be a viable solution for the long term in this particular area. So, fiber is the long-term solution. - Lamont Boileau, Sureline Broadband

Sureline is still diligently moving through process of resolving right-of-way issues, as well as working with Central Electric Cooperative and the Forest Service to develop a "roadmap" for a fiber route. Fortunately, though the talks have been slow going, the process is moving along and Sureline expects to have the approximate cost to move forward by the end of 2021. Grant funding will likely play an integral piece to fiber deployment and project completion, as "initial cost estimates are closing in to upwards of $1 million" says Sureline owner Josh Richesin.

Century Link, the first or "incumbent" ISP in the community, is also interested in exploring options for fiber, but identified a number of barriers, including cost and lengthy potential delays due to environmental regulatory requirements (NEPA) to install fiber on the federal forest lands surrounding Camp Sherman.

Both Sureline and Century Link expressed a desire to utilize any available grant funding to defray the high costs of fiber installation. Sureline was the recipient of a State of Oregon COVID Relief grant in 2021, which enabled them to first enter the market in Camp Sherman in fall of 2021. They have no pending grant applications to expand service in Camp Sherman at this time, but are nonetheless hoping to begin fiber installation as soon as 2022: "We are tentatively forecasting by end of 2022. We know the challenges winter brings, so the sooner the better!" shared Boileau.

In early 2021, Century Link won competitive federal funding through the Rural Digital Opportunity Fund (RDOF) to expand service in the census block that includes Camp Sherman. The funding becomes available in 2022, and must be fully expended by 2028. RDOF is an initiative of the Federal Communications Commission (FCC):

> *The Rural Digital Opportunity Fund is the Commission's next step in bridging the digital divide to efficiently fund the deployment of broadband networks in rural America. Through a two-phase reverse auction mechanism, the FCC will direct up to $20.4 billion over ten years to finance up to gigabit speed broadband networks in unserved rural areas, connecting millions of American homes and businesses to digital opportunity. The RDOF Phase I auction…will target over six million homes and businesses in census blocks that are entirely unserved by voice and broadband with speeds of at least 25/3 Mbps. –FCC, Implementing the Rural Digital Opportunity Fund (RDOF) Auction.*

In addition to fiber, Starlink offers another possible pathway forward. So far, community members have reported high levels of satisfaction with Starlink's bandwidth and reliability and the adoption rate picked up significantly throughout the summer of 2021. If enough community members are able

to utilize Starlink at their homes, and remain happy with the results, the cost of fiber installation may not be justified. Black Butte School could also try Starlink, although it is unlikely they will make the switch until Starlink is through beta testing and officially hits the market. It also remains to be seen how Starlink will perform during the winter months, given the known challenges with satellite and fixed wireless systems under snowpack and icy conditions.

Conclusions and Next Steps

This report clearly shows that Camp Sherman remains an underserved community, with large gaps between current and desired levels of broadband service, speed, and bandwidth. The Internet Service Providers currently operating in the community are largely aware of these challenges, and some are actively engaged in identifying funding for expansion of service within the next five years or even sooner. Trends in use indicate that like other rural communities across the country, demand for reliable bandwidth of at least 25 mbps is already high and increasing as more remote workers move to the community and existing community members pursue more remote work and educational opportunities. While some community members continue to prefer a disconnected life, most community members are looking for opportunities to expand their connectivity and are hoping to be able to eliminate "doubled up" services with a single, reliable source of sufficient bandwidth. Local resorts and tourism businesses are also recognizing that most guests expect a certain level of connectivity, and the era of guests coming to Camp Sherman in part for the charm of disconnection is fading.

Although the scope of this report does not include identifying solutions or engaging in feasibility analysis, we have highlighted some potential next steps that Black Butte School District may be interested in pursuing. This includes partnering with Jefferson and/or Deschutes Counties, pursuing new grant funding for fiber expansion in partnership with one or more internet service providers, and several community-based approaches.

As mentioned above, this report is intended to be "rolled up" and incorporated within the planned Jefferson County assessment and feasibility study. By staying closely engaged with the Jefferson County BAT, the District can ensure that the outcomes of this report are included in the final scope, and Camp Sherman is one recipient of any future funding secured by the County. Since Camp Sherman borders the Jefferson/Deschutes County line, BBSD may also find value in sharing this report with Deschutes County Commissioners, Central Oregon Regional Solutions, the Oregon Broadband Advisory Committee (OBAC), or other statewide partners, such as LINK Oregon, who are supporting broadband assessment and expansion in Oregon. COIC can facilitate a connection between the District and any of these partners, as requested.

The District may also choose to pursue grant funding independently. Given the stated interest from several ISPs in expanding their service, COIC recommends the District develop a public-private partnership with an ISP and seek grant funding together to offset the cost of fiber installation. This will likely speed up the timeline for installation. It may be necessary to work in partnership with the US Forest Service as well, given the predominance of USFS owned and managed lands between Camp Sherman and Sisters. There are a number of current funding opportunities available now, and more are anticipated in 2022. We have included a list of known funding sources at the time of this report in the appendix. In most cases, the District is an eligible applicant for any of these programs, but some may require partnering with another entity, such as a city, county, EDD, or an ISP to serve as the direct applicant.

It is clear that many community members are highly motivated to be involved in finding and implementing solutions. Question 15 of the survey asked respondents to indicate their willingness to support solutions:

- 113 respondents would like to receive additional information and updates about this project
- 12 respondents would be willing to serve on a project steering team
- 80 respondents would be willing to sign a letter of intent to purchase a new service, or a petition/letter of support for grant funding
- 47 respondents would be willing to share their contact information with an ISP interested in increasing service to Camp Sherman

One option for community-based support is to form a local Broadband Action Team. In their June 2020 White Paper, "Leave No Oregonian Offline", LINK Oregon provides a blueprint for the formation of local BATs and a network of support at the statewide level. As a local anchor institution, the District is in an ideal position to form a BAT, although time and staff capacity constraints may prove prohibitive for this approach. Alternatively, the District could recruit additional Camp Sherman community members to participate on the Jefferson County BAT.

A second option for community involvement would be to create an online petition or form letter of support, to further demonstrate community buy-in for any future grant application. If the District decides to pursue public-private partnership with an ISP, but encounters difficulty in recruiting an ISP, they may find it helpful to reach back out to community members to provide a letter of intent to purchase. This can be a very persuasive tool in attracting ISP participation in any service expansion effort.

Regardless of how the District chooses to utilize this report, COIC intends to continue to work on broadband connectivity at the regional scale, seeking opportunities to improve connectivity to all underserved communities in Jefferson, Deschutes, and Crook counties.

Appendix

Data Sources:

- U.S. Census "American Community Survey 5 Year Estimates, 2015-2019", https://www.census.gov/programs-surveys/acs
- VRBO, https://www.vrbo.com/; and AirBnB, https://www.airbnb.com/
- Link Oregon White Paper: "Leave No Oregonian Offline", https://www.linkoregon.org/wp-content/uploads/2020/12/Leave-No-Oregonian-Offline-June-2020.pdf, June 2020.

Broadband Funding:

- **Economic Development Administration (EDA)**
  - Economic Adjustment: https://www.grants.gov/web/grants/view-opportunity.html?oppId=334743

  - Build Back Better Regional Challenge: https://www.grants.gov/web/grants/view-opportunity.html?oppId=334735

  - Good Jobs Challenge: https://www.grants.gov/web/grants/view-opportunity.html?oppId=334720

  - Statewide Planning Research and Networks: https://www.grants.gov/web/grants/view-opportunity.html?oppId=334728

- **Business Oregon, State Broadband Office**
  - Broadband Infrastructure Program – $107 million
    - 10m for planning and TA
    - 97m for broadband infrastructure
    - Program details TBD, applications anticipated by April 2022
  - Digital Literacy, Security and Inclusion Program – $10 million
    - Helps folks who have a device but may not be getting everything out of it; also provides devices to those who don't have one. Portland has already begun developing programs in this area.
    - Program details TBD, applications anticipated by April 2022

- **USDA Broadband**

  - USDA Reconnect Broadband Loan & Grant Program
  - USDA Distance Learning and Telemedicine (DLT) Grant Program
  - USDA Community Connect Broadband Grant Program

- **FCC Broadband Programs**

- o Broadband DATA Act, to improve broadband mapping accuracy and accountability.
- o Emergency Broadband Connectivity Fund, to establish an Emergency Broadband Benefit Program, under which eligible households may receive a discount off the cost of broadband service (up to $50 monthly benefit per eligible household and up to $75 on tribal lands). The FCC has 60 days to create regulations. Public comments are due Jan. 25 and reply comments are due Feb. 16, 2021.
- o COVID-19 Telehealth Program

- **NTIA Broadband Programs**
  - o $300 million to implement a broadband infrastructure deployment grant program benefiting rural areas, prioritizing applications delivering 100/20 Mbps or better broadband service in areas without access to 25/3 Mbps broadband service.

- **American Rescue Plan Act (ARPA)**

  - o The key broadband-related provisions in the bill include the following:

    - Emergency Connectivity Fund: $7.17 billion for an Emergency Connectivity Fund to enable remote learning and to extend broadband connectivity to students in their homes, for which the FCC is to issue rules within 60 days of the Act's enactment.

    - Coronavirus Capital Projects Fund: $10 billion to a Coronavirus Capital Projects Fund that will be through U.S. Treasury Department. It will likely be administered like the CARES Act Coronavirus Relief Fund with $100 million to each state. Broadband capital projects can be funded.

Anticipated in 2022:

There is additional broadband funding anticipated later this spring as part of an infrastructure bill. There are currently additional proposals of up to $100 billion for broadband in the U.S. Congress.

- $80 billion would be set aside for deploying new broadband networks or expanding existing ones to reach those who currently can't get a signal. The committee said the investment would be enough to drive 100 percent connectivity throughout the country. The Federal Communications Commission would be responsible for awarding three-fourths of the $80 billion through a national bidding process. The remainder of the funds would be given to the states to fill in connectivity gaps.
- An additional $15 billion would go toward implementing Next Generation 911 services, including systems that accept text messages, images or videos in emergencies when a phone call is not possible.
- Another $5 billion would be used to subsidize low-interest financing for broadband deployment projects and $8 billion in subsidies to help low-income families and students afford their monthly Internet bill.

Oregon Senate Bill 1603 (2020)

Oregon's Senate Bill 1603 (2020) took effect on January 1st of this year. The statute created the Oregon Broadband Fund and directs the Public Utility Commission to transfer up to $5 million per year of moneys deposited in universal service fund to the Broadband Fund, and continuously appropriates moneys in the Broadband Fund to the Oregon Business Development Department to provide grants and loans through, and to administer, programs related to broadband. It sunsets the Broadband Fund and the transfer of moneys from universal service fund to Broadband Fund and grant program on January 2, 2030. Funds should become available for distribution in the second half of this year (see "Business Oregon" section, above.