

# **Broadband Access in Sonoma County**

## *Broadband is a Utility; The Quiet Crisis of Availability*

### **SUMMARY**

This past year of learning to cope with the many problems brought about by the COVID-19 pandemic has been an education for all of us. One lesson learned was that a high quality internet connection is necessary to function successfully. Sonoma County must categorize high quality internet service as a utility; a necessity like electricity and water, and not just a convenience or luxury. Designating broadband as a utility recognizes its central and necessary role in our lives. As a utility, it could eventually be subject to regulation of costs and services, but this would require legislation and statewide action.

Like electrical power, broadband access should be available to all. This was true before the pandemic, but the need is clearer than ever. Our daily lives now include working from home, distance learning and online classes, online visits to a doctor or scheduling a vaccination appointment, and even applying for a job. Buying almost anything online and reading the daily newspaper online threaten the existence of brick and mortar stores and printed media. All of this will remain to some extent after COVID-19 is just a bad memory. However, not all residents of Sonoma County are stakeholders in this new reality.

**There is a socio-economic digital divide.** A high-quality broadband connection is expensive, and many cannot afford one. Therefore, they lack access to the internet. An individual who is disadvantaged by a low income is further disadvantaged by an inability to attend classes or work remotely, or even to fill out an online job application. The result is a socio-economic digital divide. Those who can afford a good link and access to the internet can prosper; those who cannot fall further behind or are simply excluded.

**There is an urban-rural digital divide.** Sonoma County has large areas where the population is dispersed, the terrain is rugged, tall trees abound, and internet connections are poor or simply do not exist. There is a significant urban-rural digital divide that puts rural residents at a disadvantage and leaves rural businesses, including farms and wineries, much less able to connect with the world. Commercial broadband companies expect to make a profit; they cannot recover the cost of bringing a good internet connection to these distant and widely disbursed sites. The result is that many rural residents have either no connection or must rely on outdated, slow, and unreliable technology.

The need for a quality broadband connection that allows access for everyone to all media is widely understood by the leaders of Sonoma County, but not enough has been done to achieve this goal. The County has been forced to react to seemingly endless disasters: annual wildfires, homelessness, flooding, and COVID-19. A proactive approach toward solving the quiet crisis of broadband availability has not appeared to be a sufficiently high priority.

The Grand Jury found that Sonoma County has no established plan for broadband extension to its unserved and underserved residents. Moreover, the available information on broadband availability and quality is poor and the County office that leads the effort at broadband expansion is understaffed and underfunded. Procedures and regulations that would favor broadband

expansion need to be optimized in order to improve the ability of the County to obtain State or Federal funding if and when it becomes available. Finally, Sonoma County needs to create a mechanism to extend infrastructure and service to its residents when commercial providers are unable or unwilling to do so.

The Grand jury has several recommendations including that the Board of Supervisors should recognize broadband as a necessity, indeed a utility. Sonoma County should adopt and support a plan for broadband expansion that incorporates high bandwidth standards, and create or otherwise empower an organization to carry out the plan. Sonoma County agencies should cooperatively devise standards and regulations that would expedite broadband expansion and assure its incorporation into new and ongoing construction. The County should also establish mechanisms through which a non-profit organization or a private-public partnership can build county-owned infrastructure that brings broadband connections to rural areas. The Sonoma County should identify targets for broadband expansion and generate “shovel-ready” proposals that are in sufficient detail to capture grant funding. Finally, the County should work to increase access to programs that subsidize broadband for low-income users and should initiate study of long-term sources of revenue to expand such programs.

## GLOSSARY

- ASB Access Sonoma Broadband, an office within the EDB  
Centered on broadband expansion
- BOS Sonoma County Board of Supervisors
- CASF California Advanced Services Fund
- CBC California Broadband Council
- CPUC California Public Utilities Commission
- DSL Digital Subscriber Line
- EDB Sonoma County Economic Development Board
- FCC Federal Communications Commission
- Gigabit One thousand megabits (one billion bits) of digital information
- JPA Joint Powers Agreement
- Magellan Plan *Sonoma County Broadband Specific Plan*, prepared by Magellan Associates
- Megabit One million bits of digital information
- Mbps Megabits per second, a measure of the speed of transmission of digital information
- NBNCBC North Bay North Coast Broadband Consortium
- SCOE Sonoma County Office of Education
- SMEDD Sonoma-Mendocino Economic Development District

## BACKGROUND

### **The Digital Revolution Continues and the Digital Divide Widens - The Effect of COVID-19**

Over the last several years, our lives have become more and more dependent on computers and reliable access to the internet. Shopping online threatens the very existence of “brick and

mortar” stores. Businesses increasingly see a good website as essential. We get news from digital sites while traditional newspapers get thinner; many have simply disappeared. Working from home was once seen as a small privilege that might be available one or two days a week; it is now recognized as a viable option or a job requirement. Many employers only accept job applications submitted electronically through their web portal. Inability to access the internet is part of the growing digital divide: the gulf or separation between those who have ready access to computers and high-quality internet connections and those who do not. Broadband access should be understood to be a **utility**, a necessity like electricity or running water.

The crisis brought about by the COVID-19 pandemic did not create a move to a digital world, but it has rapidly advanced trends that were already in progress. Person to person interactions are the prime means of virus transmission and the pandemic made personal contact dangerous, potentially fatal. In response, many offices either substantially or completely closed and shifted to a “work from home” mode. Bedrooms became offices and kitchen tables were work desks. Schools at all levels were forced to close, leaving teachers working from home or from deserted classrooms and connecting with students via Zoom or other digital platforms. Students became almost totally dependent on their computers for instruction, interaction with their teachers, and contact with their peers. Whenever possible medical appointments that were once routine office visits were reconfigured as remote interactions, thus protecting both patients and medical personnel from contact with potentially infected individuals. People stayed at home, masked themselves, bumped elbows, socially distanced, and talked to our families, friends, and co-workers by Skype, Zoom, or other contact-free means. Residents may not like what the virus brought, but there were few choices except to adapt to the situation.

### **Broadband Access as a Utility**

The COVID-19 pandemic had one more major consequence; it is now obvious that high quality digital access is a necessity if one is going to be able to survive and thrive in this evolving environment. Reliable broadband access is increasingly viewed as a utility, as important as reliable electric power, a quality water supply, and good roads. Acceptance of broadband access as a utility could lead to genuine regulation of both service levels and costs (but this would require statewide legislation and considerable re-thinking of broadband demands and expectations).

Unfortunately, quality broadband access is not always available. With respect to the residents and businesses of Sonoma County, there are three major reasons:

- There is a **socio-economic digital divide**. Even if it is available, access may be too expensive to afford. Given a choice between paying the rent and paying for broadband, which would you choose? The lack of affordable broadband access limits the ability of both adults and children to advance in an ever more digital world. Without good internet access, the socio-economic divide widens; the poor are further excluded from the economy and even more relegated to low-pay work. Broadband availability is a major issue of equity, social, and economic justice.
- There is also a **rural-urban digital divide**. Much of Sonoma County is characterized by hills or mountains, forested areas, and relatively isolated farms and small communities. Broadband access may be either completely unavailable or of a quality or reliability that does not allow adequate and consistent connectivity. The cost of bringing access to these

areas is often more than a commercial broadband provider will spend, given limited potential return on investment. Providing access also may cost more than an individual or small community can afford. Rural residents are more likely to be left behind.

- **Insufficient bandwidth** can be a major problem. A single user with a slow internet connection may find a Zoom connection to be unstable. Households that had barely adequate, less expensive service that supported basic functions like e-mail and web searching now find they need better access. Consider how a family with two parents working from home and three children involved in distance learning using Zoom can overtax a connection without the capacity to handle the digital traffic. A better service might be available at higher cost, or it might not be available at all.

## **METHODOLOGY**

This is a self-initiated investigation by the 2020-2021 Sonoma County Civil Grand Jury.

The Grand Jury conducted interviews with 20 key individuals in Sonoma County who were involved in the potential expansion of broadband access. They included:

- Members of the Sonoma County Board of Supervisors
- Representatives of the State of California
- Representatives from County Departments, Boards, and Programs
- Commercial broadband suppliers
- Individuals with information technology expertise
- Interested members of the public

The Grand Jury reviewed documents from many public websites and obtained additional information from documents supplied or recommended by interviewees. The most important of these are listed in the Bibliography.

Note: all of the Grand Jury's interviews were conducted via Zoom, and almost all of the documents it examined were viewed or downloaded from the internet. This was challenging; interviews were plagued by poor or lost connections involving both Jurors and those interviewed. "Low-bandwidth" messages were common. Almost all of the references in the Bibliography require internet capability to access.

## **DISCUSSION**

For the last few years County government and the Board of Supervisors (BOS) have been in a crisis management environment. Annual wildfires and massive evacuations, the homelessness crisis, flooding in West County, and now the COVID-19 pandemic have consumed funds and energy. County government has been forced to be reactive rather than proactive. Although broadband access is known to be a problem area, it has not had a high enough priority to demand an aggressive response.

The COVID-19 pandemic has emphasized the importance of universal and robust internet availability. When viewed from a technological perspective the County has two classes of citizens: the well-connected, and the others who are fully or partially excluded from full use of the internet. The Grand Jury investigated the state of broadband availability in Sonoma County and the prospects of extending broadband connections to unserved and underserved areas and

populations. The Grand Jury also examined mechanisms that might support broadband expansion. This report details its investigation.

### **Broadband is the Newest Utility. It is Not a Luxury**

High quality internet access is a necessity to live fully and productively in our society. We shop, bank, pay bills, see a doctor, work at home, get news, apply for a job, and play games online. Some date and find partners online. Most could only schedule a vaccination appointment online. Even prior to the COVID-19 pandemic students with poor internet connections had difficulty doing assignments or research. It is hard to find an aspect of our lives in which computers and the internet are not important and sometimes even vital, *e.g.*, emergency communications.

Consider the fate of today's Sonoma County residents who simply cannot afford the cost of an adequate broadband connection, live in areas where connectivity to the internet is not available at all, or where they have a poor, unreliable or intermittent connection. All are victims of the "Digital Divide." They are functionally excluded from or badly hindered in many everyday functions, and often pushed into a status of second-class citizenship as a result. Disadvantaged citizens are further disadvantaged and separated from opportunities to earn, learn, and even stay healthy. Broadband access and availability are issues of social justice as well as inadequate infrastructure.

The COVID-19 pandemic has brought our reliance on internet connectivity into sharp focus. Working from home is the norm or required for many who previously commuted daily to their offices. County schools closed in the spring of 2020 and students and their teachers shifted to online classes and presentations. Medical offices shifted to online visits; telemedicine and telehealth became familiar terms. Consider the impact if the pandemic had occurred 50 years ago without the internet. Schools and offices would have had to decide: close down, leaving students without schooling and workers without jobs, or continue as before and face the consequences of a much more serious pandemic and many more deaths.

### **Broadband: Definitions and Standards**

The term broadband is popularly equated with internet access. It differentiates a "good connection" from narrowband connection via telephone line and dial-up modem. However "good broadband" is not well defined.

The Federal Communications Commission (FCC) defines broadband in terms of download and upload speeds of data transfer, expressed as megabits per second (Mbps). Download speed refers to how quickly data in the form of web pages, photos, or a job application are transferred to your computer. Upload speed refers to how quickly your photos or completed application can be sent from your computer.

- The current FCC standard for minimally acceptable broadband is 25 Mbps download rate. This is sufficient for a single user to stream programs, participate in teleconferences, and download graphics and text in addition to simpler tasks like email or voice-over-internet telephone calls. This download rate will not support multiple users within a household who are all trying to do, such things at the same time, a common occurrence. The FCC standard of 3 Mbps upload rate allows transfer of documents and graphics from an individual's computer to another site but it is insufficient for many

business applications. This FCC standard is expressed as 25/3; a higher standard is necessary to meet current needs and expectations of effective use of the internet.

- The California Public Utilities Commission (CPUC) uses an older standard of 6/1 to define minimal broadband speeds. This is widely viewed as inadequate; a Zoom meeting or multiple users in a household working at once can be very difficult or impossible. An attempt to upgrade the 6/1 standard in the State Senate in 2019-2020 (SB 1130) failed in the State Assembly. A new bill in the 2021-2022 session, SB 4 sponsored by Senator Lena Gonzalez, is pending and would prioritize California Advanced Services Fund (CASF) support to areas where current speeds are 10/1 or below, and has a further goal of raising download speeds to a minimum of 100 Mbps.
- A 2020 Executive Order (N-73-20) from Governor Newsom calls for a 100/20 service level; more than 50% of rural Californians do not have this level of access, but it is probably the best definition of “good broadband” for present use. This service level is also called for in *Broadband for All*, an aspirational 10-year plan from the California Broadband Council. Service of this quality would easily meet the needs of most households.
- Multi-user sites such as schools where hundreds of students might be on line simultaneously or businesses with dozens of employees online require multiple gigabit-level connections to handle the large demands of all of the digital traffic (a gigabit = 1,000 megabits).

### **Transmission of Digital Information**

Digital signals are transmitted in many ways.

- **Fiber Optic Cable:** Currently the optimal form of broadband signal transmission with gigabit download and upload speeds and very high capacity. Cable can be buried and either enclosed in a conduit or directly in the ground, making it resilient in emergency situations such as wildfires. Cable can also be strung overhead on electric or telephone poles, which is less costly but more fragile in emergencies.
- **Wireless Transmission:** Wireless access points from transmission locations can potentially provide gigabit download speeds, but 30-40 Mbps or less is common. Wireless can reach areas where cable beneath roads or on overhead lines is not economically feasible. However, transmission relies on uninterrupted and adequate line-of-sight; hills, trees, or buildings can interfere and block transmission. Signal strength also decreases with distance from the transmitter, so several sources may be needed to serve a rural area.
- **Coaxial Cable:** While often thought of as a means of transferring television signals, coaxial cable can potentially meet or exceed the 100/20 proposed broadband standard. This level is not always attained; signal strength decreases somewhat with the distance from the source. A common problem arises when a cable line serves multiple households and bandwidth is shared. Like a crowded freeway, everything slows down.
- **DSL (Digital Subscriber Line):** Also called twisted copper, DSL relies on telephone lines to transmit digital information. Download speeds of 40 Mbps and upload speeds of 2 Mbps are possible but rarely attained. Signal strength depends strongly on the distance

from the internet source to the user, and is typically near or below the old 6/1 standard. Many believe DSL to be legacy technology, obsolete but common in rural areas.

- **Satellite:** The newest technology makes use of a network of multiple low-orbit satellites to provide broadband signals to individual users, including those in rural areas and difficult to reach sites. Latency (lag time) would be less than with conventional high-altitude satellites. It is still in the testing and feasibility phase, but it has the potential to meet the 100/20 standard. Initial testing by Starlink, a potential provider, is in progress in Sonoma County. Costs and quality of the service are not yet clear; the expense of deploying and maintaining the network of satellites might make service very expensive, especially if it is not widely adopted.

### **How many Households Are Affected by Broadband Limitations?**

Insufficient broadband access is a problem in many parts of the United States. The 2020 version of *The Economist: Pocket World in Figures* shows the USA to have 33.9 fixed broadband subscribers per 100 population, tied with Greece in 22<sup>nd</sup> place in the rankings, and behind Canada and most of Western Europe. Our average download speed of 20 Mbps places us 20<sup>th</sup>, compared to Singapore's #1 rate of 55.1 Mbps or #2 Sweden's 40.2 Mbps, and also below the 25/3 standard set by the F.C.C.

California Advanced Service Fund (CASF) data highlight the urban-rural divide in broadband access in California. Under the lowest standard of 6/1 Mbps or less, service is unavailable to 2% of urban households vs. 17.3% of rural households. At the highly functional level of 100 Mbps download speeds 97.5 % of urban users have the possibility of access while only 48.7% of rural residents can be served.

Unfortunately, these numbers are misleading and the situation is worse than indicated. The data include potential or advertised service from broadband providers, but not actual service delivered to users. The statistics are also greatly flawed in that some are based on surveys in which if one household within a census tract has a connection, all households are presumed to have access. Hence, the data often greatly underestimate the problems of internet service, especially in rural areas. Executive Order N-73-20 indicates, "23% of California housing units, housing 8.4 million residents, do not have broadband subscriptions."

Within Sonoma County, California Public Utilities Commission (CPUC) maps attempt to show the extent of the problem. However, the data upon which the maps are based are flawed; again, census tract figures are used and broadband providers often consider their actual levels of service to be proprietary information. Using the obsolete and inadequate 6/1 standard unserved areas are seen mostly in coastal, rural, forested, and mountainous areas of the County. Even with the inadequate 25/3 standard shown in Figure 1, large parts of the County, including some urban areas, are unserved or underserved (yellow areas on the map), but the underlying data remain poor and do not accurately describe the situation.

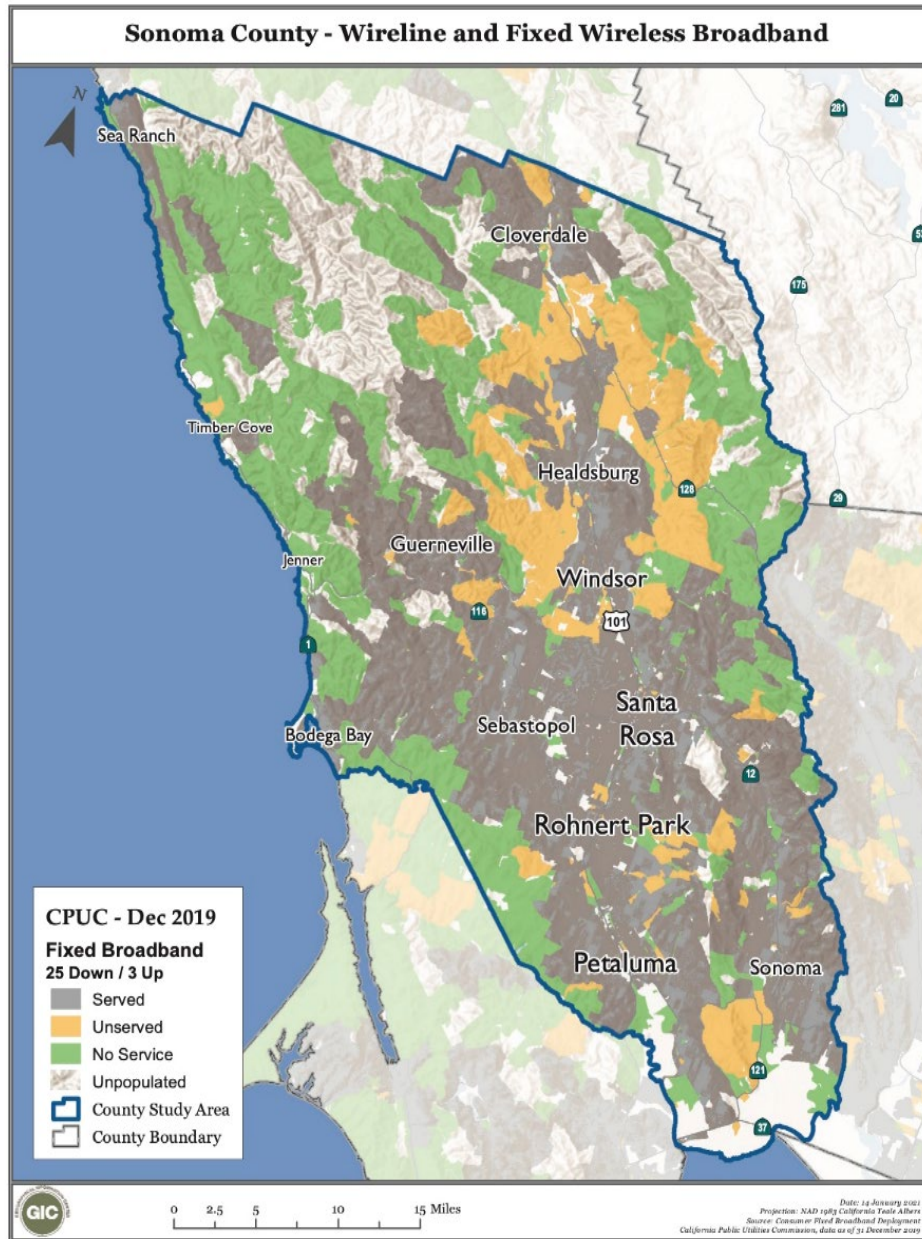


Figure 1. A Misleading CPUC Map of Broadband Availability in Sonoma County

This map is based in part on advertised download and upload speeds and census-tract data in which all households in a tract are considered served even if only one has a connection. Therefore, it makes broadband service appear to be better than it actually is.

No CPUC map evaluates service using a 100/20 standard. A more detailed source, the *California Interactive Broadband Map*, covers all of California but can be narrowed to areas as small as about 300 X 300 yards. The map shows a complex mixture of potential service levels. Again, large parts of Sonoma County have substandard access or none at all. This map allows



searching by street address; it is informative to enter an address, note the claimed download speed, and then run a speed test to determine the actual service level.

### **Broadband Expansion: What are the Plans?**

- **Statewide:** In response to Executive Order N-73-20, the California Broadband Council (CBC), an organization including elected officials and leaders of multiple government departments, produced a wide ranging and ambitious document: *Broadband Action Plan 2020: Broadband for All*. The plan includes many expansive goals and hopes, and provides investment estimates of several billion dollars that will be needed to bring 100 Mbps service to all Californians. It is an aspirational document much more than a specific and detailed plan. The CBC promises yearly updates and progress reports.
- **Countywide:** In 2017, Sonoma County commissioned the consulting firm Magellan Advisors to study the state of broadband access in the County and to provide a plan to the Economic Development Board (EDB). Their report, *Sonoma County Broadband Strategic Plan*, (Magellan Plan) was completed in 2019. The plan has been under revision, and presentation to the Board has been delayed more than once. At the time the Grand Jury investigation was conducted and this report prepared, BOS planned to consider it in May 2021.

### **Broadband Expansion: Where Do We Stand?**

Sonoma County has formulated a broad Five-Year Specific Plan. The plan is based on five “strategic pillars”, one of which is resilient infrastructure. The fourth of five goals in this category is to “implement countywide technological solutions to promote resiliency and expand community access.” The Strategic Plan emphasizes that grant funding will be expected to support much of this effort. County Administration and the EDB will be responsible for providing equitable access within the communities and expanding broadband access within the County. In their summary of current infrastructure work, the County’s data center, communications network, and mobile systems are cited in the context of resilience to power outages and remote work possibilities. This is all County-owned infrastructure for County work, and not directly related to broadband availability to most households and businesses.

The EDB has established Access Sonoma Broadband (ASB) as an office to advance broadband deployment. ASB currently has only one paid employee, and this person is grant-supported. Without more resources, it is difficult to see how ASB can meet its expectations.

Two organizations linked to ASB have prepared grant applications related to broadband extension.

- The Sonoma-Mendocino Economic Development District (SMEDD), in partnership with the North Bay North Coast Broadband Consortium (NBNCBC), has developed a *Sonoma-Mendocino Broadband Business Plan Project Narrative* to begin creation of a non-profit organization that would generate open access fiber optic infrastructure in underserved areas of the two counties. The grant would allow production of a detailed plan and identification and involvement of potential commercial providers. NBNCBC has also identified several target communities where initial efforts could be centered.

- WiConduit, a not-for-profit company led by EDB and ASB personnel and dedicated to broadband expansion, submitted a grant application to the CASF Infrastructure program. If successful, it would provide broadband to Annapolis, Timber Cove, Jenner, Hacienda, and other surrounding communities, none of which have broadband service. The project is predicted to serve 335 businesses and more than 1,300 households.

The school systems within the County have done relatively well in responding to the COVID-19 pandemic and the challenges of distance learning. Sonoma County is divided into 40 school districts with 71,000 students. These districts vary in size and serve both rural and urban areas. The smallest district in the county, Kaskia is located in a rural area and has 11 students. The largest district, Santa Rosa City Schools, enrolls over 16,000 students in the County’s most populous city.

In the spring of 2020, the COVID-19 pandemic caused the closing of all Sonoma County schools for in-classroom instruction. This raised concerns from school boards, educators, parents, and students on how instruction was to be implemented. The Sonoma County Office of Education (SCOE) provided technical support and resources to all the county schools for providing distance learning via the internet. SCOE asked schools to do a technology audit to determine which students had computers with internet access at home, and which students would need to borrow them from the school or otherwise acquire the necessary hardware. High-speed internet connections were provided to district offices and schools that were not already served, including the remote Kaskia District. In part by using funds diverted from school lunch programs, school districts were able to provide temporary “hotspots” which allowed families to access the internet.

SCOE estimates that at least 90% of students had a usable connection. This has continued throughout the COVID-19 pandemic school closure, but will end with full reopening of classrooms. Underserved rural areas and socially disadvantaged urban residents will still lack permanent adequate and affordable broadband access, and students will still encounter obstacles to working at home.

### **Organization of Broadband Expansion Efforts**

Sonoma County recognizes that its problems of broadband connectivity are significant, and that they are not limited by county borders. Neighboring counties have similar isolated areas, difficult terrain, and budgets that cannot cover all of the costs of serving unserved and underserved households. Organizations to foster broadband extension include:

- **Access Sonoma Broadband (ASB)** was created by the EDB and is housed within it. Its stated mission is to “help connect Sonoma County’s unserved areas to fast, reliable, and affordable broadband services.” As noted earlier ASB has only one paid employee and this individual is supported by a grant; this suggests that BOS has not given broadband a high priority.
- The **Sonoma-Mendocino Economic Development District (SMEDD)** exists under a Joint Powers Agreement between the two counties. Its purpose is to foster discussion and evaluation of regional socio-economic problems and to plan for their resolution. SMEDD includes broadband access in its interests, and it is empowered to apply for grant funding to support its programs. Sonoma County is represented by EDB and ASB officials.

- The **North Bay North Coast Broadband Consortium (NBNCBC)** was formed in 2014 to oversee broadband planning in Sonoma, Marin, Napa, and Mendocino Counties and has received CASF funding to support its activities. Sonoma County is represented by BOS officials. Several individuals interviewed by the Grand Jury were critical of its effectiveness.

These organizations have overlapping membership and goals as illustrated in Figure 2

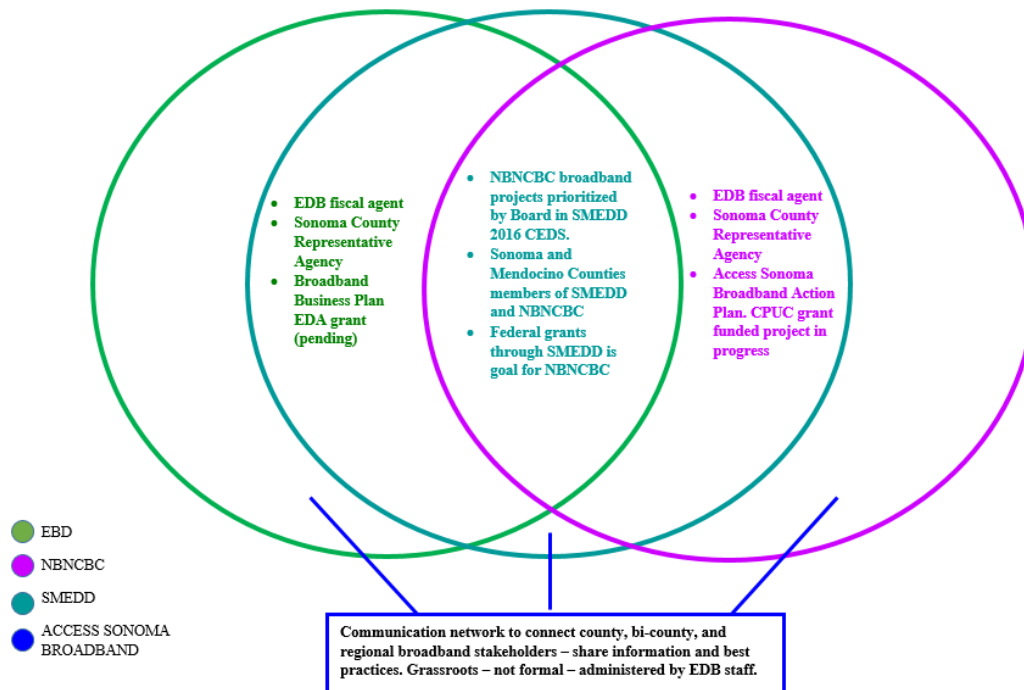
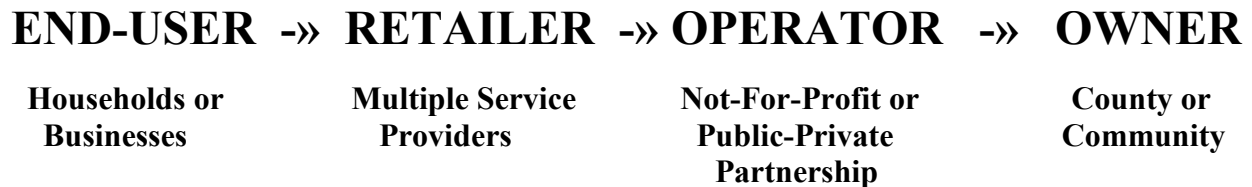


Figure 2. Broadband Organizations in Sonoma and Neighboring Counties.

### Public Ownership of Broadband Infrastructure

One of the central elements of the 2019 Magellan Report is creation of a publicly-owned broadband infrastructure system when existing providers are unable or unwilling to do so. Commercial providers will not lay or hang fiber optic cable over long distances if they cannot earn a profit, and sparsely populated areas do not have enough potential customers to repay the infrastructure costs. Instead, County-owned cable could span the “middle mile” between a major conduit corridor, such as that along the SMART train right-of-way, and service centers in the outlying areas and communities. “Last mile” connections to individual homes and businesses could also be municipally owned, provided by suppliers, or paid for by subscribers. The County would save on usage fees paid to current providers if it were able to use its own infrastructure. The Magellan Report identifies some California communities (e.g. Brentwood, San Luis Obispo, and Rancho Cucamonga) that have at least partly adopted a municipally owned model, often through a public-private partnership. The Federal Infrastructure plan proposed late in March 2021 emphasizes support of municipally and non-profit owned broadband infrastructure.

Municipal ownership of broadband infrastructure also allows creation of an open-access network. An operator oversees construction, maintenance and operation of the network and provides access to multiple competing retail sources of service. The retailers purchase space on the network and use it to deliver internet and other services to individual businesses and households. Subscribers can choose from available retailers; hopefully competition will lower costs. Meanwhile, the County derives revenue from the fees paid by the retailers for use of the network infrastructure as shown in Figure 3.



*Figure 3. The flow of money in an open access network.*

End-user fees are collected by the retail service provider. Some of that money is paid to the network operator to pay for use of the network. The operator then pays the network owner after meeting its own costs.

Sonoma County already owns or controls assets that could be used in broadband expansion. Aside from roads and bridges, which can carry conduit and fiber optic cable, County buildings, communication towers, and water tanks could be available for wireless equipment.

### **Obstacles to Broadband Expansion in Sonoma County**

Greater broadband access is regularly cited as important, necessary, or even vital. Yet little has actually been accomplished to solve the problem, and many County residents remain unserved or underserved. Because of poor data, even the true extent of the problem is unknown; hundreds of anecdotes do not constitute data.

#### *Broadband Access Has Not Been a High Priority*

Every individual the Grand Jury interviewed for this investigation expressed an opinion that improved and expanded broadband service was a necessity. Our investigation suggests that these opinions have not been translated into significant actions. The BOS has devoted energy and resources in reaction to emergencies (e.g. fires, flood, homelessness, affordable housing, COVID-19) leaving little energy for the proactive approaches to the long-term needs for broadband access. This is part of the everyday work of governing and improving the lives of citizens, and it demands attention.

ASB is unlikely to make progress either in planning projects or in completing actual broadband installations if it remains a one-person operation, no matter how devoted and talented that person is. The County 5-year Plan needs its commitment to broadband to be taken seriously; in the draft document, it is relegated to item four out of five infrastructure areas on page 18 of a 23-page document. This can be interpreted to suggest that County government has demonstrated insufficient commitment to broadband expansion.

Similar criticism of statewide efforts seems justified. A report from the Pew Charitable Trusts, *How States Are Expanding Broadband Access*, praises California for creating the California

Broadband Council but then notes that “while the CBC has served as a convener for state agencies and other partners, it has lacked a clear mandate; as a result, agencies have sometimes not prioritized participation.” *Broadband For All*, the plan proposed by the CBC, has been praised but also characterized as long on high-sounding words but with little to say about how to achieve its goals.

### *Money, Money, Money*

Expansion of broadband connections to rural areas and limited income users is going to be expensive, but it must be seen as an investment in the people and institutions of Sonoma County. Roads are expensive to build, but we understand that they are necessary investment costs.

It is unrealistic to expect the County to, by itself, cover the infrastructure costs and ongoing subsidies of universal broadband service. Suggested approaches include:

- **A Federal Infrastructure Program:** In 1936, Congress enacted the **Rural Electrification Act**, which provided long-term federal loans for the installation of electrical distribution systems to supply rural areas of the United States. The **Federal Highway Act** of 1956, also known as the National Interstate and Defense Highways Act permitted construction of the Interstate Highway System of limited access highways across the country. Although federal funds paid for construction, the highways are owned by the states in which they were built.

A similar program for rural broadband expansion is possible and proposals to improve infrastructure frequently include broadband. A Presidential proposal on infrastructure in March 2021 includes \$100 billion for universal broadband in a \$2 trillion infrastructure program, but its enactment is up to Congress. Any program will almost certainly require significant local knowledge, involvement, and probably investment. Meanwhile, some of the funds from the American Rescue Plan (COVID-19 Relief) act of 2021 can logically be directed toward broadband projects. An announcement from State Senator McGuire indicates that Sonoma County will receive more than \$100 million from this legislation.

- **A State of California Program:** *Broadband for All*, the CBC broadband plan, is not precise about how to pay the several billion dollars estimated investment in broadband expansion. It suggests infrastructure funding through public financing, perhaps through a bond issue or in conjunction with local governments, and possibly through philanthropic organizations. Executive Order N-73-20 asks the Governor’s Office of Business and Economic Development (GO-Biz) to identify funding opportunities; no further information was found on their website.

Ongoing funding to subsidize internet connections to low income households is a recognized need. *Broadband for All* notes that internet service in the United States is expensive compared to most countries. It blames light regulation, a lack of competition, and very limited awareness of and eligibility for affordable or subsidized programs for the fact that more than half of households without a broadband connection blame cost. The plan asks CPUC to improve the existing program, to increase awareness of the program, and to promote competition between providers in order to lower prices. It also asks that all newly constructed low-income housing should be required to include free internet access. The Governor’s executive order also directs the CPUC to “develop tools

for low-income individuals and social service organizations to easily identify and subscribe to affordable broadband plans.”

- **Sonoma County** lacks a specific mechanism to fund broadband expansion, in particular with respect to subsidizing low-income users. This will require an ongoing source of money. One approach might be to add an incremental charge to existing users’ access fees. Because it is such a large issue of social justice and equity, customers might be willing to support such a surcharge. Alternatively, subsidies might be funded through a dedicated revenue stream from a parcel tax or an increment in the sales tax. Increased Sonoma County Library funding, continuing support of the Sonoma County Agricultural Preservation and Open Space District, and passage in 2020 of an extension of the transportation sales tax increment are examples of successful use of this approach.

### *No Organization Has the Power to Facilitate Broadband Expansion*

The Magellan Report includes a number of specific recommendations including creation of a countywide advisory board to coordinate implementation of a broadband plan. This group would include city, County, and industry representation. No such organization exists, and expansion resides in the EDB and ASB.

ASB could be restructured and empowered to meet this need; either as a part of County government or through establishment of a Joint Powers Agreement (JPA) centered on broadband. SMEDD already exists through a JPA, but its charter and governance would need to be greatly revised. NBNCBC could also assume this function, again with considerable changes to its organization and powers. The BOS could “start from scratch” to form, empower, and finance a lead organization. With neither, a plan nor an organization to make or oversee broadband expansion all actions must now be on an *ad hoc* and uncoordinated basis.

### *“Dig Once”: Policy, Standards, and Procedures Have Not Been Established*

"Dig Once" is an attractive and useful concept. It is both foolish and expensive to repave a road and then, a few months later, dig it up to install water or electrical lines. Permit Sonoma, the Sonoma County agency that oversees construction and land development, considers the term as prohibiting disruption of a road within five years after repaving, and then only involving pre-existing utilities, usually water and electrical lines, to upgrade or replace their infrastructure. Broadband conduit, with or without cable, is not automatically included in planning. The BOS could direct Permit Sonoma and the Department of Transportation to upgrade and clarify requirements to include broadband infrastructure.

Installing high-speed fiber-optic infrastructure is not cheap, but it is a needed investment. BroadbandNow indicates that it can cost up to \$8,000 *per home* to have the cabling put in place. Yet, perhaps unsurprisingly, a Federal Highway Administration report details that up to 90 percent of this cost was tied up in the process of actually digging up and repairing roadways, not the fiber lines themselves.

A comprehensive "Dig Once" policy could help establish a cost-effective way to expand and improve broadband to Sonoma County. Broadening the definition to include installation of conduit would require clearly defined engineering standards for trenching, materials, pipe placement and access points, encroachment rights, and all other aspects of the permitting process as well as the cooperation of pre-existing utilities. Since rural county roads are rarely repaved

and often do not include buried utility lines the “Dig Once” concept could be expanded to include direct burial of fiber optic cable in the roadside right-of-way at much lower cost. County bicycle and walking trails are also candidates for placement of conduit and/or cable in this way.

Inclusion of planning for broadband in upcoming projects provides a practical example. Within the next year or two electrical lines are expected to be undergrounded in Freestone, a small community west of Sebastopol. Conduit, with or without cable, could be included in the project at relatively little extra cost. The Sonoma County Department of Transportation and Public Works, Permit Sonoma, and ASB would need to work together to expedite the processes of planning and permitting. Internet providers would also need to be notified when work is being planned and given the opportunity to lay proprietary or open access cable lines.

If there are no takers the county could pay for and own the fiber optic cable; initial investments could be recouped by leasing access to internet providers. The estimate given by Fiber to the Home is that initial outlay could be recouped in 8 years, and leases would continue to generate profits long into the future. Public ownership of the infrastructure can also increase competition (many providers able to use the line), which can lower cost to the end consumer while providing quality service.

#### *“Shovel-Ready” Projects Need to be Identified.*

Potential Federal or State funding appears likely, possibly through a major and long-promised national infrastructure bill, through use of some of the money from the American Rescue Plan (COVID-19 Relief) Act of 2021, from PG&E settlement funds, or from a State infrastructure program. Funding is likely to go to those who are prepared to use it: so-called shovel-ready projects where detailed plans and expected costs are at hand. The lack of priority given to broadband needs leaves Sonoma County with limited ability to present proposals at a shovel-ready level.

ASB considers projects in two stages. Primary analysis or high-level design is essentially desktop analysis: what community to study, how many potential users, what facilities exist or are needed, etc.? ASB has about ten potential projects at this stage, and NBNCBC has identified 30 priority areas across Sonoma, Marin, and Mendocino Counties. The Magellan Report includes analysis of three potential broadband project communities. *Secondary analysis* is much more detailed and involves engineering studies, regulation consideration, consultation with potential suppliers and contractors, and detailed cost analysis. Bringing a project to this secondary or shovel-ready stage has significant costs and could require additional staffing and/or grant support for the necessary work.

#### *Existing or Legacy Providers*

Existing or Legacy Providers of broadband service have little or no incentive to expand access to areas where they have no likelihood of earning a profit. They are often an obstacle to broadband expansion with strong incentives to stifle competition and maintain control. Because of right first of refusal law, if they have an existing facility in an area they can state an intent to “deploy broadband or upgrade existing facilities” and delay a potential competitor from doing so or even receiving grant funds (PUC § 281). There are also competitive reasons for established providers to treat data on their operations as proprietary information and to describe their potential service rather than actual service delivered (e.g. use of census tract data). Analysis of actual service to

an area may involve a house-by-house in-person evaluation, which can be difficult and expensive.

## **CONCLUSIONS**

Broadband should be viewed as a utility and managed as such. Utility status would be symbolic at present; transformation into a regulated public utility would require considerable legislative and administrative action. This Grand Jury investigation has found nearly universal acceptance that high-quality broadband access is necessary for all residents of Sonoma County—a reality made obvious by the COVID-19 pandemic. Yet good access is lacking for many County residents. High costs exclude many potential users and deepen economic divides: this is a clear issue of equity, social justice, and economic disparity affecting low-income individuals. Lack of available access or low bandwidth service excludes or hinders other residents, primarily in rural areas. The County has two technological classes of citizens: the well-connected, and the others who are partially or totally excluded from full use of the internet.

Sonoma County has not met the challenge of assuring that good broadband service is available to all of its residents. County government does not appear to have given broadband a high enough priority for action. County leadership has delayed in adopting a plan, and it has not provided the resources needed to get things done. No one doubts that extension of broadband access to all County residents will be difficult, but widespread and effective action to organize and initiate activity, secure funding, and complete real projects is not yet apparent.

The Grand Jury recognizes that expansion of broadband access is a complex and expensive problem and that the individuals involved in this effort are dedicated and competent. What is needed is strong leadership, direction, and financial support from the Board of Supervisors and Office of Administration. Without leadership to harness and mobilize a unified effort many Sonoma County residents and businesses will be left behind.

## **COMMENDATIONS**

The Sonoma County Civil Grand Jury commends:

- The Sonoma County Office of Education, School Districts, Schools, Teachers and Staff for their efforts to make distance learning effective during the pandemic.
- The Sonoma County Economic Development Board and Access Sonoma Broadband for, with very limited resources, their efforts to bring broadband to unserved and underserved residents of the County.

## **FINDINGS**

The Sonoma County Civil Grand Jury determined that:

- F1. Broadband access is a necessity; it has become a “Utility”, like electricity, roads, or water, but broadband has not yet been formally recognized as such.
- F2. The need for high quality broadband access has been clear for some time, but the crisis brought on by the COVID-19 pandemic emphasized the urgency in addressing this need.



- F3. Without high quality broadband access the ability to work at home, apply for a job, do distance learning, access telehealth or telemedicine, receive emergency notifications or other activities that require internet access is limited or absent.
- F4. Broadband access is an equity issue; disadvantaged residents who lack the ability to pay for broadband services are further disadvantaged and hindered in opportunities for work, education, and other important aspects of society.
- F5. Many residents and businesses in Sonoma County, particularly those in rural, coastal, forested, or mountainous areas, have no access, undependable access, or low-quality broadband service.
- F6. The Sonoma County Board of Supervisors has neither taken proactive action to improve broadband access nor exhibited a sense of urgency regarding this problem.
- F7. The Sonoma County Administration and Board of Supervisors have delayed adopting a plan to address the problems of broadband affordability, availability, or low-quality access in Sonoma County.
- F8. In the absence of an actual plan for expansion of broadband access, any actions or applications for funding in this area have been done on an ad hoc basis.
- F9. Multiple agencies and groups have interests in broadband expansion. There is not yet a Countywide coordinated effort between departments and broadband providers to address implementing a broadband strategic plan.
- F10. Access Broadband Sonoma has been given the task of implementing broadband expansion in Sonoma County but it lacks the funding, staffing level, or authority to accomplish this goal.
- F11. While inability to access adequate broadband is recognized as a significant problem, reliable quantitative data on unserved and underserved residents are lacking.
- F12. Access to State and Federal grants will be necessary to finance broadband expansion. Without a plan, good data, and support mechanisms to apply for and utilize grant funds such funding is less likely.
- F13. “Dig-Once” is widely held to be a useful concept, but it is not a well-defined policy within Sonoma County: installation of broadband infrastructure is often not considered as part of a project, and no mechanism exists to inform potential broadband suppliers of a project or to mandate conduit installation.
- F14. The definitions of “minimal broadband”, “acceptable broadband”, and “quality broadband” vary widely.
- F15. Fiber optic cable is currently and for the foreseeable future the optimal means to carry broadband signals.

## **RECOMMENDATIONS**

The Sonoma County Civil Grand Jury recommends that:

- R1. The Sonoma County Board of Supervisors consider recognizing and designating broadband as a “Utility” that needs prioritization by October 31, 2021. (F1)

- R2. The Sonoma County Board of Supervisors adopt and support a plan to address a lack of broadband access in the County by November 30, 2021. (F6, F7, F8)
- R3. The Sonoma County Board of Supervisors provide staff and funding to allow the Economic Development Board and Access Sonoma Broadband to develop accurate data on broadband service for the County by December 31, 2021. (F11)
- R4. The Sonoma County Board of Supervisors and Economic Development Board assemble an interdepartmental group to coordinate and oversee efforts in Broadband expansion by November 30, 2021. (F9, F10)
- R5. The Sonoma County Board of Supervisors and the Economic Development Board consider the establishment of a broadband Joint Powers Agreement that includes Sonoma County, Mendocino County, and possibly other neighboring counties by November 30, 2021. (F9)
- R6. The Sonoma County Board of Supervisors give a high priority to addressing personnel levels sufficient to accomplish the goals of a broadband specific plan. (F10, F12)
- R7. The Sonoma County Department of Transportation, Permit Sonoma and Access Sonoma Broadband develop procedures and standards that would ensure placement of broadband conduit in all appropriate situations by December 31, 2021. (F13)
- R8. In the annual budget process the Sonoma County Board of Supervisors and the Office of Administration include evaluation of the costs of laying cable or empty conduit in upcoming infrastructure projects by December 31, 2021. (F13)
- R9. The Sonoma County Board of Supervisors, the Economic Development Board, and Access Sonoma Broadband include in the implementation of any broadband plan a clear requirement for the download and upload speeds of 100/20 proposed in State of California Executive Order N-73-20 to be the minimal acceptable level of service by September 30, 2021. (F14)
- R10. The Sonoma County Board of Supervisors assure that any plan for broadband expansion should utilize fiber optic cable transmission or its equivalent whenever it is possible by November 30, 2021. (F15)

## **REQUIRED RESPONSES**

Pursuant to Penal Code §§ 933 and 933.05, the Grand Jury requires responses as follows:

- Sonoma County Board of Supervisors (R1, R2, R3, R4, R5, R6, R8, R9, R10)
- Sonoma County Office of Administration (R8)
- Sonoma County Economic Development Board (R4, R5, R9)
- Sonoma County Department of Transportation (R7)
- Permit Sonoma (R7)
- Access Sonoma Broadband (R7, R9)

## **BIBLIOGRAPHY**

- Magellan Advisors, *Sonoma County Broadband Specific Plan*, 2019. (<http://mendocinobroadband.org/wp-content/uploads/Sonoma-County-Broadband-Strategic-Plan.pdf>)

- California Broadband Council, *California Broadband for All: Broadband Action Plan 2020*. ([broadbandcouncil.ca.gov/wp-content/uploads/sites/68/2020/12/BB4All-Action-Plan-Final](https://broadbandcouncil.ca.gov/wp-content/uploads/sites/68/2020/12/BB4All-Action-Plan-Final))
- Strategic Planning: *Sonoma County Five Year Strategic Plan 2021-2026*. (Draft) (<https://sonomacounty.ca.gov/Board-of-Supervisors/Strategic-Plan/>)
- Access Sonoma Broadband, *Availability of and Needs for Broadband Adoption Programs in Sonoma County*. ([https://sonomacounty.ca.gov/uploadedFiles/Sonoma/EDB/Projects/Access\\_Sonoma\\_Broadband/Documents/Availability-of-and-Needs-for-Broadband-Adoption-Programs.pdf](https://sonomacounty.ca.gov/uploadedFiles/Sonoma/EDB/Projects/Access_Sonoma_Broadband/Documents/Availability-of-and-Needs-for-Broadband-Adoption-Programs.pdf))
- Executive Department, State of California, *Executive Order N-73-20*, 2020. (<https://www.gov.ca.gov/wp-content/uploads/2020/08/8.14.20-EO-N-73-20.pdf>)
- The Economist, *Pocket World in Figures*, 2020 Edition, Profile Books Ltd., London, UK.
- Sonoma-Mendocino Economic Development District, *Fiscal Year 2020 Sonoma-Mendocino Economic Development District EDA SPRINT Grant Project Narrative*, 2019.
- Access Sonoma Broadband, *Current Initiatives*. (<http://sonomaedb.org/Current-Projects/Broadband/>)
- Pew Charitable Trust, *How States Are Expanding Broadband Access: New Research Identifies tactics for Connecting Unserved Communities*, 2020. (<https://www.pewtrusts.org/en/research-and-analysis/reports/2020/02/how-states-are-expanding-broadband-access>)
- Cooper, T., *Dig Once: The Digital Divide Solution Congress Squandered and Policy That Could Save \$126 Billion on Broadband Deployment*, BroadbandNow, 2019. (<https://broadbandnow.com/report/dig-once-digital-divide/>)
- FTTH Council Americas, *DIG SMART: Best Practices for Cities and States Adopting Dig Once Policies*,
- Gonzales, L., *SB-4, Communications: California Advanced Services Fund. (2021-2022)*
- *California Interactive Broadband Map* (<https://sonomacounty.maps.arcgis.com/apps/webappviewer/index.html?id=db9d5a631dd14dd4becf6a51d5fc3801>)
- Falcon, E., *The American Federal Definition of Broadband Is Both Useless and Harmful*, Electronic Frontiers Foundation, 2020.
- Kang, C., *F.C.C. Approves a \$50 Monthly High-Speed Internet Subsidy*, New York Times, February 25, 2021.
- Kang, C. *That Spotty Wi-Fi? There's \$100 Billion to Fix It*, New York Times, April 1, 2021. ([www.nytimes.com/2021/04/01/technology/digital-divide-rural-wifi.html](http://www.nytimes.com/2021/04/01/technology/digital-divide-rural-wifi.html))

*Reports issued by the Civil Grand Jury do not identify individuals interviewed. Penal Code Section 929 requires that reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who provides information to the Civil Grand Jury.*