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VIA ELECTRONIC MAIL

To: Jen Leasure, The Quilt

From: Jeff Mitchell

Re: **Monthly Broadband Policy Update – through January 29, 202**

Capitol Hill

The Biden Administration has released the general outlines of a proposed $1.9 trillion COVID-19 relief package that will include another round of stimulus checks and as much as $130 billion for K-12 education, however it is unclear whether it will include an explicit broadband component. We expect a large Biden infrastructure proposal will follow within weeks after the COVID relief package passes, however details are not yet available. The Biden-Harris campaign website promised $20 billion of that package would be devoted to "rural broadband infrastructure," however it is possible the actual package will track closer to the $86 billion in broadband-related spending proposed in last year's House Democrats' infrastructure package. USTelecom, the largest carrier trade group, is promoting its own ambitious plans for "Building Our Connected Future" targeted to the new administration's "first 100 Days."

National Telecommunications and Information Administration (NTIA)

We are waiting for a public notice from NTIA regarding the $1.3 billion Broadband Infrastructure Deployment Grants program ($1 billion for tribal areas) approved in the most recent COVID relief package signed into law in December 2020.

The next NTIA BroadbandUSA webinar will be February 17 and will address: Data as the Foundation for Broadband Planning (registration link). There were no NTIA webinars during December or January. The November webinar addressed How Broadband Enhances Local Economies while October addressed Digital Inclusion and K-12 Education: The Impact of COVID-19 on Students and Educators; archived webinars are here.

NTIA has been highlighting state broadband efforts made possible by CARES Act funding – in this blog post (highlighting Arizona, Arkansas, Illinois, Oregon, and Vermont), and citing this GovTech article (discussing Mississippi, Indiana, and Delaware). The January BroadbandUSA Newsletter also links to articles on state funding for broadband infrastructure in Idaho and

Kansas. We linked last month to a November 2020 PEW article providing an overview of states' efforts to tap CARES Act funding for broadband, with links to resources to track those efforts. U.S. DOE has a portal to track state usage of the $31 billion CARES Act Education Stabilization Fund and the National Governors Association also has a list of selected broadband projects using CARES Act funds.

NTIA has launched a Digital Inclusion webpage which provides a clearinghouse of information about federal and state digital inclusion resources. NTIA hosts a searchable database featuring 50 federal broadband funding opportunities across a dozen federal agencies. The NTIA Broadband USA main page features a state-by-state summary of state broadband programs (scroll down to the map and click on a state).

USDA – Rural Utilities Service

Proposed ReConnect projects can be viewed here (must create free log-in to access); 2019 awardees are identified here; 2020 awardees are here; proposed and funded projects are depicted on an interactive map here. The most recent RUS Community Connect Grant program application window is now closed. The Distance Learning & Telemedicine Grant Program is currently closed.

Precision Agriculture

The FCC's Office of Economics and Analytics on December 15, 2020, released a working paper on the impact of broadband availability on agriculture:

> The working paper analyzes the impact of increased broadband availability in rural areas on the productivity of U.S. farms, drawing on both FCC data on broadband availability by census tract and U.S. Department of Agriculture data on agricultural productivity by county, for key row crops like corn, cotton, hay, and soybeans. The working paper finds statistically significant effects of increased broadband service, both in terms of lower costs (fertilizer, fuel, seed, etc.) and higher production (yield). To cite one striking result, the analysis finds that a 1% increase in the number of 25 Mbps/3 Mbps or better broadband connections per 1,000 households is associated with a 3.6% increase in corn yields, as measured in bushels per acre.

The FCC's recently-approved $9 billion 5G Rural Fund will included a $1 billion set-aside for agricultural use in Phase 2. Farms are already using private LTE networks with CBRS spectrum, including greenhouse monitoring in Missouri and supporting drone-mounted cameras to make real-time decisions on herbicide applications in North Dakota. In the "miscellaneous" rural category, note the American Connection Project, which identifies existing open Wi-Fi networks in rural areas.

NTIA's September 2020 webinar on precision agriculture is available here. The most recent meeting of the FCC's Precision Agriculture Connectivity Advisory Task Force was October 28 and can be viewed here. Background and links to prior meetings are available here. The April 2019 USDA report on rural broadband infrastructure and next generation precision agriculture is available here. Purdue University announced in August 2020 that it was collaborating with the National Science Foundation-funded Engineering Research Center to develop the Internet of Things for Precision Agriculture.

Federal Communications Commission

As widely expected, President Biden elevated Commissioner Rosenworcel to be Acting Chair of the Commission. With the departure of Chairman Pai and Senate confirmation of Simington late last year (replacing departing Republican O'Rielly), the Commission is now deadlocked with a 2-2 tie (D's Rosenworcel and Starks; R's Carr and Simington). This means that until a third Democrat is nominated and confirmed by the Senate, Commission actions will be limited to those that can garner at least one Republican vote. In response to this deadlock, pressure could build for bureaus to implement certain new policies on "delegated authority" – which do not require a Commission vote but which, if controversial, tend to increase partisan rancor.

The next open meeting, the first under Acting Chair Rosenworcel, will take place February 17 and will include mostly staff presentations on new programs or spending recently authorized by Congress, including: the $3.2 billion for Emergency Broadband Benefit Program; the $249.95 million for another round of the COVID-19 Telehealth Program; and the $65 million for the Commission finally move forward on broadband mapping. The January 2021 open meeting included a series of staff presentations closing out the Pai-era, as well as approval of the first batch of applications for the $100 million Connected Care program, an NPRM on Expanding Flexible use of 12 GHz spectrum, and a Public Notice seeking comment on the upcoming 2.5 GHz band auction (more on these items below).

Spectrum

In this section of the monthly broadband policy update, we are maintaining short summaries of selected FCC spectrum proceedings that are active and which are expected to impact the public availability of broadband. Because each of these items are often quite complex, we are focused on broad summaries and major developments only.[1]

[1] Here is a short but helpful backgrounder on the relative importance of the different bands in the 5G era (courtesy Jeremy Horowitz at venturebeat.com):

L-Band (1.0GHz to 2.0GHz)

The FCC's unanimously decided to approve a long-pending request by Ligado Networks (f.k.a. LightSquared) to utilize a portion of the L-band spectrum. Because Ligado's spectrum is close to spectrum reserved for GPS, the Department of Defense (DOD), Department of Transportation (DOT), and aviation and other interests strongly opposed the FCC's move. NTIA (on behalf of DOD and DOT) challenged the FCC's decision through a petition for reconsideration and a petition for stay, however the FCC in December 2020 denied NTIA's petition. Ligado has apparently raised $4 billion to implement 5G deployment in the cleared spectrum. It is unclear whether previous efforts to reverse the FCC ruling will gain traction with the new Congress and new administration.

2.5 GHz (formerly EBS)

The FCC in 2019 decided to auction remaining unlicensed Educational Broadband Spectrum (EBS) (2.5 GHz band) to commercial users. This spectrum is suitable for mobile and fixed point-to-point wireless services. Prior to the auction, tribal entities in rural areas had a limited opportunity to apply for licenses for available 2.5 GHz spectrum in their areas through a "Rural Tribal Window." That window closed in September 2020 and the FCC is processing and accepting applications. (Once accepted, application are subject to further review and a public comment period before they are finally approved.) On October 23, 2020, the FCC announced the first batch of 154 2.5 GHz license grants to tribes.

The FCC on December 17, 2020 denied petitions for reconsideration of the July 2019 EBS Order – petitioners included SHLB. In a parting shot at the old EBS regime, the FCC in January 2021 released notices of apparent liability against 10 entities it claims violated the old EBS rules – with proposed fines exceeding $47 million. The Commission in January also released a Public Notice seeking comment on proposed auction procedures, the first step toward conducting auction of the remaining spectrum.

3.1-3.55 GHz

On August 10, 2020, the White House announced an intergovernmental agreement where the Department of Defense has agreed to vacate a 100 MHz band from 3.45 to 3.55 GHz to allow for 5G use. This agreement clears the way for an auction of this valuable spectrum in as soon as

> The . . . low band tier covers a lot of space, slowly, while the . . . mid band covers less space at faster speeds, and the . . . high band covers the least space at super-fast speeds. . . . One low band (600-700MHz) tower can cover hundreds of square miles with 5G service that ranges in speed from 30 to 250 megabits per second (Mbps). A mid band (2.5/3.5GHz) tower covers a several-mile radius with 5G that currently ranges from 100 to 900Mbps. Lastly, a high band (millimeter wave/24-39GHz) tower covers a one-mile or lower radius while delivering roughly 1-3Gbps speeds. Each of these tiers will improve in performance over time.

15 months. In September 2020 the Commission approved an order and notice of rulemaking proposing uses for the newly cleared 100 MHz of spectrum. The speed at which this agreement was reached is unusual by historical standards, where the process typically takes 5-8 years. The 3.1-3.55 GHz band is currently used by the Department of Defense (DOD) for fixed and mobile radar as well as secondary non-federal amateur and experimental users.

Citizens Broadband Radio Service (CBRS) (3.55-3.65 GHz)

The FCC's CBRS auction of Priority Access Licenses (PALs) closed on August 24, netting over $4.5 billion, with all three major wireless carriers bidding. Verizon, the large carrier with the biggest mid-spectrum needs, was the big winner, bidding $1.9 billion for 557 licenses in 157 counties. According to TeleCompetitor: "The top 5 CBRS auction winners combined will spend about $3.9 billion, representing nearly 87% of total auction proceeds. There were a total of 228 winners in the auction, including many small rural providers."

General Authorized Access (GAA) allow unlicensed access to available channels managed by a frequency coordinator called a Spectrum Access System (SAS). More information about SAS functionality – which is critical to all future spectrum sharing applications – is available here and here. A good general non-legal web resource for CBRS is available here.

UETN was in the news in October 2020, with their announced deployment of a private LTE network to 25 schools using GAA CBRS spectrum. UETN's project is expected to deliver robust parking lot access to school networks featuring high speeds and content filtering. Virginia Tech, which claimed eight PALs CBRS licenses, is expected to combine those with GAA use to develop innovative private LTE applications.

C-Band (3.7-4.2 GHz)

The C-Band auction ("Auction 107") commenced December 20 and wrapped up January 15. Up for grabs was 280 megahertz of spectrum in the 3.7–3.98 GHz well-suited for 5G. All 5,685 available spectrum blocks were auctioned with gross proceeds exceeding $80.9 billion – far in excess of the $60 billion estimated. Complete auction results are available here. The next phase of the auction – frequency assignment – begins February 8, 2021.

4.9 GHz Band

From the Commission's background on this item:

> Nearly two decades ago, the Commission designated the 4.9 GHz (4940-4990 MHz) band for use in support of public safety. Today, the 4.9 GHz band remains underused outside of major metropolitan areas, with stakeholders citing high equipment costs

> and limited availability of broadband equipment, among several barriers to its use. Currently, access to the 4.9 GHz band is restricted to certain entities and use of the spectrum is limited to public safety purposes. Licensees do not receive exclusive use licenses for the spectrum but rather operate pursuant to a coordination framework for shared use of the band. Although nearly 90,000 public safety entities are eligible under our rules to obtain licenses in the band, there are only 3,559 licenses currently issued to 2,090 individual licensees.

The order, which was approved in September 2020, eliminated the exclusive public safety use requirement for the spectrum and permits "one statewide 4.9 GHz band licensee per state (the State Lessor) to lease some or all of its spectrum rights to third parties, including commercial, critical infrastructure, and other users, thus making up to 50 megahertz of mid-band spectrum available for more intensive use." Public safety interests are upset with the item and the speed at which it is proceeding, with a petition circulating to have the spectrum allocated instead to FirstNet.

5.9 GHz Band

The Commission at the November 2020 open meeting approved rules to reorganize spectrum previously reserved for the transportation sector ("Dedicated Short Range Communications" or DSRC) in order to support development of next generation "Cellular Vehicle to Everything" (C-V2X) technology in the upper band, while freeing up the lower 45 MHz of the 5850-5925 MHz band. The reorganization increases spectrum available for unlicensed Wi-Fi utilization – strongly supported by Qualcomm and silicon valley interests – but continues to be staunchly opposed on safety grounds by transportation interests including state departments of transportation for all 50 states.

6 GHz Band

In April 2020 the FCC authorized 1200 MHz of spectrum to be available for two kinds of unlicensed use of the 6 GHz band: low power indoor usage and standard power usage anywhere. By expanding Wi-Fi and increasing opportunities for innovation, the FCC's action is widely expected to create billions in value for the economy. Some claim this is the most important decision the FCC has made on unlicensed spectrum use in 25 years. On October 2, the DC Circuit denied emergency requests to stop the 6 GHz order from taking effect – however those cases will continue to be heard. Interests opposed to the FCC's 6 GHz order included AT&T, the National Association of Broadcasters (NAB), and public safety groups. Generally, opposing interests fear interference with incumbent operators with AT&T, for example, expressing concern that existing microwave links used for network backhaul will be disrupted.

12 GHz

This October 2020 article from Fierce Wireless provides a good overview of the complicated politics around 12 GHz, which is a band currently licensed exclusively to satellite providers (and used by SpaceX among others), but is suitable for 5G. The NPRM adopted in January 2021 seeks comment on whether it is possible for mobile service to share use with the current satellite users.

White Spaces

The unused spectrum between TV station channels or in places where channels are vacant are called "white spaces." This vacant broadcast spectrum represents a resource for mobile broadband, particularly in rural areas. In March 2020 the FCC proposed updated rules to facilitate increased innovation in the white spaces area. The FCC approved proposed rules in October 2020 that are expected to protect broadcasters while allowing innovative 5G and broadband deployment in the unused channels. These rules were essentially the product of a negotiated industry consensus between broadcasters and groups such as Microsoft who have helped perfect the technology necessary to make spectrum sharing in these spaces work.

Low-Earth Orbit (LEO) Satellite

Elon Musk's SpaceX in October 2020 launched its "Better Than Nothing Beta" test of its Starlink LEO satellite internet service. The beta has a $499 set up fee associated with the equipment needed to connect, and a $99 monthly fee. A Starlink spokesperson explained: "Expect to see data speeds vary from 50Mb/s to 150Mb/s and latency from 20ms to 40ms over the next several months as we enhance the Starlink system. There will also be brief periods of no connectivity at all." Amazon is also launching a massive LEO project, called "Kuiper." Notwithstanding these well-funded, glitzy LEO start-ups, skeptics remain.

Starlink ended up being a big winner in the just concluded Rural Digital Opportunity Fund (RDOF) reverse auction, winning $885.5 million of the $9.2 billion available. (AT&T has a useful overview of the complete RDOF auction results that, of course, also provides the big ISP perspective. A more skeptical perspective on the RDOF results can be found here.)

Universal Service/Digital Equity

The FCC has released the 2020 Universal Service Monitoring Report containing summary data for all universal service programs (data through September 2020). The current universal service construct, which is over 25 years old, is straining to address the equitable distribution of limited broadband resources – partly reflected in a universal service fund contribution factor just jumped in one quarter from 27% to almost 32%. Notably, the related concepts of universal service and

digital equity seem to merging, as illustrated by this recent comprehensive Benton report: "Broadband for America NOW".

COVID-19: New Telehealth Programs

Connected Care Pilot Program: The Commission in January issued a public notice with the first group of awardees in the $100 million Connected Care pilot program (application window closed December 7): $26.6 million for a group of 14 projects, including awards to University of Virginia, University of Mississippi, Duke University, and Temple University. The FCC's Connected Care Pilot webpage has full background on the program.

COVID-19 Telehealth Program: Congress in December 2020 authorized a further $249.95 million for another round of COVID-19 Telehealth Program awards (Round 2). The FCC briefly sought public comment on selection criteria for Round 2; SHLB's comments are here – all other comments here. Six Senators (Manchin D-WV, Rounds R-SD, Smith (D-MN), Hassan (D-NH), King (I-ME), and Sheehan (D-NH) have written the FCC asking that 20% of the new funding be set aside for small, rural providers.

Congress directed the FCC to establish the COVID-19 Telehealth Program in spring 2020 as part of the CARES Act, appropriating $200 million for awards (Round 1). Funding for the initial round was exhausted by June 2020 and the final list of awardees is available here (Excel; PDF). Successful applicants received funding commitments that they can claim by demonstrating the purchase of eligible goods or services by September 30, 2020. The FCC in September 2020 extended that purchase deadline until December 31, 2020; invoices for reimbursement must be submitted to the FCC by July 31, 2021 (more information on invoicing here).

E-rate

SHLB, leading a group of education advocacy organizations,[2] has filed a petition at the FCC seeking an expedited declaratory ruling that E-rate temporarily support "off-campus" use – aimed at students currently forced to use home learning due to COVID. Among other things, the petition sites one of President Biden's first executive orders which encouraged the FCC specifically to use its existing authority "to increase connectivity options for students lacking reliable home broadband, so that they can continue to learn if their schools are operating

[2] The American Library Association (ALA), the Consortium for School Networking (CoSN), the National School Boards Association (NSBA), the State Educational Technology Directors Association (SETDA), the State E-rate Coordinators' Alliance (SECA), the Urban Libraries Council (ULC), the Wireless Future Project at New America, and the Wisconsin Department of Public Instruction.

remotely." (Somewhat related, SHLB has released its 2021 policy roadmap for E-rate and other programs.)

New America recently released a report addressing the digital learning gap in the age of COVID: The Online Learning Equity Gap – Innovative Solutions to Connect All Students at Home. The report strongly supports the FCC's use of E-rate funding to support digital learning outside of the classroom, and highlights innovative efforts in Colorado and Virginia to address the "online learning chasm." Related: see this article about the DragonNet project in Missouri. Funds for Learning recently released its annual E-rate Trends Report for 2020, reflecting spending and survey data through July 17, 2020.

The Commission's March 2020 COVID-related waiver the gift rules for both the E-rate and RHC programs was recently further extended until June 30, 2021. Note the waiver is available only to certain entities:

1. Health care providers "involved in the screening and treatment of patients for COVID-19 and in providing service to other patients in an effort to both help mitigate the spread of COVID-19 and devote limited on-site medical resources towards treatment of COVID-19";

2. "E-Rate eligible entities on behalf of students, teachers, or patrons while schools and libraries prepare for extended remote learning and remain fully or partially closed as a direct result of COVID-19."

Rural Health Care

SHLB on January 25, 2021, has requested the Commission to extend the deadline for funding year 2021 applications from April 1 to May 31 – due to COVID and to problems implementing some of the programmatic reforms from August 2019, and impacts each of these factors has had on USAC (including USAC's role approving eligibility for the thousands of COVID-19 Telehealth Program applicants). The problems rolling out the 2019 reforms to the Telecommunications Program are reflected in two recent Commission actions: in late December directing USAC to update the databased to include the most recent approved rates; and in January allowing Alaska health care providers to use rural rates from prior years, thereby exempting from rates in the new database for the next funding year. SHLB in the letter linked above also asked the Commission to adopt a similar waiver for the lower 48 but have it extend to urban rates as well.

Net Neutrality

All eyes will be on the new FCC to see how they will address net neutrality – however it is unlikely the Commission will consider acting until the Democratic majority is in place sometime later this year. In the meantime, the court cases continue. Recall the DC Circuit reversed the FCC in

asserting blanket preemption of state-specific rules, but this did not preclude state-by-state preemption claims based on specific conflicts with federal law. In addition to California and Vermont (litigation updates below), four other states have enacted some form of net neutrality law: Colorado, Maine, Oregon, and Washington, none of which have yet been challenged by industry or the federal government. The likely reason for no new cases is that potential litigants are looking to the California and Vermont cases to see what those courts do. Meanwhile, Public Knowledge highlights some of what carriers are up to in the absence of federal net neutrality rules.

Federal Courts:

- Eastern District of California. In October 2018, SB 822, the California Internet Consumer Protection and Net Neutrality Act of 2018 was challenged in federal district court in California by the DOJ and several industry groups in a separate suit. DOJ had sought a preliminary injunction but the court agreed to a request by all parties to stay the case after California agreed not to enforce the law pending final resolution of *Mozilla v. FCC*. The DOJ on August 5, 2020 filed a renewed motion for a preliminary injunction; the state responded on September 16; reply briefs by the DOJ and industry groups were filed October 14.

- Vermont District Court. In October 2018 the same industry groups – American Cable Association (ACA), CTIA - The Wireless Association (CTIA), NCTA - The Internet & Television Association (NCTA), and USTelecom challenged Vermont's net neutrality law and executive order in federal district court there and in January 2019 sought summary judgment. The parties in March 2019 agreed to stay further proceedings pending a final resolution of *Mozilla v. FCC.* DOJ and industry groups also renewed their challenges to the Vermont law after the stay expired, however the parties have agreed to a new stay pending the outcome of the motions for injunctions in the California litigation.

States

The National Conference of State Legislators (NCSL) features a summary of net neutrality efforts by state for 2020 here (updated January 19, 2021). *Note this list does not identify current laws, only current efforts to pass new laws*.