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VIA ELECTRONIC MAIL

To: Jen Leasure, The Quilt

From: Jeff Mitchell

Re: **Monthly Broadband Policy Update – May 3, 2021**

Capitol Hill

On April 1, 2021, President Biden introduced his proposed $2.25 trillion infrastructure package – which includes $100 billion for broadband and a very strong bias toward fiber deployment. The debate on what Congress can or will pass (and how to pay for it) is now in full swing. Senate Republicans, led by Senator Capito (R-WV) have introduced their own $568 billion proposal (with $65 billion reportedly for broadband), and a bi-partisan group of Senators are working on a compromise plan. With the legislative window short, Democrats have threatened to pass an eventual package on a party-line vote using the Budget Reconciliation mechanism, but it is not clear they have the votes to do so. In the background, industry groups are jockeying to benefit from and mute the impact of this initiative.

National Telecommunications and Information Administration (NTIA)

NTIA in April featured a two-part webinar (part 1; part 2) on its new broadband infrastructure grant programs: Tribal Broadband Connectivity Grants ($1 billion); Broadband Infrastructure Deployment Grants ($300 million). Two further webinars on these infrastructure programs are scheduled for May 12, and May 13. May 5 and May 6 will feature part 1 and part 2 of webinars addressing the Connecting Minority Communities Pilot Program ($285 million). Archived NTIA webinars are here.

The redesigned monthly BroadbandUSA Newsletter for April is available here. (Includes a link to Electronic Frontier Foundation's interesting look at California's efforts to address market and regulatory failures in their local broadband markets.) For those interested in the Treasury Department state block grants for broadband (the $10 billion Capital Projects Fund), here is the page to watch.

USDA – Rural Utilities Service

The Consolidated Appropriations Act of 2021 allocated $100 million to the USDA Reconnect program. Minor rule changes to the next round of ReConnect funding became effective April 27, 2021. 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 application cycle has started and closes June 4, 2021.

Precision Agriculture

The most recent meeting of the FCC's Precision Agriculture Connectivity Advisory Task Force was March 12, 2021 and can be viewed here. Background and links to prior meetings are available here. 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. NTIA's September 2020 webinar on precision agriculture is 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

The tentative agenda and information for the May 20, 2021, FCC Open Meeting is available here; details on the April 22 Open Meeting are here. There are no broadband or spectrum items of

particular note at either meeting – although see items below on the $3.2 billion Emergency Broadband Benefit program and the $7.1 billion E-rate Emergency Connectivity Fund.

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]

L-Band (1.0GHz to 2.0GHz)

The FCC in April 2020 unanimously approved a long-pending request by Ligado Networks (f.k.a. LightSquared) to utilize a portion of the so-called 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. While Ligado has raised $4 billion to implement 5G deployment in the cleared spectrum, the cloud of DOD opposition remains with the most recent National Defense Authorization Act (which became law January 1, 2021) authorizing DOD to conduct an independent technical review of the impact of the FCC's order. A high-profile lobbying campaign is apparently also underway to reverse the decision.

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, applications are subject to further review and a public comment period before

[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):

> 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.

they are finally approved.) Tribal license grants so far are listed here. The Commission in January released a Public Notice seeking comment on proposed auction procedures, the first step toward conducting auction of the remaining spectrum, possibly in 4Q 2021 but more likely in 1Q 2022.

3.45-3.55 GHz

The DOD in August 2020 agreed to vacate a 100 MHz band from 3.45 to 3.55 GHz to allow for 5G use, clearing the way for an auction of this valuable spectrum for 5G deployment. The FCC in March 2021 established rules for the new band and proposed auction procedures for an auction by the end of 2021. The 3.1-3.55 GHz band is currently used by DOD for fixed and mobile radar as well as secondary non-federal amateur and experimental users. WISPA, the Wireless Internet Service Providers Association, in March 2021 announced an innovative proposal to the FCC to obtain 200 MHz between 3.1 and 3.55 GHz "for coordinated, non-auctioned, high-powered, point-to-multipoint use, on either a shared or licensed-by-rule basis."

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. 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.

Recently Dallas schools were in the news installing their own wireless towers using CBRS. UETN was in the news in October 2020 announcing 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. A California K-12 school district is also successfully using CBRS to connect directly with students off-campus (1000 feet and beyond). Virginia Tech, which claimed eight PALs CBRS licenses, is expected to combine those with GAA use to develop innovative private LTE applications.

Rural carriers in April 2021 began an effort to get the FCC to modify the power rules for CBRS – a modification could impact lower power users.

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 and here.

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 have 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. The Biden Department of Transportation is apparently open to reexamining these concerns.

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). USAC's 2020 Annual Report (released March 31, 2021) also provides a useful overview of USF data. 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%. In March 2021 the FCC announced that the 2nd Quarter 2021 Contribution factor will be 33.4%. In response, SHLB will soon be launching a USF contributions initiative which may stimulate action – and even USTelecom (the largest carrier trade group) is now publicly supporting some type of USF contributions reform.

Because it is primarily consumer-facing, we have not been closely tracking the $3.2 billion Emergency Broadband Benefit (EBB) FCC program recently created by Congress. While the EBB is a COVID-19 initiative, it is clearly a pre-cursor to a permanent Lifeline program that supports broadband. The FCC has announced that EBB is set to launch on May 12 – a program overview with links to more information is available here and within the public notice.

New Telehealth Programs

COVID-19 Telehealth Program: On April 29, 2021, the *very short* application window for Round 2 of the COVID-19 Telehealth Program opened. Applications will be accepted through May 6, 2021 and must be submitted online. Congress in December 2020 authorized a further $249.95 million for Round 2 of COVID-19 Telehealth Program awards. After briefly seeking public comment on new selection criteria, the FCC on March 30 released program rules for Round 2.

During the spring of 2020, Congress directed the FCC to establish the COVID-19 Telehealth Program 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).

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.

E-rate

With the May 10 statutory deadline approaching for the FCC to promulgate rules governing the $7.1 billion E-rate "Emergency Connectivity Fund" (ECF), Acting Chair Rosenworcel on April 30, 2021, released a draft order for public comment. The draft rules notably would fund only existing services, which means no funding for deployment of new networks; and does not suspend the cost-allocation rules as had been requested by SHLB and others. The public comment period ends at 6 pm ET on May 5.

SHLB has filed a request for a further extension of the deadline to complete special construction projects until June 30, *2022*. In March 2020 the Commission provided a one-year extension for special projects that had a June 30, 2020, deadline – mostly funding year 2019 projects but apparently including some older projects that had already received extensions. SHLB argued in its new petition that COVID-19 continues to impact service providers' and applicants' ability to complete projects, affecting up to 90 currently pending projects.

Rural Health Care

The FCC on February 12, 2021, extended the RHC filing window to June 1, 2021, granting SHLB's request for the same. On March 12, 2021, the FCC announced that the inflation-adjusted RHC program caps for funding year 2021 (July 1, 2021, through June 30, 2022) would be $612 million for the overall program and $154.5 million for upfront payments and multi-year commitments under the Healthcare Connect Fund Program.

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 extend it to urban rates as well. On April 18, 2021, the Commission granted a two-year waiver of the urban and rural rates database for all program participants.

Net Neutrality

Tech lobbying for the FCC to restore net neutrality has begun – however it is unlikely the Commission will consider acting until the Democratic majority is in place, probably sometime later this year. Meanwhile, the Commission in a filing at the DC Circuit has hinted that it is considering acting. This was in response to a January 2021 challenge filed by California of the Pai FCC's final net neutrality decision (after the remand from the DC Circuit).

Net neutrality legislation in the Democratic congress is back under consideration. In the meantime, litigation at the state level continues. Recall the DC Circuit in upholding the FCC's repeal of net neutrality rules reversed the FCC claim of blanket preemption of state-specific rules. In addition to California and Vermont, 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 potential litigants were looking to the California and Vermont cases to see what those courts do (litigation update below). 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 U.S. Department of Justice (DOJ) and several industry groups in a separate suit. The Biden DOJ in early February withdrew its challenge and in late February 2021 the District Court denied the industry groups' request for an injunction – allowing the law to finally go into effect. The wireless trade group CTIA has filed its opening brief appealing this decision to the 9th Circuit Court of appeals.

- 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 agreed to stays the case, first pending the outcome of the Mozilla case, and then the motions for injunctions in the California litigation. With the California injunction denied, we will be watching Vermont as well as laws in other states.

Controversy over enforcement of the California law erupted immediately as wireless carriers began claiming the California law prevents them from providing zero-rated bandwidth for a veterans telehealth service provided via mobile devices. While the carrier claims are contested, talks were expected to quickly resolve this particular situation.

States

The National Conference of State Legislators (NCSL) features a summary of net neutrality efforts by state for 2021 here (updated January 20, 2021). *Note this list does not identify current laws, only current efforts to pass new laws*.