July 29, 2020

The Honorable Ben Hueso
Chair
State Capitol, Room 4035
Sacramento, CA 95814

The Honorable John Moorlach
Vice Chair
State Capitol, Room 4035
Sacramento, CA 95814

Re: AB 570 – Broadband funding legislation – Oppose unless Amended

Dear Chair Hueso and Vice Chair Moorlach:

The Electronic Frontier Foundation (EFF) is the leading nonprofit organization defending civil liberties in the digital world. Founded in 1990, EFF champions user privacy, free expression, and innovation through impact litigation, policy analysis, grassroots activism, and technology development. With over 30,000 dues-paying members and well over 1 million followers on social networks, we focus on promoting policies that benefit both creators and users of technology.

EFF has been at the forefront of studying the future of broadband access in the high-speed market. It has conducted in-depth research, and produced both legal and technical publications on the issue. EFF's goal regarding broadband access is the deployment of universally available, affordable, and competitive high-speed networks. EFF focuses on fiber because it is the only data-transmission medium capable of both delivering low-latency connections to homes, and speed upgrades for generations to come that far exceed alternative last mile options while also being a necessary component for ubiquitous 5G coverage.

We are oppose unless amended to AB 570 because it does not solve one iota of the broadband crisis communities are facing today. It prioritizes networks that are unable to meet current 2020 COVID-19 needs. Every current analysis of Internet usage adequate to support remote work and education have concluded that broadband speeds need to be far above the 25/3 mbps standard AB 570 establishes. EFF supports funding broadband infrastructure, but it must be for infrastructure that can meet the needs of today and tomorrow. We would be in full support of the legislation if its metrics could be updated to ensure that every dollar we ask Californians to pay into a fund went towards guaranteeing every Californian obtains one high-speed connection. The bill before the committee does not do that while simultaneously denying help to more than 1 million Californians who lack sufficient access in both rural and low income neighborhoods.

AB 570's metrics promote upgrading obsolete copper wire DSL lines or wireless as the focus of the new program under its prioritizing "cost effective" 25/3 mbps standard, which would waste state money and forestall needed fiber investments in communities.

Broadband network technology has undergone a transformational change where the market for slower speeds capable of being reached by legacy networks is rapidly approaching obsolescence.[1] This change is in fact the core reason why one of the largest telecommunications companies that serves 2 million Californian residents in rural markets, Frontier Communications, is bankrupt today. Throughout its bankruptcy filings and mandated disclosures to investors, Frontier Communications explained that the rapid transition of its customers to services that exceed its 25/3 (and slower) DSL network depleted the company of its revenues. Exacerbating the problem was the company's lack of willingness to invest in fiber to the home to replace those lines, despite its own internal documents showing an estimated 3 million customers could have been profitably upgraded to gigabit fiber to the home without one dollar of government subsidy.[2]

AB 570 ignores the lessons we should be learning from the failure of Frontier Communications by doubling down on an out of date metric of 25/3 mbps broadband (a pre-COVID-19 standard set by the FCC in 2015 that focused on how much one single user per household needed to use the Internet at the time, not today in 2020) while emphasizing that the California Public Utilities Commission (CPUC) ***prioritize*** "cost effective" means to distribute these slow obsolete networks. This priority cost-effective requirement increases the likelihood that funds will be diverted to the Incumbent Local Exchange Carriers (ILEC) like Frontier Communications or AT&T who are most capable of delivering yesterday's broadband at the lowest cost to the state by upgrading their existing copper networks. But knowing full well that the private investor community is adamantly opposed to any private dollars being spent on outdated networks that caused the Frontier bankruptcy, those companies will need the state to finance the entire cost in order to shift the loss to the government.

[1] Phillip Dampier, Telcos Without Fiber to the Home Service Face Crisis as Their Market Share Will Erode to Zero https://stopthecap.com/2020/06/03/telcos-without-fiber-to-the-home-service-face-crisis-as-their-market-share-will-erode-to-zero.

[2] Ernesto Falcon, Cory Doctorow, & Katharine Trendacosta, *Frontier's Bankruptcy Reveals Why Big ISPs Choose to Deny Fiber to So Much of America*, DEEPLINKS BLOG (April 30, 2020), available at https://www.eff.org/deeplinks/2020/04/frontiers-bankruptcy-reveals-cynical-choice-deny-profitable-fiber-millions.

What drove the rapid transition away from 25/3 networks in most markets was the availability of high-speed cable or faster wireless. A similar exodus should be expected from state financed 25/3 networks if SpaceEx's low earth orbit satellites delivering speeds in excess of 25/3 at low latency become accessible or T-Mobile's 5G network, which is required by the Federal Communications Commission to reach these communities with 50 to 100 mbps network speeds[3] within five years. Should either of these events take place, ***every*** state dollar spent on 25/3 broadband will be at a total loss to the state. This is why high capacity networks enabled through fiber remains the only long term and safe investment to ensure every state dollar spent building infrastructure remains valuable for the decades that follow. EFF's technical analysis shows conclusively only fiber infrastructure can continuously ascend in speeds delivered without requiring new state investments in construction after the fact.[4]

AB 570 stands for the proposition that the state should help fewer rural and low income Californians in the midst of a pandemic while SB 1130 ensured that all Californians lacking one high-speed broadband access connection were eligible for help.

AB 570's metric of 6/1 unserved to determine eligibility for state support would dramatically shrink the number of Californians eligible for help that was established and supported by this committee under SB 1130. The Senate passed SB 1130 stands for the goal of universal access where each Californian who lacks one high-speed broadband access connection was eligible for support. AB 570 would reduce the eligible population by more than 1 million Californians based on federal data,[5] a vast majority of them in rural markets, and leave them behind. Its low income support threshold, while broader in tethering support based on income status alone, also narrows the eligibility pool from SB 1130's metric by requiring higher levels of poverty before being eligible for support.

These adjustments serve only one purpose, to reduce the number of Californians, all of whom lack a ***single high-speed broadband option*** capable of handling today's broadband needs, from being considered worthy of state support. This type of line drawing runs in direct contradiction to traditional goals underlying universal service, which is to guarantee that all people are entitled to equivalent services. It should be flatly rejected as acceptable policy.

COVID-19 has forced every Californian to grapple with their broadband access capacity at home with many legacy Internet access connections that deliver 25/3 mbps failing today.

Internet usage is on the rise as Californians follow social-distancing guidelines as a means to help combat the spread of COVID-19. However, not all broadband connections are created equal as legacy networks have begun to fail while fiber networks weather the storm. A recent story published by the New York Times indicates that increased usage has caused a degradation of

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[3] Press Release, FEDERAL COMMUNICATIONS COMMISSION, *FCC Approves Merger of T-Mobile and Sprint*, available at https://docs.fcc.gov/public/attachments/DOC-360637A1.pdf.

[4] Bennett Cyphers, *The Case for Fiber to the Home, Today: Why Fiber is a Superior Medium for 21st Century Broadband*, ELECTRONIC FRONTIER FOUNDATION (Oct 11, 2019), https://www.eff.org/files/2019/10/15/why_fiber_is_a_superior_medium_for_21st_century_broadband.pdf.

[5] FEDERAL COMMUNICATIONS COMMISSION Form 477 data (June 2019), available at https://opendata.fcc.gov/Wireline/Fixed-Broadband-Deployment-Data-Jun-2019-Status-V1/sgz3-kiqt.

network quality for users relying on legacy networks.[6] Findings from M-Lab, the largest collection of open Internet performance data in the world, show that Internet access is breaking for a great number of people creating effectively a "second class" of online participants.[7] In other words, even when you have Internet access, it might not work under today's increased usage needs. Simultaneously, networks that are completely converted over to fiber-to-the-home are facing no challenges whatsoever in handling the increased traffic from the pandemic.[8]

EFF's own engineering analysis[9] of different last-mile technologies has led our engineering team to conclude that networks that are fully fiber-to-the-home (FTTH) have sufficiently high capacity not just for today, but for decades into the future. This future potential explains why a sudden double-digit percentage of increased usage would be relatively easy to absorb for fiber networks. It also means we need to retool our approach to broadband to promote an infrastructure ready for the future in order to avoid wasteful spending of scarce public dollars on networks facing obsolescence, including networks delivering 25/3 mbps.

AB 570's middle mile fiber provision and long haul are already standard industry practice and are likely already being handled by current industry deployment. It is the last mile connection where rural and low income residents are in dire need of help.

Globally nearly 2 billion kilometers of fiber optic wires have been deployed to build and connect people to the Internet. AB 570's provisions on fiber simply codify standard industry practices of deploying middle mile and backhaul fiber for an ISP and does not change the status quo. This is because the economics of running long distance fiber between major cities and institutions have generally been highly profitable without state support and require very little actual fiber in the community itself where the capital expenditure rises. For example, the deployment of T-Mobile's long range 5G network relying on 600 MHz spectrum will push middle mile fiber up to an average of 13 miles away from communities per the CTIA's estimates[10] (see chart on the following page) to deliver network speeds well in excess of 100 mbps.[11] This committee should recognize how little a requirement to build middle mile fiber means in actual change of circumstances on the ground when a major national corporation is already legally required to meet these obligations without AB 570.

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[6] Cecilia Kang, Davey Alba, & Adam Satariano, *Surging Traffic is Slowing Down Our Internet*, NY TIMES (Mar. 26, 2020), available at https://www.nytimes.com/2020/03/26/business/coronavirus-internet-traffic-speed.html.

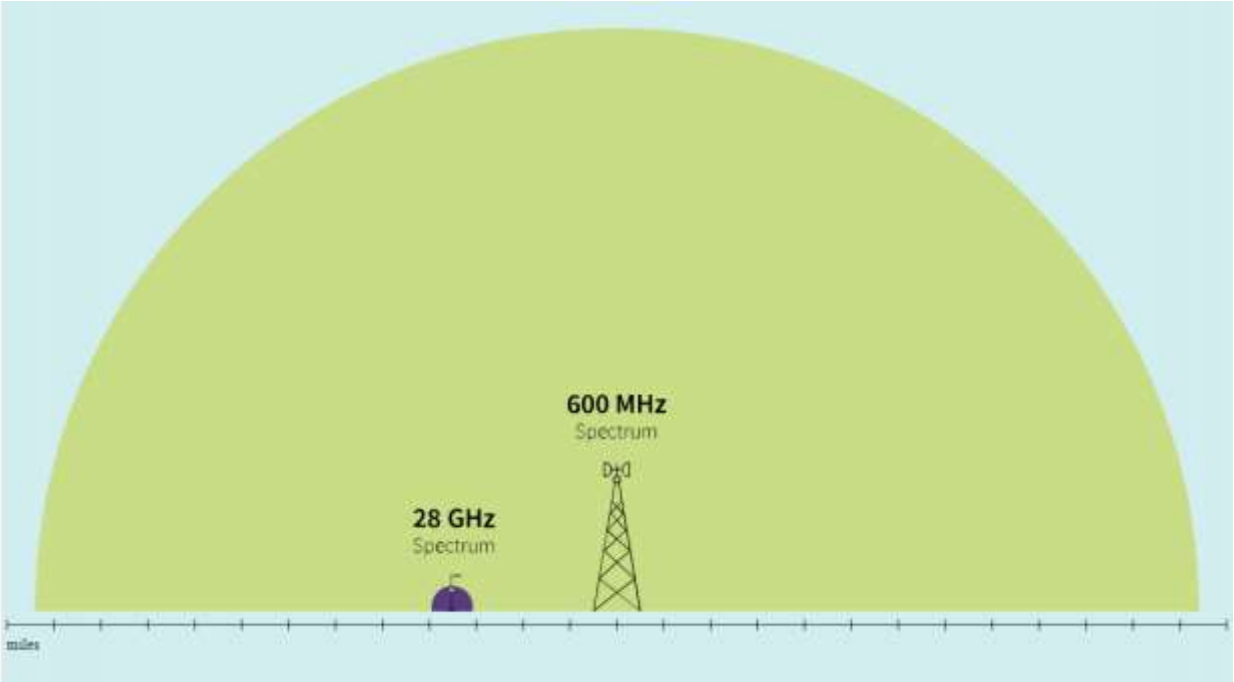
[7] Sascha Meinrath, *The Coronavirus Pandemic is Breaking the Internet*, THE HILL (May 2, 2020), available at https://thehill.com/opinion/technology/495806-the-coronavirus-pandemic-is-breaking-the-internet-and-what-to-do-about-it.

[8] Doug Dawson, *Will COVID-19 Traffic Kill the Internet?*, POTS AND PANS (Mar. 31, 2020), available at https://potsandpansbyccg.com/2020/03/31/will-covid-19-traffic-kill-the-internet.

[9] Bennett Cyphers, *The Case for Fiber to the Home, Today: Why Fiber is a Superior Medium for 21st Century Broadband*, ELECTRONIC FRONTIER FOUNDATION (Oct 11, 2019), https://www.eff.org/files/2019/10/15/why_fiber_is_a_superior_medium_for_21st_century_broadband.pdf.

[10] The Wireless Industry, *The First High-Band Auction Starts This Week* (Nov. 12, 2018) , *available at* https://www.ctia.org/news/the-first-high-band-auction-starts-this-week

[11] Jeremy Horwitz, *T-Mobile's 600 Mhz 5G Peaks at roughly 225 Mbps, but there are caveats* (Dec. 5, 2019), VENTUREBEAT, available at https://venturebeat.com/2019/12/05/t-mobiles-600mhz-5g-peaks-at-roughly-225mbps-but-there-are-caveats/



The core challenge in connecting rural markets to 21st century services is whether fiber is present ***within*** the community, not 13 miles away from it. Locally placed fiber has the ability to enable hundreds of applications and services and several broadband options in the multi-gigabit and beyond speeds. It is the connection to the homes, businesses, and anchor institutions that are still stuck with legacy infrastructure dating back to the AT&T monopoly era that is limiting these communities potential. Pushing fiber closer to these end points but stopping far away in favor of delivering 25/3 connections at the last mile will merely postpone the long term investment costs the state must tackle in the first place and unnecessarily drive up the final price tag of ending the digital divide by forcing the state to take a loss in non-fiber based investments.

Average data consumption needs will continue to rise and networks financed by the state must be ahead of the curve, not be years behind it.

While internet usage has increased in this moment due to social distancing, these increases appear to be around 40 percent,[12] while mobile data usage has increased by merely 10 percent.[13] These increases do not represent unprecedented new levels of broadband access usage, and should have been well within the range of expected Internet traffic increases in the next few

[12] John Graham–Cumming, *COVID-19 Impacts on Internet Traffic: Seattle, Northern Italy and South Korea*, THE CLOUDFLARE BLOG (Mar. 13, 2020), available at https://blog.cloudflare.com/covid-19-impacts-on-internet-traffic-seattle-italy-and-south-korea; *See also* Mike Robuck, *Due to COVID-19, Broadband Usage Spikes 47% in Q1, Nearly Surpassing All of 2020's Projections- Report*, Fierce Telecom (May 4, 2020), available at https://www.fiercetelecom.com/operators/due-to-covid-19-broadband-usage-spikes-47-q1-nearly-surpassing-all-2020-s-projections.

[13] CTIA, *Managing Our Wireless Networks Through COVID-19*, available at https://www.ctia.org/the-wireless-industry/managing_our_wireless_networks-covid-19.

years, as applications and services evolve. Per Cisco's pre-Covid-19 analysis, North American data consumption will reach 90 exabytes per month by 2022.[14]

Year	North America IP Based Traffic in Exabytes Per Month
2012	14.4
2018	43
2022	90

Source: Cisco Visual Predictions 2012-2017 and 2017 - 2022

The COVID-19 experience has simply given us a sneak peek of what the future holds for many California communities that lack high-capacity networks. The existence of systemic network performance failures for legacy networks means the state should not finance or extend the life of those assets with government money. Rather, the CPUC should be given the tools to only approve projects ready for the future while rejecting networks incapable of meeting projected increased demand.

Backing networks that are already failing today's challenges simply guarantees the waste of government resources and funding non-fiber based networks would be akin to funding a bridge to nowhere. If the state is asking Californians to pay into a fund through a fee, the only fair

return for their investment is in local fiber infrastructure that would not just benefit their future, but their children's and grandchildren's future as fiber is estimated to continue to upgrade and be viable for a minimum of 70 years. For example, fiber deployed in the 1970s is still in full use today (a mere 50 years ago).

There is no shortcut to connecting people to the 21st century of broadband access, it all goes through fiber, and real opportunity exists if we embrace the long term investment challenge of connecting all Californians who need it.

Every new network built needs enough revenue sources to become self-sufficient and incremental approaches risk splitting revenue sources. A piece meal approach runs the risk of making markets that are perfectly viable into cost prohibitive territories. This is ultimately the problem with the currently law, and AB 570's approach, to resolving the digital divide. By starting with isolated pockets and ignoring the opportunities of upgrading entire communities, these networks lack the ability to aggregate demand and benefit from scale.

[14] *Cisco Visual Networking Index: Forecast and Trends, 2017–2022 White Paper*, Cisco (Feb. 27, 2019), https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-741490.html.

As noted previously, if 1 million eligible Californians were given the opportunity to pay an affordable rate of $40 to $60 a month for a high-speed connection, the state would put in play $40 to $60 million of local investment ***per month*** into these networks that would not only make them financially self-sufficient, but rapidly expanding. However, if the state continues an approach limiting its build out to only portions of the unserved population, it will drive up costs and prevent future cost saving opportunities.

Recent discussions of issuing fiber bonds backed by the state hold true promise[15] as fiber is a unique asset that will remain useful for several decades beyond the length of a 30 year loan. If the state were to embrace a strategy of building open access fiber networks through long term, low interest, bonds in a comprehensive fashion to cover all Californians who lack high-speed access today, expert analysis indicates that such an approach could achieve universal rural access.[16] We are seeing this approach enjoy significant success in the state of Utah where 11 cities, including rural communities, are jointly building out fiber infrastructure through long term debt financing and are collecting revenues in excess of their debt servicing needs.[17]

Aggressive long term investments in fiber are in fact necessary if we wish to bring an end to the digital divide. For example, North Dakota, which has no national carriers today, are approaching universal fiber access through small local private networks and local governments.[18] Due to more than ten year old investments in fiber, 99.8% of North Dakota students have broadband speeds fast enough to handle remote education along with their parents engaging in remote work. Other states that have received government funding in broadband spent that money on the slowest possible speeds to achieve minimum standards, including California, and still struggle with persistent inequality of access. The failure can be squarely placed on the relentlessly low expectations past funding efforts supported and we are reaping the consequences of those decisions today.

We need more long term investments in broadband, but it must be focused on future proofed networks, not networks rapidly becoming outdated.

Backing networks that failed today's challenges simply guarantees a waste of government resources and funding non-fiber based networks would be akin to funding a bridge to nowhere. The Senate has made the clear decision that the future of CASF should be in investing in fiber networks with the passage of SB 1130. This remains the right call as government infrastructure investments should stand the test of time rather than bake in the need to continually come back to California residents for more of their money for perpetual increment upgrades.

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[15] Sydney Johnson, *Lawmakers Look for New Ways to Pay for Broadband in Rural California* (Jun. 4, 2020), EDSOURCE, *available at* https://edsource.org/2020/lawmakers-look-for-new-ways-to-pay-for-broadband-in-rural-california/632755.

[16] Benoit Felten & Thomas Langer, *Structurally Independent Broadband Infrastructure Can Solve Perceived FTTH Coverage Issues* (Jun. 2016), DIFFRACTION ANALYSIS, available at https://www.diffractionanalysis.com/services/white-papers/2016/06/structural-remedies-solve-rural-broadband-issue.

[17] UTOPIA FIBER, https://www.utopiafiber.com/about-us.

[18] Karl Bode, *Why North Dakota Has the Best Internet in the United States*, MOTHERBOARD (May 6, 2020), available at https://www.vice.com/en_us/article/wxqegb/why-north-dakota-has-the-best-internet-in-the-united-states.

AB 570's shortfalls can all be remedied by simply updating its metrics to be synchronized with SB 1130's goals for universal high-speed access and more tailored towards a sustainable long term investment strategy. EFF would be fully committed to supporting such a bill, but must regretfully oppose AB 570 as written today.

Sincerely,

Ernesto Falcon
Senior Legislative Counsel
Electronic Frontier Foundation