

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

*Order Instituting Rulemaking Regarding  
Revisions to the California Advanced  
Services Fund*

Rulemaking 20-08-021  
(Filed 10/14/20)

**OPENING COMMENTS OF ELECTRONIC FRONTIER FOUNDATION TO ORDER  
INSTITUTING RULEMAKING REGARDING REVISIONS TO THE CALIFORNIA  
ADVANCED SERVICES FUND**

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**I. Introduction**

In accordance with Rule 6.2 of the California Public Utilities Commission (“Commission”) Rules of Practice and Procedure (“Rules”), the Electronic Frontier Foundation (EFF) submits comments to the Order Instituting Rulemaking 20-08-021 (“Rulemaking”).

**II. About EFF**

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 (with several thousand California 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 and has conducted in-depth research and produced both legal and technical publications on the issue. EFF's goal in 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 low latency and speed upgrades for generations to come that far exceed alternative last-mile options as well as a necessary component for ubiquitous 5G coverage.

**III. Q1 - Broadband Infrastructure Grant Account – Should the Commission make changes to application requirements and guidelines, challenge process/criteria, deployment schedule, the ministerial review process, performance criteria, or project monitoring rules? If so, what kind of modification and why?**

EFF recommends that the Commission adopt the following two requirements for applications as a means to properly sort out long-term investments and temporary short lived solutions:

- 1) Projects must be able to increase in capacity to meet consumer demand over a period of 60 years without new state subsidies.
- 2) Projects must be able to deliver sufficiently low enough latency to enable real-time interactive applications and services.

There are many ways to meet minimum speed performance standards established under the existing CASF program, but most of them would constitute significant waste and lost investment dollars by the state if financed. Because of the danger of waste, the state should put in clear protections to ensure that each project it finances not only solves the digital divide for today, but for future generations. By adopting a lifetime-of-the-project analysis, the state can filter out and reject temporary solutions that would only yield networks that are useful for a few years while prioritizing long-term solutions that end the digital divide for our lifetime.

Assessing last-mile networks based on their capacity to increase at a cost-effective basis is a means to determine if a network is a “future proof” project—i.e., that the infrastructure being financed by the state (sometimes completely financed by state dollars) can scale with

consumption needs for more than 60 years without additional state infrastructure dollars. This would ensure that limited state dollars are going towards projects that will be self-sufficient without further state assistance, deliver the most long-term value to state residents, and eliminate the need for a perpetual subsidy, thus enabling residual state dollars to be more targeted towards low-income support and adoption efforts.

Consumption trends have been measured extensively by the industry as a standard practice. Private industry already uses private dollars to finance new infrastructure designed to sustain long-term growth in order to extend the number of years an asset can be monetized long after the initial investment is recovered. There is little reason for the state to not also assess its own investments along this same lifetime-of-the-project approach. The absence of a “future proofing” requirement risks allowing applicants to shift the loss to the government while reaping the profits of bypassing the investment costs.

The Commission should not only assess projects based on their ability to scale with consumption, but on their average latency. The need for real-time communications has grown substantially as Californians must do their business, politics, and education from home across multiple video-conference platforms with multiple end-users. Physics determines the different performance capabilities of various transmission mediums.

Wireless networks, for example, must contend with the environment: physical obstructions, weather changes, and other interference. Shorter distances make up for many of the challenges by reducing the number of causes of signal interference, so arguably a high-speed wireless network backed with fiber optics would be superior to a long-distance wireless network backed by an alternative capacity limited medium. Various wireline options that travel over legacy copper or coaxial infrastructure face barriers in latency due to the increased friction signals face when traveling over electrical as opposed to photonics. EFF details the various performance realities in latency and jitter in our engineering analysis and finds that fiber and hybrid fiber/cable mediums general enjoy lower latency (with fiber obtaining the best performance at

the speed of light).<sup>1</sup> The Federal Communications Commission (FCC) also regularly collects latency data on various networks to would help guide the analysis.<sup>2</sup>

**IV. Q 9. Open Access – Should all CASF projects be required to provide open access (where a working definition of open access is making capacity available on non-discriminatory, reasonable, and equal terms)? Why or why not?**

EFF recommends that projects that are fiber infrastructure based be required to share access with Wireless Internet Service Providers. There is wide industry consensus now acknowledging that ubiquitous access to high-speed 5G broadband requires ubiquitous access to fiber infrastructure. One study by the Fibre to the Home Council Europe estimates that highly dense small cell deployments in 5G can have 65% to 74% reduced costs if a preexisting fiber-to-the-home (FTTH) network is present.<sup>3</sup> This cost savings holds true for both urban and rural markets. However, were we to only allow 5G to be deployed where a wireless provider must deploy both the dense fiber and the wireless infrastructure alone, California will see very little deployment and even less wireless 5G competition. This is because such an approach needlessly increases the upfront cost to a wireless carrier to deploy to a point where most rural markets will simply be unreachable under the national industry’s current return on investment formula of 3 to 5 years.

Sharing solves this problem. Given that 5G broadband is not yet profitable<sup>4</sup> due to lack of willingness by consumers to pay ever-increasing prices, it is essential for policy to facilitate sharing to reduce deployment costs and thus make more markets commercially feasible. EFF has confidence that innovations in non-broadband markets will emerge if the network is widespread, accessible, and affordable. It is notable that South Korea’s 5G deployment is the most advanced

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<sup>1</sup> 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](https://www.eff.org/files/2019/10/15/why_fiber_is_a_superior_medium_for_21st_century_broadband.pdf).

<sup>2</sup> Federal Communications Commission, *Measuring Fixed Broadband – Ninth Report* (Aug. 3, 2020), available at <https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-ninth-report>.

<sup>3</sup> Raf Meersman, *5G and FTTH: The Value of Convergence*, FTTH CONFERENCE (Mar. 13, 2019), <https://www.ftthcouncil.eu/documents/COM-190313-FibreFor5G-ConvergenceStudy-Presentation-RafMeersman%20-%20v4%20-%20publish.pdf>.

<sup>4</sup> Mike Dano, *Inside the Hunt for New 5G Revenues (Hint: Forget Phones)*, LIGHT READING (Nov. 19, 2019), [https://www.lightreading.com/mobile/5g/inside-the-hunt-for-new-5g-revenues-\(hint-forget-phones\)/d/d-id/755769](https://www.lightreading.com/mobile/5g/inside-the-hunt-for-new-5g-revenues-(hint-forget-phones)/d/d-id/755769).

among democracies, but was contingent on required sharing between fiber wireline infrastructure and wireless companies.<sup>5</sup>

In terms of wireline providers, open access becomes more complicated if the owner of the infrastructure has a conflicting interest with other potential broadband resellers. To address this problem, EFF recommends that, were the Commission to pursue open access policies for wireline projects for other wireline providers, that the applicant be structurally separated from the provisioning of broadband service. This would correctly align the incentives for the applicant and 3<sup>rd</sup> parties where the fiber provider is motivated to capture as much revenue as possible from attracting resellers and the resellers will have confidence that the fiber provider will maintain a non-discriminatory stance.

To the extent open access policy is pursued to open up existing monopoly networks to competition, the Commission must take care to ensure that a sufficiently large enough revenue pool is available to sustain competition while regulating the incumbent provider's offerings to ensure non-discrimination. This issue is not as pronounced in wireless open access because consumers do not view wireless and wireline broadband access as substitutes. For example, in the Nordic region, consumers enjoy both fiber wireline access and universally available high-speed 4G, and neither has cannibalized the other.<sup>6</sup> This is because mobile services address different needs of consumers than home wireline-based connections and consumers typically only choose wireless-only service because of limited income.

Lastly, structurally separated open-access fiber, particularly if the applicant is a patient investor, can cost-effectively extend the reach of fiber networks in markets that are ignored by existing providers. Already California is home to the largest private open-access fiber network in the United States today in Fullerton, California,<sup>7</sup> which is deploying universal fiber with no state

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<sup>5</sup> Joseph Waring, *KT Dissatisfied with Government 5G Fibre Plan*, Mobile World Live (Apr. 13, 2018), available at <https://www.mobileworldlive.com/featured-content/asia-home-banner/kt-dissatisfied-with-government-5g-fibre-plan>.

<sup>6</sup> EFF response to arguments that wireless broadband can substitute for wireline broadband, GN Docket No. 18-238 (Oct. 12, 2018), <https://ecfsapi.fcc.gov/file/101269873074/EFF-%20Wireline%20vs%20Wireless.pdf>.

<sup>7</sup> SiFi Networks, *SiFi Networks to Build USA's Largest Privately Funded Open Access FiberCity* (April, 8, 2019), available at <https://sifinetworks.com/residential/sifi-networks-to-build-usas-largest-privately-funded-open-access-fibercity>.

financial support because revenue generation is sought at the aggregate level rather than on a discriminatory per-household level. In fact, SiFi Networks has said in filings with the CPUC that even slight state financial support of a mere 10% to 20% (as opposed to 100% financed by the state sought under the law today by Frontier and Charter)<sup>8</sup> would enable the company to reach *an additional* 4 million more homes with fiber.<sup>9</sup>

Rural markets pose unique, but not impossible, challenges to serve. Spread-out populations make it difficult to recover the costs of building the infrastructure to connect all residents. However, open-access fiber can change the formula in approaching those markets — namely through supporting the construction of one fiber network that can aggregate demand from anchor institutions and retail broadband providers under an open-access regime. One study even suggests that it is feasible that many rural markets can be connected to fiber for *zero subsidies*, if long-term, low-interest loans are offered and the fiber is treated as an infrastructure project structurally separated from selling broadband services.<sup>10</sup> Such approaches are being used in countries such as Ireland<sup>11</sup> and New Zealand.<sup>12</sup> The multi-city/state effort to build universal open-access fiber in Utah shows that these challenges can not only be overcome, but done so in a financially feasible way geared towards long-term investment.<sup>13</sup>

**V. Q 10. Strategies for Investing in Tribal Lands and Communities – What should the Commission do to establish strategies to encourage broadband deployment and adoption in Tribal Lands and communities in advancement of program goals?**

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<sup>8</sup> Steve Blum, *Total California Broadband Grant Ask Grows to \$528 Million, Twice What’s Available*, TELLUS VENTURE ASSOCIATES (May 6, 2020), available at <https://www.tellusventure.com/blog/total-california-broadband-grant-ask-grows-to-528-million-twice-whats-available>.

<sup>9</sup> Letter from SiFi Networks to the California Public Utilities Commission on Open Access Fiber, available at <https://www.eff.org/document/letter-sifi-networks-california-public-utilities-commission-open-access-fiber>

<sup>10</sup> Diffraction Analysis, *Structural Remedies to Solve the Rural Broadband Issue*, available at <https://www.diffractionanalysis.com/services/white-papers/2016/06/structural-remedies-solve-rural-broadband-issue>

<sup>11</sup> Press Release, Over 300,000 homes in Northern Ireland Now Enjoying the Benefits of Fibre Broadband, BT Regions, available at <http://www.mynewsdesk.com/uk/btregions/pressreleases/over-300000-homes-in-northern-ireland-now-enjoying-the-benefits-of-fibre-broadband-2337783>.

<sup>12</sup> Columbia Telecommunications Corporation, *The New Zealand Ultrafast Broadband Network: Flexible, Cost-Effective Open Access*, available at <http://www.ctcnet.us/NewZealandUltrafastNetwork.pdf>.

<sup>13</sup> UTOPIA FIBER, April Monthly Update (May 1, 2020), available at <https://www.utopiafiber.com/2020/05/01/april-monthly-update>.

EFF recommends the CPUC establish a robust open-access fiber regime as a means to signal to private investors who are already financing multi-decade international fiber efforts to invest in California. Several international financial entities adopting long-term strategies are directing money towards fiber projects in the EU<sup>14</sup> that came about from intentional regulatory decisions by the European Commission to embrace open-access fiber as an infrastructure policy. Demand for high-speed fiber is only increasing as new applications and services launch, requiring ever-increasing amounts of capacity. COVID-19 has only accelerated this trend, allowing for an opportunity to capture that demand with a fiber network and translate that into revenue to sustain the network.

To the extent the private model reaches its limits to the hardest-to-serve markets, the CPUC must proactively build up the public model. Governments have several key advantages over the private sector and have been here before with water, electricity and the roads. Primarily, public-sector entities are willing to accept breaking even for a deployment as opposed to obtaining a certain profit margin. This allows public-sector-led investments to take on more expensive per-household projects. However, unleashing the public sector to take on these long-term projects requires financing that is appropriately suited for their long-term goals—namely, through the bond market, which is growing increasingly familiar with fiber infrastructure investments.

Lastly, assisting local governments in deploying fiber infrastructure will also require regulatory support to ensure that private incumbents do not intentionally stifle efforts. It is likely that in many instances the local provider will need to interconnect with a large private provider in order to obtain access to the Internet, and the government must ensure that good-faith negotiations occur to prevent withholding or overcharging of price from undermining public sector efforts.

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<sup>14</sup> Infracapital and Macquarie Capital are examples of the type of entities regularly investing in fiber infrastructure in the EU, see *Infracapital and Nokia named preferred bidder for Polish Fibre Broadband Network* (Jun. 15, 2017), available at <https://www.infracapital.co.uk/Controls/Brochure/-/media/Literature/UK/Infracapital/Infracapital-and-Nokia-named-preferred-bidder-for-Polish-fibre-broadband-network.pdf>; see *Macquarie Capital to Acquire Fibre Broadband Network in Move to Create Spain's First Independent Wholesale Bitstream Operator* (Nov. 6, 2019), available at <https://www.macquarie.com/us/en/about/news/2019/maccap-to-acquire-fibre-broadband-network-in-move-to-create-spains-first-independent-wholesale-bitstream-operator.html>.



Respectfully submitted,      Dated: October 14, 2020

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