BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Broadband Infrastructure Deployment and to Support Service Providers in the State of California.	))))	Rulemaking No. 20-09-001

CALIFORNIA EMERGING TECHNOLOGY FUND

COMMENTS ON SB 156 MIDDLE MILE ISSUES

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Pursuant to Rules 6.2 of the Commission's Rules of Practice and Procedure and the schedule set in the Assigned ALJ's Email ruling extending comment deadline, August 20, 2021 ("Scoping Memo"), the California Emerging Technology Fund ("CETF") hereby timely files its Opening Comments on the Senate Bill ("SB") 156 middle-mile issues. A nonprofit organization devoted to closing the Digital Divide, CETF appreciates the ability to provide input on the SB156 middle-mile issues, as they are important to reaching the State's statutory goals for 98% of broadband coverage in all regions.

1. Identifying Existing Middle Mile Infrastructure:

Attachment A provides a list of the state routes proposed for the statewide open access middle mile network, referred to as the "Anchor Build Fiber Highways." These routes may also be viewed on an ArcGIS map, which can be found here: https://www.arcgis.com/home/webmap/viewer.html?webmap=e17e4e1c88b04792ab0a2c50aa1a19a3&extent=- 126.1445,34.5234,-113.5981,41.1113

- **What routes, if any, should be modified, removed from consideration, or revised? Provide an explanation for these suggestions.**

The California Public Utility Commission ("CPUC" or "Commission") process to identify priority State Routes for an open access middle-mile network should start first by comparing the list of candidate routes in Attachment A with the Strategic Broadband Corridors Report prepared by the Regional Consortia and submitBTOPted to the California Broadband Council in November 2018. The Strategic Broadband Corridors were identified through an open consultation process with

Regional Transportation Agencies, coordinated by the California Association of Councils of Governments, under the umbrella of California Forward in cooperation with the California Department of Transportation ("Caltrans"). Importantly, the Broadband Strategic Corridors were identified and prioritized *based on reaching unserved households*, which should remain the primary criterion for State investment in government-owned middle-mile infrastructure. CETF recommends that all middle-mile investments should be driven by a priority focus on reaching last-mile unserved households, especially high-poverty areas and Tribal Lands.

For several Regional Consortia, identification of Broadband Strategic Corridors was based upon their work to prepare Preferred Scenarios to achieve ubiquitous deployment at scale throughout their region, thereby assisting the Commission in meeting the State's statutory goal of achieving at least 98% in all regions by 2022.[1] Although the Regional Consortia used CPUC broadband maps with the previous definition of "unserved" (10 Mbps. download and 1 Mbps. upload), the Preferred Scenarios remain viable because they focused on getting to the hardest-to-reach households, which means that all newly-defined "unserved" households at speeds of 25 Mbps. download and 3 Mbps. upload and all anchor institutions that are passed along the path of deployment. Further, the Preferred Scenarios planned to reach 100% of all unserved households, which is the strategic approach to be assured of achieving at least 98%.

Also, in 2018, Caltrans and the California Transportation Commission ("CTC") adopted updated guidelines for transportation corridor planning that recognize "broadband as a green strategy" to improve mobility and reduce transportation sector impacts on the environment. These transportation guidelines are practical tools in advancing the notion of "Dig One, Dig Smart" policies and practices because they encourage the incorporation of broadband into transportation projects for economies of scale, not just use transportation corridors rights-of-way (ROWs) to build government-owned middle-mile broadband networks. CETF recommends that the CPUC should advocate -- and the California Department of Technology ("CDT") must ensure -- that the Third-Party Administrator ("TPA") engaged to oversee construction of the middle-mile network

[1] This goal is far from being achieved, and it is now September 2021. Proposed bills (such as SB4) to extend collections for the California Advanced Services Fund (CASF) move that deadline far into the future.

actually incorporates the spirit and intent of "Dig Once, Dig Smart" policies and practices. This means that another prioritization of the middle-mile network by the CPUC, CDT, and TPA must come from taking into consideration: (a) all planned transportation projects (including scheduled maintenance resurfacing and overlay projects; and (b) all Caltrans priority corridors for intelligent transportation systems ("ITS") for traffic controls. There also are segments of the State's transportation network for which conduit was installed at the time of construction to facilitate the deployment of broadband, including Highway 99 in Merced County and State Route 198 in King and Tulare Counties. These segments with existing conduit are assets to consider as another factor in prioritizing deployment.

While the government-owned middle-mile network is envisioned to align primarily with the State's surface transportation network (a strategy that CETF has advocated for more than a decade), there are other ROWs and alignments that should be considered, particularly High-Speed Rail Project, State Passenger Train System, State Water Project, Irrigation and Water Districts, and energy utilities.[2] For example, in Imperial County, the Imperial Irrigation District (IID) owns as many vital ROWs as Caltrans. Fortuitously, the Southern Border Broadband Consortium (managed by Imperial Valley Economic Development Corporation) secured from IID a willingness to consider collaboration in conjunction with preparation of the Imperial County Preferred Scenario. Another example of substantial planning with explicit engagement of an investor-owned utility (IOU) was led by Riverside County with the cooperation of all 28 cities.

Finally, there are pending applications before the CPUC that will provide critical middle-mile infrastructure that should be approved, several of which should have been expedited and approved years ago, such as the Northeast Loop for five Counties along State Route 299, State Route 139, and State Route 36, and the Kern Valley Project along State Route 178 and State Route 14. Deployment of broadband infrastructure along Highway 299 from Eureka to Redding to Alturas is obviously critically necessary. Further, it is most regrettable that the Eureka to Redding project

[2] CETF appreciates the focus on whether infrastructure, ROWs or dark fiber owned by Investor-Owned Utilities may be used to assist last mile providers in extending middle-mile facilities to rural, remote, and Tribal areas in another phase of this rulemaking. CETF supports the Commission's efforts to continue to strongly encourage cooperation by IOUs in this important state broadband goal, given IOUs benefit by broadband connections to their consumers in numerous ways.

(known as the Digital 299 project) was not accomplished despite CASF grants.[3] Further, all of the pending projects for the Redwood Coast Region will establish vital middle-mile segments.

It must be underscored that the State investment in a middle-mile government-owned network needs to be approached by the Commission, CDT and TPA with an intensity of focus and sustained, engaged collaboration akin to the Manhattan Project, but with full openness and transparency. It is essential that CDT, TPA, and the Commission work with and through existing structures and ongoing efforts, especially the Regional Consortia and leading Metropolitan Planning Organizations ("MPOs"), such as Southern California Association of Governments ("SCAG") and San Diego Association of Governments ("SANDAG") under joint collaborative umbrella of Southern California Transformation. SANDAG and SCAG are providing trailblazing leadership to close achieve Digital Equity and are working with their Regional Consortia. The State should respect and incorporate their recommendations.

There also are Local Governments that have taken the initiative to accelerate broadband deployment and adoption, such as the City of San Jose, City of Los Angeles, City of Fresno, South Bay Cities Association in the SCAG Region, County of Los Angeles, County of Nevada, County of Tuolumne, and County of Ventura. Other Local Governments will be stepping forward as a result of the historic State investment in broadband. This local leadership should be enthusiastically embraced by the Commission and incorporated into the middle-mile planning. Outside of Southern California, CPUC, CDT, TPA should request and rely upon the Regional Consortia to convene all of the Local Governments in their regions to provide input on priorities for middle-mile deployment, which they did previously in identifying Broadband Strategic Corridors in 2018.

Once the above work has been completed to prioritize essential middle-mile infrastructure to reach all unserved households and Tribal Land, then CDT and the TPA should issue an open, competitive "Request for Partnerships" ("RFP") to determine which existing Internet Service

[3] The Digital 299 route should be considered as a middle mile priority; the route has been negotiated with Caltrans already and the costs are known to the CPUC. CETF also notes that the Redding to Alturas segment is part of the Northeast Loop Project was negotiated by CETF in the Memorandum of Understanding with Frontier Communications during its restructuring proceeding, A.20-05-007.

Providers (ISPs), both private and public, are willing to step up to provide access to existing middle-mile and/or build the missing middle-mile segments to reach last-mile unserved hardest-to-reach households. This approach ensures transparency and fairness in determining which ISPs are willing to help the State achieve ubiquitous broadband deployment while avoiding unnecessary duplication of middle-mile infrastructure. SANDAG and SCAG are jointly developing an RFP that can serve as an example. The MPOs' RFPs will include a Map of Needs and Opportunities with layers of data overlaid on the CPUC Broadband Map, including high-poverty areas, anchor institutions, and public assets, for ISPs to explicitly declare willingness and ability to step up to serve. It is intended that the RFP will be structured such that those ISPs that do not respond to the RFP will have voluntarily and officially "stepped aside" without rights to future challenges to new entrants.

If an incumbent claims that a proposed State Route is served by existing middle-mile, then hard questions should be asked about the availability, pricing, and capacity for last-mile providers. If an existing middle-mile segment lacks available dark fiber, or is priced unreasonably, then it is not viable for last-mile ISPs to use to reach unserved households.

In summary, the past work and existing efforts are foundational to jump-start planning the middle-mile network. There is no need to reinvent wheels. All investments in constructing government-owned middle-mile infrastructure should be prioritized to reach unconnected households, with special attention to high-poverty areas and Tribal Lands. Further, the most cost-effective strategy is to focus on planning deployment to the hardest-to-reach unserved households, including all Tribal Lands, and then connect all other locations such as anchor institutions and small businesses along the path of deployment. Any other approach will sub-optimize State investments and waste funds that otherwise could be used to reach last-mile unserved households.

- **Are there existing middle mile routes that are open access, with sufficient capacity, and at affordable rates on the county highway routes listed in Attachment A?**

All projects built with American Recovery and Reinvestment Act ("ARRA") funds, such as the Digital 395 mostly middle-mile project and by CVIN, LLC (dba Vast), are required to be open access, according to rules set by the funding Broadband Technology Opportunity Program

("BTOP").[4] As such, the State need not build middle-mile in these existing open access middle-mile corridors. CETF attaches as Attachment B the BroadbandUSA Fact Sheet on Nondiscrimination and Interconnection obligations which includes the federal agency's requirement on open access of projects.

In fact, these BTOP projects are good examples that show "if you build it, they will not come—at least not quickly." CETF observes that there remains underutilization of these middle-mile assets. As a result, CETF recommends that there must be focus on last-mile unserved households from the very beginning, in collaboration with all public and private stakeholders, to ensure middle-mile investments will accelerate last-mile deployment and connections for households, businesses, and anchor institutions. Attached as Attachment C is the addendum that CETF proposed to all ISPs for the May 4, 2020, CASF applications, which Frontier did include for the Northeast Loop Phase II project.

CETF has long advocated that all middle-mile construction subsidized by CASF (and/or federal funds) should be open access, which is a condition that should be applied to all pending applications. CETF does not support open access for CASF-subsidized last-mile infrastructure. However, if the pending CASF applications were immediately approved with open access requirements for the middle-mile segments, the State can have an immediate win for expanding middle-mile back-haul capacity throughout California.

- **In the context of these comments, what is sufficient capacity and affordable rates?**

The Commission, CDT and TPA should determine "sufficient capacity" for any given segment of middle-mile infrastructure based on the number of unserved last-mile households and anchor institutions along the path of deployment that will be supported by the middle-mile backhaul. Then, there should be a reasonable "margin of safety" capacity added to each segment for public

[4] The BTOP program was administered by NTIA, a part of the US Department of Commerce. During ARRA, BTOP funded two broadband infrastructure projects in California, most notably the Digital 399 project ($81,148,788) between Carson City, Nevada and Barstow serving the Eastern Sierra, and the Central Valley Next Generation Broadband Infrastructure Project which connected 18 Central Valley counties with a 1,371-mile fiber backbone network (720 miles of newly constructed fiber and 164 miles of leased dark fiber).

safety, future growth, and redundancy purposes. It is in planning for this "margin of safety" that expeditious and cost-effective public-private partnerships can be negotiated with ISPs regarding existing middle-mile infrastructure to avoid unnecessary duplication of middle-mile infrastructure.

The concept of "affordable rates," while a complex matter, should not be overcomplicated. Affordable rates for open access to middle-mile infrastructure should be based on two primary factors: (1) amortization of new capital investment over the life of the infrastructure; and (2) cost of operation and maintenance of the infrastructure over the life of the new infrastructure. The CPUC, CDT, and TPA should calculate an average baseline "affordable rate" (perhaps by region) and make this public knowledge as a "benchmark" for negotiating cost-effective public-private partnerships. It must be a simple, straight-forward value proposition in the public interest.

Of course, the State always can make the open access rates lower by reducing the amount of new capital investment to be amortized, even reducing that figure to "zero" as a matter of public policy. However, the actual embedded full-cost calculation should be made public to fairly evaluate opportunities for public-private partnerships with ISPs.

- **For routes that are identified as being open access, with sufficient capacity, and at affordable rates, how should the Commission verify these claims (e.g., should Communications Division send a data request for service term sheets, rates, approximate dark fiber, lit fiber, and conduit capacity, etc.)?**

The "Request for Partnership" ("RFP") process referenced above is an excellent mechanism to obtain the proprietary information, subject to non-disclosure agreements (NDAs), to verify all ISP claims regarding ability and willingness to reach last-mile unserved households, especially high-poverty areas, and Tribal Lands. The RFP should be structured as a legally-binding "Step Up or Step Aside" invitation, such that those ISPs who do not step up have by definition no challenge opportunities to any government-owned middle-mile deployment. CPUC, CDT, and TPA then only have to verify the information submitted pursuant to the RFP and subject to NDA.

Please note, however, that it is essential that the work described in the CETF response to Question 1 above should be completed as the preparation and foundation for an RFP. The equivalent of the SANDAG-SCAG Maps of Needs and Opportunities should be part of the CPUC-CDT-TPA Request for Partnerships.

Further, it is possible through the RFP process that CPUC-CDT-TPA can determine if an ISP with existing middle-mile infrastructure can and is willing to make excess capacity available to the State in comparison to the baseline-benchmarked costs discussed above for construction of new middle-mile infrastructure, even if the ISP declines in the RFP process to participate in deployment to last-mile unserved households. In this case, the ISP representations can become part of an agreement with bonding for performance standards and hold harmless provisions compelling upgrades if necessary.

- **Are there any other criteria that should be used to verify these claims?**

Responses to the RFP should request documentation and independent verification of claims by credible parties identified by CPUC-CDT-TPA. In addition, assertions about capacity and ability should be backed up by performance bonds and hold harmless provisions in awarding funds and negotiating agreements. The Commission also should perform its usual due diligence in vetting the managerial and financial fitness of any new entrants desiring to provide middle-mile services in the State.

2. Priority Areas

Federal funding must be encumbered and spent in a limited time period. Additionally, unserved and underserved areas of the state are in substantial need of broadband infrastructure investment.

- **Is it reasonable to assume counties with a disproportionately high number of unserved households (e.g., 50% or more unserved at 100 Mbps download) are areas with insufficient middle-mile network access?**

No, this is not a reasonable assumption. As explained earlier, all middle-mile investments need to be driven by hardest-to-reach last-mile unserved households, especially high-poverty areas

and Tribal Lands. The new definition of "unserved" simply masks the need to drive to all the areas that historically have been unserved. The new definition of "unserved" identifies areas to be upgraded along the path of deployment. But, unless the CPUC-CDT-TPA focus on the hardest-to-reach "unserved" households, the middle-mile investments risk becoming "middle miles to nowhere" with slower incremental progress toward reaching the most digitally-disadvantaged. CETF prefers the State deploy infrastructure at scale which will accelerate access to high-speed Internet infrastructure for everyone, especially the most digitally-disadvantaged residents today.

- **What other indicators, if any, should the Commission use to identify priority statewide open-access middle-mile broadband network locations (i.e., built expeditiously, areas with no known middle-mile network access, regions underserved by middle-mile networks, regions without sufficient capacity to meet future middle-mile needs)?**

As previously explained, the overriding criteria for prioritizing State investments in government-owned middle-mile networks are to deploy last-mile infrastructure to the hardest-to-reach unserved households. This approach (along with the RFP process) is the most cost-effective strategy to accelerate deployment and provide adequate bandwidth for all locations (households, small business and anchor institutions) along the path of deployment.

At the end of the day, the metric that counts more than anything else is as follows: How many of the hardest-to-reach households that previously had no access to high-speed Internet service have been connected, and how many households were in high-poverty areas and Tribal Lands? Everything else being referenced as indicators of progress are useful milestones, but they are only "inputs" to "outcomes". Real accountability for results (measurable "outcomes") needs to be built into the middle-mile initiative from the very beginning. If this is done right, then those measurable outcomes become the indicators for prioritization and the program is much more transparent.

However, if for some reason there is a middle-mile segment needed to enhance public safety in a location that isn't being addressed by the above approach, then government-owned middle-mile infrastructure investment for public safety purposes is entirely appropriate and a companion

criterion to reaching last-mile unserved households. This may be necessary in remote areas where there have been recurring disasters such as wildfires or floods, for example.

3. Assessing the Affordability of Middle Mile Infrastructure

A key consideration is determining the cost of various middle mile services. Through identifying the costs of these services in California, as well as across the country and globe the Commission can identify a threshold whereby services can be considered reasonably affordable.

- **What are existing providers paying or charging for middle mile services?**

In addition to CPUC, CDT and TPA doing research for comparisons to the baseline-benchmarked costs in California, this information can be obtained through the RFP process described herein.

However, there a factor that CETF has flagged repeatedly that is likely to drive up the costs of new construction—for both middle-mile and last-mile deployment. That factor is the lack of skilled workers in California to meet the demand for the new construction. Thus, the State needs to join forces with labor leaders, employer organizations, and community-based organizations ("CBOs") to recruit and train digitally-disadvantaged residents to help build the infrastructure that will benefit their families and communities.

Although it should be obvious, it is worth making a differentiation between the cost for open access of middle-mile backhaul infrastructure as discussed herein, and affordable broadband rates charged to low-income households by last mile providers. If the costs of new middle-mile construction are calculated as recommended by CETF, then the cost for last-mile Internet service for low-income households should not be impacted. The existing affordable broadband offers, including the federal Emergency Broadband Benefit ("EBB") Program (and its proposed successor, the Affordable Connectivity Program), should be sufficient. Further, if the CPUC and Federal Communications Commission ("FCC") Lifeline programs can be revamped to be effective in a modern broadband marketplace, then affordability of rates for last-mile low-income households is addressed through direct means, and not considered a factor of middle-mile costs.

- **Are there other factors or sources of information the Commission should consider for determining whether these services are affordable?**

The CPUC should request information from other states, the Federal Communications Commission, Department of Commerce's National Telecommunications and Information Administration ("NTIA"), National Association of Regulatory Utility Commissioners ("NARUC"), and Internet Service Providers, the latter on a confidential basis if the data is nonpublic.

- **Is it reasonable for the costs of these services to change depending on the location where the service is provided (i.e., rural vs urban)?**

Construction and labor costs vary widely in California, which is why the baseline-benchmark process recommended by CETF above suggests doing that analysis by region.

4. Leasing Existing Infrastructure

Indefeasible Rights of Use (IRUs) are long term leases (generally 20 to 30 years) for unrestricted, legal capacity on a communications network for a specified period of time. These contracts generally obligate the purchaser to pay a portion of the operating costs, and the costs of maintaining the infrastructure.

- **If there is existing open access communications infrastructure with sufficient capacity to meet the state's needs, should the state purchase IRUs from that network?**

The RFP process is an effective approach to obtaining this information in addition to gathering information from FCC, NTIA, and ISPs.

- **Is there any value in the state purchasing an IRU from the network if capacity is already available?**

It should be a straight-forward determination of what's in the public interest as to whether or not there is value in purchasing an IRU from a network if capacity is already available. CETF described that approach above. However, the State should not have to be paying for existing ARRA middle-mile projects that already have an open access requirement.

- **If the state relies on IRUs for the development of the statewide network, will the generational investment that this funding provides be diminished when the IRU leases end 20 to 30 years later? Will existing networks run out of spare capacity?**

The answer to this question can be determined by calculating the baseline-benchmarked costs and analyzing the responses to the RFP.

5. **Interconnection: The statewide network will need to connect with other networks in order to deliver services.**

    - **At what points should the statewide network interconnect (e.g., to other networks, servers, etc.)?**

    - **Are additional exchange points necessary or strategic, and if so, where?**

Issues regarding the appropriate network interconnections and exchange points for a government-owned middle-mile network (and for any IRU or pending CASF project) should be determined by starting with the focus to drive to the hardest-to-reach last-mile unserved households, especially high-poverty areas and Tribal Lands. Interconnections and exchange points are all a function of the needs and volume of demand by last-mile users.

As to exchange points, current exchange points are in San Francisco, Silicon Valley, Los Angeles, and Sacramento. The statewide network should interconnect into those major exchange points but could also consider establishing new exchange points that serve the far North section of the State, the Central Valley and San Diego.

6. **Network Route Capacity: The state will need to determine the amount of capacity to build into the network to meet existing and future demand.**

    - **How many strands of fiber should the network deploy for each route?**

    - **Are there other requirements or standards the Commission needs to consider to determine sufficient capacity?**

    - **Should the network also deploy additional conduit within each route for potential future expansion?**

    - **Should these factors change based on the population density and distance from the core network?**

It would be prudent for the statewide network to "future proof" the network by placing extra dark fiber into any new conduits, and to ensure such conduits are large enough to handle future demand in the 20-to-30-year time frame. Extra dark fiber is a low-cost expense. Conduit if purchased in bulk may also be achieved at reasonable cost. The expected amount of traffic should be factored in.

Conclusion

CETF urges the Commission to approach the middle-mile issues by (a) prioritization of middle-mile investments to drive to the hardest-to-reach last-mile unserved households, especially high-poverty areas and Tribal Lands coupled with (b) Request for Partnership process to invite ISPs to "Step Up or Step Aside" as delineated above. This approach accelerates deployment of high-speed Internet for all residents, instead of incremental builds to pockets of newly-defined unserved areas. It also obtains all the data and proprietary information needed to make the most cost-effective investments in middle-mile infrastructure in the public interest.

WHEREFORE, CETF respectfully requests that the Commission consider its comments as to the SB156 middle mile issues.

Respectfully submitted,

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Attachments

A. Regional Consortia Report on Broadband Strategic Corridors
B. BroadbandUSA Fact Sheet BTOP Nondiscrimination and Interconnection Obligations (including Open Access policy)
C. CETF Recommended Section for CASF Applications Regarding Anchor Institutions to Address Distance Learning and Telehealth-Telemedicine in Response to COVID-19