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**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.

R. 20-09-001

**REPLY COMMENTS OF THE CORPORATION FOR EDUCATION NETWORK
INITIATIVES IN CALIFORNIA (CENIC) TO THE ASSIGNED COMMISSIONER'S
RULING**

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I. Introduction

The Corporation for Education Network Initiatives in California (“CENIC”) respectfully submits these reply comments in the California Public Utilities Commission’s (“Commission” or “CPUC”) Assigned Commissioner’s Ruling (“ACR”) issued on August 6, 2021 and as modified by Administrative Law Judge (“ALJ”) Glegola’s August 20, 2021 email ruling. As previously noted, the ACR initiates a public comment process to collect recommendations for the locations for a statewide open-access middle-mile broadband network. CENIC will continue to respond to those opening comments where we believe we can continue to provide useful information to the Commission for consideration.

II. Discussion

A. Prioritization

CENIC is pleased to see and is supportive of the parties that elevated the importance of prioritizing middle-mile builds that last-mile projects can connect to, particularly in unserved, tribal, and high-need communities.¹ These areas face greater obstacles to the deployment of broadband and can benefit from a coordinated approach. As noted by some of the commenters, low population density, environmental or local permitting issues, to name a few, have posed significant challenges to unserved and underserved communities.² Senate Bill 156 (“SB 156”) presents a unique opportunity to address these historical challenges with solutions that can be designed and engineered outside of this rulemaking in order to take advantage of experts who build broadband networks, and their engagement of both public and private sector partners. Nonetheless, this proceeding provides an opportunity for parties to fully inform the record and elevate potential challenges that may have an impact on the process of identifying locales that can be built expeditiously and those that cannot.

B. Middle-Mile Considerations

SB 156 called for the Commission to look at considerations “...that would increase the attractiveness and usefulness of the statewide open-access middle-mile broadband network for commercial internet service providers.”³ If a middle-mile network is built that doesn’t interconnect to internet exchange points (where internet traffic transits to and from the global internet), or otherwise have the ability to send and receive traffic between network sources and

¹ See ATT Opening Comments, p. 1; USTelecom Comments, p. 1-3; CVIN Comments, p. 5; Frontier Comments, p. 2-3; Cox Comments, p. 2; CCTA Comments, p.2; Charter Opening Comments, p. 2; Comcast Comments, p. 3, 13; Public Advisors Office, p. 1; CETF Comments, p. 2; Next Century Cities Comments, p. 8-9; County of Santa Clara Comments, p. 6; Southern California Association of Governments Opening Comments, p. 3-4, 12

² See Race Comments, p. 3; Lumen Comments, p. 1

³ See Government Code Section 11549.52.(f)(1)(B)

destinations, the value of the state-owned middle-mile infrastructure will be significantly diminished. Further, the addition of extra conduit capacity on key routes makes great practical sense by allowing for spare conduit for repair and replacement purposes and is very consistent with the preferred policy strategy of “dig smart, dig once.” In addition, it will negatively impact the utility and common value of the state-owned middle-mile network if service providers prefer to trench and pull their own fiber rather than use the state-owned network. These are other reasons for middle-mile locations to be coordinated with last-mile projects.

We believe the suggestion made by TURN that the Commission should grant staff the ability to set similar capacity parameters for interconnection requirements as done in Rulemaking 20-08-001 is unnecessary.⁴ The middle-mile network is required to be open access and is under the purview of the California Department of Technology (“CDT”). CDT, in collaboration with the third-party administrator, is well positioned to design and determine requirements for interconnection and inter-operability as well as consult with the Commission.

Furthermore, CENIC would generally concur with Southern California Edison that the locations of Tier 2 and Tier 3 internet exchange points are important starting points for designing a network.⁵ Data needs to be able to flow to and from its destination point in the most efficient route possible. If middle-mile Tier 2 and Tier 3 internet exchange points are located longer distances from rural communities, it drives up the cost for middle-mile services. It also results in diminished service quality to last-mile users by not allowing network traffic interconnection between a local source and a local destination to remain local. In addition to building fiber, there are other components and facilities throughout the network that are essential for a network to function successfully. CENIC believes that these kinds of potentially complex design, operational,

⁴ See TURN Opening Comments, p. 3

⁵ See Southern California Edison Comments, p. 4

and inter-operational elements are ultimately best suited for network engineers and operators – and not for a public process despite the fact that public input is critically important in order to bring to light both public and private needs and concerns.

C. Other

In addition to the some of the obstacles CENIC highlighted above that create barriers to the deployment of broadband, we wanted to commend the PAO for also elevating potential challenges in their comments such as: “...unexpected events like supply chain disruptions or extreme weather could easily result in time and cost overruns...”⁶. While CENIC raised the supply chain disruptions in our opening comments, the extreme weather events in California as of late pose others, especially in high fire threat areas of the state.

The California Broadband Cooperative, Inc pointed out in their comments that simply measuring available capacity based on the number of strands understates the capacity of a strand of fiber.⁷ CENIC would concur with this statement and would note that we have been testing the newest versions of Dense Wave Division Multiplexing (DWDM) transport systems, which have shown that they can successfully transmit up to 800Gbps per wave (with a vast spectrum allowing for multiple waves). CENIC currently deploys 400Gbps per wave, where a fiber strand has circa 25Tbps capacity. With optical technologies continually evolving and improving to support increasingly greater bandwidth capacity for transport purposes, the full potential of what a single strand of fiber will be able to carry seems endless. Ultimately, CENIC would encourage the Commission to not spend too much time focusing narrowly on the number of strands to be included on a build, but rather reinforce our earlier comment that networking design, engineering needs,

⁶ See PAO Comments, p. 2

⁷ See California Broadband Cooperative, Inc. Comments, p. 6

and operating standards should be led with respect to what will constitute middle-mile services, including what is necessary for route capacity.⁸

Finally, while deployment is a critical piece of solving the digital divide puzzle, the questions of adoption and affordability for last-mile consumers are two other critical issues that need to be addressed.⁹ Without the well-rounded approach we are recommending here in our comments the benefits of, and the vision for, the Broadband for All program could fall short. We are optimistic that the CPUC is addressing these topics, and that doing so will help to achieve digital equity and access for more Californians.

III. Conclusion

CENIC is grateful to have the opportunity to provide these reply comments in the public comment process for the open-access middle-mile broadband network, and remains deeply committed to achieving broadband digital equity for all Californians.

Respectfully submitted,

/s/ Louis Fox

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⁸ See CENIC Opening Comments, p. 4

⁹ See Lumen Comments, p. 3; The Greenlining Institute Comments, p. 4