

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



FILED
10/01/21
04:59 PM

Order Instituting Rulemaking
Regarding Broadband Infrastructure
Deployment and to Support Service
Providers in the State of California.

Rulemaking 20-09-001

**Comments of the Advanced Communications Law & Policy Institute at
New York Law School to the ALJ's Email Ruling Issued September 9,
2021**

Michael J. Santorelli, Director
Alexander Karras, Senior Fellow
ACLP at New York Law School
185 W. Broadway
New York, NY 10013
Tel: (212) 431-2100
E-mail: ACLP@nyls.edu

October 1, 2021

TABLE OF CONTENTS

1. Introduction	1
2. Overview of Comments.....	1
3. Middle-Mile Network Case Studies	3
3.1 Colorado (EAGLE-Net)	3
3.2 Florida (North Florida Broadband Authority)	5
3.3 Illinois (Illinois Century Network)	6
3.4 Kentucky (KentuckyWired).....	8
3.5 Massachusetts (MassBroadband123)	9
3.6 Michigan (Merit Network).....	11
3.7 Missouri (Sho-Me Technologies)	13
3.8 North Carolina (North Carolina Research and Education Network)	14
3.9 Ohio (Ohio Academic Resources Network).....	16
3.10 Utah (Utah Telecommunications Open Infrastructure Agency)	18
3.11 Virginia (Mid-Atlantic Broadband Communities Corporation)	20
3.12 Washington (Northwest Open Access Network)	22
4. Guiding Principles Regarding California’s Open-Access Middle-Mile Network	24
4.1 Prioritize Initial Deployment to Unserved Areas	24
4.2 Build Out the Network in an Iterative Manner	25
4.3 Determine Whether Some Areas Can be Served Via a PPP with an ISP	27
4.4 Assure Sufficient Flexibility in Network Planning and Deployment	27
4.5 Put Aside Funds Sufficient to Cover Unexpected Challenges.....	28
4.6 Create a Robust Program for Engaging Viable Last-Mile Partners.....	29
5. Conclusion.....	31

**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 20-09-001

**Comments of the Advanced Communications Law & Policy Institute at
New York Law School to the ALJ’s Email Ruling Issued September 9,
2021**

1. INTRODUCTION

In accordance with Rule 6.2 of the California Public Utilities Commission (“Commission”) Rules of Practice and Procedure, the Advanced Communications Law & Policy Institute (“ACLP”) at New York Law School respectfully submits these comments in Rulemaking 20-09-001. The ACLP is a party to the proceeding.

2. OVERVIEW OF COMMENTS

On September 9, 2021, ALJ Glegola issued an email ruling that, among other things, requested comment on the extent to which the “successes or pitfalls” of other states’ middle-mile networks might inform California’s ongoing efforts to design and deploy its own statewide open-access middle-mile system.¹ In response, these comments (1) profile major middle-mile systems in 12 states – Colorado, Florida, Illinois, Kentucky,

¹ *Administrative Law Judge’s Email Ruling (R.20-09-001) Ordering Additional Comments as Part of Middle-Mile Data Collection, CPUC (Sept. 9, 2021) (“ALJ Email Ruling – Sept. 9, 2021”).*

Massachusetts, Michigan, Missouri, North Carolina, Ohio, Utah, Virginia, and Washington – and (2) use those analyses as the basis for identifying guiding principles that the Commission might consider as it develops recommendations regarding the design, deployment, and operation of California’s emerging middle-mile network.²

The Commission is to be commended for seeking to learn from the experiences of other major middle-mile initiatives. Large-scale infrastructure projects of any kind are complicated and expensive endeavors.³ Broadband infrastructure projects are exceedingly more complex given the dynamic nature of the underlying technology and the robustly competitive nature of the marketplace. As discussed below, other state middle-mile networks have struggled for myriad reasons. However, some have sustained themselves for decades, due in large part to an iterative approach to building the network, upgrading it, and expanding its service offerings. These comments highlight the importance of taking a cautious and judicious approach to constructing a sizeable network across parts of the state where such infrastructure does not currently exist. Embracing such a mindset will not preclude the state from meeting the statutory deadlines for encumbering the funds that will be used to build the network. Rather, it will ensure that the funds are invested in the most impactful manner possible.

² These comments supplement previous ACLP submissions in this docket, namely: ACLP Comments (July 2, 2021), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M392/K633/392633612.PDF> (“ACLP Comments – July 2, 2021”); ACLP Reply Comments (Sept. 21, 2021), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M409/K412/409412026.PDF> (“ACLP Middle-Mile Replies – Sept. 21, 2021”).

³ See, e.g., Dustin Gardiner, *California Lawmakers Delayed Approving Billions for High-Speed Rail. Could it Derail the Project?*, Sept. 26, 2021, S.F. Chronicle, <https://www.sfchronicle.com/politics/article/California-lawmakers-delayed-approving-billions-16485930.php>.

To assist in developing such an approach, these comments offer the following guiding principles, which are discussed in more detail in section 4:

- Prioritize initial deployment of the middle-mile network to truly unserved areas;
- Build out the network in an iterative manner;
- Determine whether some areas can be served via a public-private partnership (“PPP”) with an internet service provider (“ISP”);
- Assure sufficient flexibility in network planning and deployment;
- Put aside funds sufficient to cover unexpected challenges; and
- Create a robust program for engaging last-mile partners.

3. MIDDLE-MILE NETWORK CASE STUDIES

This section profiles large-scale middle-mile network projects in Colorado, Florida, Illinois, Kentucky, Massachusetts, Michigan, Missouri, North Carolina, Ohio, Utah, Virginia, and Washington. Each case study includes (1) brief background of the system; (2) a summary of the network’s performance; and (3) takeaways relevant to the present inquiry.

3.1 *Colorado (EAGLE-Net)*

Overview. Funded in large part by a \$100 million federal grant in 2009, EAGLE-Net was positioned as a 1,600-mile statewide middle-mile fiber network that would connect rural and underserved school districts across Colorado and provide connectivity to various anchor institutions.⁴

⁴ EAGLE-Net Project Overview, BTOP, U.S. Dept. of Commerce, <https://www2.ntia.doc.gov/sites/default/files/grantees/cboecs.pdf>.

Performance. As the network was being built, it quickly became clear that, in many places, the infrastructure would be placed near existing middle-mile assets. Rather than “identify[] and adapt[] to these market changes, EAGLE-Net plowed forward,” overbuilding private infrastructure and eventually triggering a federal investigation.⁵ Some attempted to defend EAGLE-Net’s efforts by distinguishing its fiber offerings from those of other middle-mile providers.⁶ In particular, EAGLE-Net’s defenders argued that overbuilding only exists when there are multiple fiber networks in an area that offer the same functionality on the same terms and conditions.⁷ The federal inquiry, however, defined “overbuilding” more broadly, focusing on instances where EAGLE-Net fiber was deployed “in proximity” to other middle-mile fiber.⁸ This supported a finding of inefficient overbuild, which contributed materially to the network’s financial struggles.⁹ Eventually, a private entity was engaged to “take[] over the responsibility of managing Colorado's beleaguered EAGLE-Net.”¹⁰

Takeaway. As noted in a previous ACLP filing in this docket, the failure of EAGLE-Net highlights the importance of comprehensively inventorying all middle-mile network

⁵ Kellen O’Brien, *EAGLE-Net’s Never-Ending Odyssey: Addressing Colorado’s Unique Broadband Infrastructure Challenges*, 12 J. on Telecomm. & High Tech. L 222, 240 (2014), http://www.jthtl.org/content/articles/V12I1/JTHTLV12I1_O%27Brien.PDF.

⁶ See, e.g., *EAGLE-Net in Context: An Analysis of the Processes and Benefits of Middle-Mile Broadband Projects*, CTC Technology & Energy (Nov. 28, 2012), <https://www.ctcnet.us/EAGLE-Net.pdf>.

⁷ *Id.* at p. 8-9.

⁸ See *Letter from Todd J. Zinser, Inspector General, U.S. Department of Commerce, to the Honorable Greg Walden, Chair, Subcommittee on Communications and Technology, House Committee on Energy and Commerce, et al.*, at p. 9, Jan. 23, 2014, <https://www.oig.doc.gov/OIGPublications/OIG-14-011-M.pdf>.

⁹ See generally *id.*

¹⁰ Sean Buckley, *Zayo Takes Over Management of Colorado’s Trouble EAGLE-Net Alliance*, July 20, 2015, Fierce Telecom, <https://www.fiercetelecom.com/telecom/zayo-takes-over-management-colorado-s-troubled-eagle-net-alliance>.

assets in California and adjusting the proposed route for the state’s middle-mile project to avoid overlapping deployment.¹¹ Doing so will avoid wasteful, unnecessary, and inefficient overbuild, and ensure that the focus of the state is on directing resources to areas that need it most.

3.2 Florida (North Florida Broadband Authority)

Overview. In 2009, 14 North Florida county governments and eight municipalities came together to build a “1,200-mile fixed wireless broadband network” that would connect “more than 300 community anchor institutions at speeds of 10 Mbps to 1 Gbps,” all in an effort to “enhance economic development, education, and public services throughout the region.”¹² The North Florida Broadband Authority (“NFBA”) received \$30 million in federal grant funding to begin the project; the remaining \$9 million was to come from members of the consortium.¹³

Performance. Almost immediately, the NFBA project became financially unsustainable, due in large part to project mismanagement.¹⁴ In response, the federal government froze its funding in September 2011 and opened an investigation.¹⁵ Shortly thereafter, the project was described as stable and almost complete.¹⁶ However, by 2013, a

¹¹ *ACLP Middle-Mile Replies – Sept. 21, 2021* at p. 6.

¹² *Project Fact Sheet: North Florida Broadband Authority*, NTIA, U.S. Dept. of Commerce, https://www2.ntia.doc.gov/sites/default/files/grantees/fl_nofloridabbauth_final.pdf.

¹³ *Id.*

¹⁴ See, e.g., *Testimony of the Hon. Lawrence E. Strickling, Assistant Secretary for Communications and Information, NTIA, U.S. Dept. of Commerce, Before the House Subcommittee on Communications and Technology*, at p. 11, Feb. 27, 2013, <https://www.govinfo.gov/content/pkg/CHRG-113hhrg80019/pdf/CHRG-113hhrg80019.pdf#page=28> (“Strickling Testimony”).

¹⁵ *Id.*

¹⁶ *Id.*

private entity was tapped to take over due to a “shortage of customers.”¹⁷ That entity “pulled out within a year after sourcing on the prospects of making a profit.”¹⁸ As a result, the network quickly became defunct – equipment was not maintained, making the system “unreliable” and forcing “some customers [to move] on to other sources for Internet service.”¹⁹

Takeaway. The failure of the NFBA underscores the importance of ensuring that middle-mile infrastructure is being deployed in areas that truly need it. That NFBA partners had other options for middle-mile service indicates that there was overbuild in the area. Moreover, the NFBA failure demonstrates the importance of sensible project management and experience in selecting vendors with whom to work on the project. Finally, not every project is meant to succeed – even after receiving support and technical assistance from the federal government, the NFBA middle-mile network still failed.²⁰

3.3 Illinois (Illinois Century Network)

Overview. The Illinois Century Network (“ICN”) is a state-wide middle-mile network that was originally designed and built for educational and research purposes, not for supporting last-mile connections. It was launched in 1999 and has become the largest state educational network in the country.²¹

¹⁷ Anthony Clark, *Rural Counties Struggle Getting ‘Last-Mile’ of Fast Internet*, Nov. 28, 2015, Gainesville Sun, <https://www.gainesville.com/article/LK/20151128/News/604137522/GS>.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Strickling Testimony* at p. 11.

²¹ ICN, About, <https://www2.illinois.gov/icn/about/network/Pages/default.aspx> (“ICN About”).

Performance. The ICN currently provides internet service to over 6,000 anchor institutions across the state.²² It also offers “fiber and bandwidth services to commercial [ISPs],” a service it began offering in 2013.²³ That expansion into a new line of business occurred 14 years after launch, meaning that it took over a decade for ICN to (1) fully build out its network, (2) staff it and figure out how to maintain it consistently, and (3) connect its core target audience (anchor institutions) before it determined it was ready to support additional uses, like wholesale access.

This business model expansion was facilitated by \$96 million in upgrades to the network – \$62 million came via the 2009 federal stimulus act, and much of the remaining investment came from the state.²⁴ In 2019, the state invested another \$20 million in the network.²⁵ More recently, the ICN has pursued further upgrades to the underlying technology of the network.²⁶

Takeaway. The ICN appears to be succeeding for several reasons. First, the ICN has taken an iterative approach to building out, maintaining, and expanding its network, doing so only when funding was available and sufficient to cover costs. Moreover, it did not seek to overbuild existing infrastructure, which allowed it to avoid the struggles faced by EAGLE-Net. Second, it has focused primarily on serving anchor and educational

²² *Id.*

²³ *Id.*

²⁴ *Request for Proposals on the ICN, Partnership for a Connected Illinois* (2013), http://www.broadbandillinois.org/uploads/cms/documents/icn_rfp.final.pdf.

²⁵ Illinois Dept. of Commerce & Economic Opportunity, *Illinois Century Network*, <https://www2.illinois.gov/dceo/ConnectIllinois/Pages/ICN.aspx>.

²⁶ *ICN About*.

institutions across the state and only expanded that focus once its primary customer base was being served. Third, the ICN has consistently reinvested in its network. Fiber requires maintenance just like every of type of broadband technology. In short, properly operating, maintaining, and upgrading a vast middle-mile fiber network requires considerable resources that must stay “on the books” for years to come if the network is to be kept up-to-date.

3.4 *Kentucky (KentuckyWired)*

Overview. KentuckyWired is a 3,000+-mile open-access middle-mile network built by the state in partnership with investment bank Macquarie Capital.²⁷ Its goal is to connect “government offices, universities, community colleges, state police posts, state parks, and other government institutions,” along with ISPs in an effort to “bring faster, more reliable internet to every corner of the Commonwealth.”²⁸ The initial estimated buildout cost of this project was \$324 million.²⁹ However, a 2018 audit estimated that the total 30-year cost could approach \$1.5 billion.³⁰

Performance. After years of delays and costly budget overruns, Kentucky’s long-troubled middle-mile network, KentuckyWired, is inching towards completion.³¹ However,

²⁷ KentuckyWired, Home, <https://kentuckywired.ky.gov/Pages/index.aspx>.

²⁸ *Id.*

²⁹ See, e.g., Tom Latek, *KentuckyWired Project Being Put Under State Microscope*, April 30, 2018, Kentucky Today, <https://www.kentuckytoday.com/stories/kentucky-wired-project-being-put-under-state-microscope.13091>.

³⁰ See, e.g., Jack Brammer & Bill Estep, *Audit Finds Faults with KentuckyWired Internet Project*, Sept. 28, 2018, Lexington Herald-Leader, <https://www.govtech.com/budget-finance/audit-finds-fault-with-kentuckywired-internet-project.html>.

³¹ For an overview of these troubles, see Alfred Miller, *Kentucky’s \$1.5 Billion Information Highway to Nowhere*, May 8, 2019, Louisville Courier-Journal, <https://www.propublica.org/article/matt-bevin-kentucky-information-highway-high-speed-internet> (“Highway to Nowhere”).

it has yet to forge many, if any, meaningful partnerships with ISPs to deploy last-mile networks in unserved and underserved parts of the state.³² As a result, numerous households that were promised last-mile broadband access enabled by KentuckyWired remain unconnected and without an on-ramp to the internet.³³

Takeaway. The ongoing struggles of KentuckyWired should be studied by California so that it avoids encountering the kinds of debilitating problems that have bedeviled the middle-mile effort in Kentucky. Foremost among these is the importance of focusing almost exclusively on truly unserved areas first. Although Kentucky prioritized unserved and underserved areas, it also continued to build out its middle-mile infrastructure statewide. A more targeted strategy that involved the piecemeal deployment of middle-mile infrastructure in truly unserved areas, coupled with outreach to potential partner ISPs to ensure that the network would be used, might have yielded more impactful outcomes in Kentucky. Instead, the state and its partners forged ahead in building out the entire network, which resulted in ballooning costs, delays, and numerous audits and state legislative oversight. A more flexible, iterative, and collaborative approach would likely have produced more connectivity opportunities for rural residents.

3.5 Massachusetts (MassBroadband123)

Overview. The MassBroadband123 middle-mile network was built to connect anchor institutions and bolster last-mile rural broadband connectivity. It currently “consists of

³² See, e.g., Alfred Miller, *KentuckyWired Promised Broadband and High-Tech Jobs. Will it Ever Deliver?*, Jan. 15, 2020, Louisville Courier-Journal, <https://www.courier-journal.com/story/news/politics/2020/01/15/kentuckywired-projects-unclear-future-leaves-state-reeling/4307356002/>.

³³ *Id.*

approximately 1,200 miles of fiber, connecting 123 communities in western and north central Massachusetts.”³⁴ It was built at a cost of about \$90 million, half of which was funded by the state and the other half via a federal stimulus grant.³⁵

Performance. The original vision for the MassBroadband123 network was to serve as a means of facilitating last-mile deployment by municipalities and other ISPs in unserved and underserved parts of the state. That effort quickly struggled due to, among other things, operational and sustainability concerns of some of the city-led broadband efforts.³⁶ Now, the state primarily focuses its resources on supporting last-mile deployment by private ISPs, either on their own or in partnership with municipalities.³⁷

Takeaway. The evolution of the MassBroadband123 middle-mile project highlights several key issues relevant to the present inquiry. First, building a middle-mile network in the hope that last-mile service will be provided by municipalities can lead to disappointment. Some municipalities have leveraged the MassBroadband123 network to deliver last-mile broadband service, but it appears the network has fallen short of its initial goals vis-à-vis municipal broadband. Fortunately, the state has shifted course and focused

³⁴ Massachusetts Broadband Institute, Middle Mile Network, <https://broadband.masstech.org/middle-mile-network>.

³⁵ *Project Fact Sheet: MassBroadband 123*, NTIA, U.S. Dept. of Commerce, https://www2.ntia.doc.gov/sites/default/files/grantees/MA_MassBroadband123.pdf.

³⁶ See, e.g., Lisa Gonzalez, *Shoot-Out Over the WiredWest: MBI Pulls Funding in Massachusetts Saga*, Jan. 27, 2016, Community Networks, <https://muninetworks.org/content/shoot-out-over-wiredwest-mbi-pulls-funding-massachusetts-saga>.

³⁷ See, e.g., Diane Brancaccio, *MBI Changes Broadband Course*, May 10, 2016, Greenfield Recorder, <https://www.recorder.com/MBI-changes-broadband-course-2046546>. See also MBI, Flexible Grant Program, <https://broadband.masstech.org/last-mile-programs/flexible-grant-program> (“Flexible Grant Program”). The state’s middle-mile network still serves as a means of facilitating deployment by municipal ISPs, but such uses appear to be limited.

on working directly with private providers to facilitate network expansion into unserved areas.

Second, that service providers are bringing broadband to areas near the MassBroadband¹²³ network suggests that this middle-mile infrastructure might be redundant in some places. These last-mile efforts have been fueled in large part by direct assistance from the state in the form of grants aimed at making network extension by private entities more economic.³⁸ This further underscores the ability of public-private partnerships to serve as a viable solution in some unserved and underserved areas. The potential for such PPPs and the role they might play in connecting some unserved areas should inform the final route for the California middle-mile network.

3.6 Michigan (Merit Network)

Overview. The Merit Network is a nonprofit membership organization that operates a fiber network for the primary benefit of the state's public universities.³⁹ It also offers an array of services to members, many of whom pay a fee to belong. Merit was launched in 1966 and has played many roles in furthering the evolution of the internet from a research network to today's commercial internet.⁴⁰

Performance. A significant expansion of the network began in 2010 after Merit received \$128 million in federal stimulus funding, allowing it to grow the network by 59%.⁴¹

³⁸ See, e.g., *Flexible Grant Program*.

³⁹ See Merit, About, <https://www.merit.edu/about/>.

⁴⁰ *Id.*

⁴¹ *Merit Extends its Middle-Mile Fiber-Optic Network by 2,300 Miles*, Merit News, <https://www.merit.edu/news/merit-network-extends-its-middle-mile-fiber-optic-network-by-2300-miles/>.

This expansion also increased the number of Merit’s members, the vast majority of which are public institutions. However, that expansion also helped to facilitate last-mile deployment by ISPs in previously unserved and underserved parts of the state.

According to its most recent public filing, Merit’s operating expenses in 2019 totaled about \$30 million, an amount that has remained fairly consistent over the last few years even as the network’s revenue-generating activities have grown considerably: revenues in 2019 totaled \$119 million, compared to \$38.6 million in 2016.⁴²

Takeaway. The Merit Network is expansive, but it has been built out over decades. The foundation for this network – the cabling connecting the state’s major public universities – stems from long-term efforts by universities, the federal government, and other stakeholders to construct what would eventually become the commercial internet. Subsequent expansions were funded primarily by government grants. In short, this network, which appears to be self-sustaining, took decades to arrive at this point. Like other state networks profiled here, an iterative approach to network deployment and to the expansion of services offered helped to assure long-term sustainability. Applying these lessons in the present context, it might be useful to evaluate scenarios where the state does

⁴² Merit Form 990 – 2018, https://pdf.guidestar.org/PDF/Images/2019/382/210/2019-382210903-17278220-9.pdf?_gl=1*1tiy8gn*_ga*OTIwOTUxNDAwLjE2MjQoNjgxMzY.*_ga_oH865XH5JK*MTYyNDQ2ODEzNi4xLjEuMTYyNDQ2ODE2My4w*_ga_5W8PXYYGBX*MTYyNDQ2ODEzNi4xLjEuMTYyNDQ2ODE2My4w&_ga=2.72027475.1901688495.1624468136-920951400.1624468136#page=10; Merit Form 990 – 2016, https://pdf.guidestar.org/PDF/Images/2017/382/210/2017-382210903-of9bca46-9.pdf?_gl=1*ckuvai*_ga*OTIwOTUxNDAwLjE2MjQoNjgxMzY.*_ga_oH865XH5JK*MTYyNDQ2ODEzNi4xLjEuMTYyNDQ2ODEzNi4w*_ga_5W8PXYYGBX*MTYyNDQ2ODEzNi4xLjEuMTYyNDQ2ODEzNi4w&_ga=2.68430161.1901688495.1624468136-920951400.1624468136.

not spend all the funding available for its middle-mile network, focusing instead on using only those funds necessary to build the infrastructure where it is clearly needed.⁴³

3.7 *Missouri (Sho-Me Technologies)*

Overview. Sho-Me Technologies, a subsidiary of Sho-Me Electric Cooperative, operates an 8,000-mile fiber optic network that it uses for, among other things, smart grid services, business broadband connectivity, and leases to ISPs for last-mile broadband service.⁴⁴

Performance. The Sho-Me network has cost a significant amount to fully build out over the last decade. After receiving \$27 million in federal grants to expand its network, Sho-Me was sued by landowners in Missouri “for misuse of electrical easements for commercial purposes.”⁴⁵ It took nearly 7 years and \$24 million to settle this dispute.⁴⁶

Since then, it appears that business has been robust for the co-op’s middle-mile fiber network. In 2020, fiber-related revenues increased, but so, too, did operating expenses.⁴⁷ Net margins – *i.e.*, revenues less expenses – totaled about \$4 million on \$36 million in revenues.⁴⁸ All profits are returned to its parent company, Sho-Me Electric Cooperative.⁴⁹

⁴³ See section 4.2, *infra*, for additional discussion.

⁴⁴ *Annual Report 2020*, at p. 5, Sho-Me Power Electric Cooperative, <https://shomepower.com/media/2097/smp-2020-annual-report-file-web-final-final.pdf#page=5> (“*Sho-Me Annual Report 2020*”).

⁴⁵ Jordan Arnold & Jonathan Sallet, *If We Build It, Will They Come? Lessons from Open-Access Middle-Mile Networks*, at p. 9, Benton Institute for Broadband & Society (Dec. 2020), https://www.benton.org/sites/default/files/OAMM_networks.pdf#page=9.

⁴⁶ *Id.*

⁴⁷ See generally *Sho-Me Annual Report 2020*.

⁴⁸ *Id.*

⁴⁹ See, e.g., *Barfield v. Sho-Me Power Elec. Cooperative*, Case No. 2:11-cv-04321-NKL (W.D. Mo. Aug. 21, 2015), <https://casetext.com/case/barfield-v-cooperative-2>.

Takeaway. Sho-Me’s ability to generate a profit and otherwise keep its middle-mile network afloat likely stems from the fact that it is part of a larger entity – an electric cooperative – that is familiar with addressing the myriad financial, business, and technical issues that can impact its bottom line. This makes it more flexible and adaptable than a government-run system, which might not be able to respond as well to ever-rising operating expenses, among other issues. Being able to account for and address consistently increasing operating expenses over the life of a broadband network is critical and should be reflected in any new broadband endeavor’s business plan.

3.8 North Carolina (North Carolina Research and Education Network)

Overview. The North Carolina Research and Education Network (“NCREN”) stretches across each of the state’s 100 counties and offers fiber access to 100% of North Carolina’s K-20 public education institutions, 100% of the state’s community colleges, and dozens of other “clients,” including electric cooperatives.⁵⁰ MCNC, a nonprofit organization, oversees the network.⁵¹

The origins of NCREN stretch back to 1985, when the state began building out a microwave network to connect major research institutions.⁵² Since then, the network has expanded and innovated on an iterative basis. A significant expansion was fueled by two

⁵⁰ See MCNC, NCERN – Who We Serve, <https://www.mcnc.org/who-we-serve>.

⁵¹ See MCNC, What We Do, <https://www.mcnc.org/what-we-do/connecting-north-carolina>.

⁵² See MCNC, Who We Are – History, <https://www.mcnc.org/who-we-are/history>.

federal stimulus grants totaling over \$100 million, which, together, extended the network some 1,800 miles into mostly rural, unserved parts of the state.⁵³

Performance. The continued expansion and operation of NCREN owes much to contributions from two primary sources: (1) an endowment maintained for the benefit of MCNC, funding for which stems primarily from the proceeds of a sale of a technology company,⁵⁴ and (2) grants from the Golden LEAF Foundation, the funding for which comes from the state's share of a landmark settlement with cigarette manufacturers.⁵⁵ These two prominent sources of funds played a key role in helping MCNC secure its stimulus grants and continue to channel funding on an annual basis in support of NCREN.⁵⁶

Revenues derived from service contracts with users of the network, allocations from the endowment, and grants from Golden LEAF appear to have placed MCNC on relatively stable financial footing. Coupled with forward-looking planning around the need to “refresh” the network every few years, MCNC appears to have developed a unique approach to sustaining itself and the network it oversees.⁵⁷

Takeaway. The apparent success of MCNC's NCREN is directly attributable to several unique factors, foremost among which are predictable funding streams from two

⁵³ See *MCNC – North Carolina Rural Broadband Initiative*, NTIA, U.S. Dept. of Commerce, <https://www2.ntia.doc.gov/grantee/mcnc>.

⁵⁴ *Broadband Technology Opportunities Program Evaluation Study – Case Study Report – MCNC*, at p. 23, NTIA (March 4, 2014), https://www2.ntia.doc.gov/files/mcnc_case_study_report_order_number_diopdi8645.pdf#page=26.

⁵⁵ See, e.g., *Case Study: Golden LEAF Rural Broadband Initiative*, Jan. 16, 2020, MCNC, <https://www.mcnc.org/knowledge-center/case-studies/case-study-golden-leaf-rural-broadband-initiative>.

⁵⁶ *Id.*

⁵⁷ See, e.g., *A Positive Financial Year Contributes to Network Refresh*, Aug. 10, 2017, MCNC, <https://www.mcnc.org/knowledge-center/news/a-positive-financial-year-contributes-to-network-refresh>.

outside sources – the MCNC endowment and the Golden LEAF Foundation. Along with several other factors, this network is not likely replicable elsewhere. In the context of the present inquiry, the success of NCREN demonstrates the importance of creating reliable and predictable funding streams – via revenue-generating activities, government allocations, grants, etc. – to sustain a network over many years.

3.9 Ohio (Ohio Academic Resources Network)

Overview. The Ohio Academic Resources Network (“OARnet”), a 5,500-mile statewide fiber network, “serves Ohio's education, health care, public broadcasting and government communities.”⁵⁸ Specifically, “OARnet directly connects 91 higher education institutions, providing high-speed network services to users. In addition, 18 information technology centers and seven large urban sites serving all of the state’s K-12 districts; 98 local governments; 2,800 state agency, board, and commission sites; 101 health care facilities and outlying clinics; and nine public broadcasting stations are also directly connected to OARnet.”⁵⁹

Performance. Launched in 1987, the original vision for OARnet was as an “Internet backbone...to link together the state’s major research institutions in an effort to ensure that researchers had access to the computing resources they needed.”⁶⁰ Over time, the system

⁵⁸ See OARnet, About, <https://www.oar.net/about>.

⁵⁹ See *LBO Analysis of Executive Budget Proposal – Department of Higher Education*, at p. 38, Ohio Legislative Service Commission (Feb. 2021), <https://www.lsc.ohio.gov/documents/budget/134/MainOperating/redbook/BOR.PDF#page=41> (“LBO Analysis”).

⁶⁰ See OARnet, History, <https://www.oar.net/about/history>.

has expanded significantly, touching almost every corner of the state and delivering a range of services to anchor and government institutions.

Notwithstanding its expanded footprint, OARnet is still driven by its desire to propel research, a core principle evident since its founding. Indeed, “access by non-academic, private, and industrial corporations” is permissible only insofar as the access is used for “specific scientific, educational, and economic development collaborations throughout the state.”⁶¹ OARnet can be used to enable last-mile service, but such appears to be an ancillary focus of the system: OARnet is used by only 15 last-mile providers across the state.⁶²

Beginning in the early 2000s, the state began to shift the focus of OARnet away from its original mission of serving researchers towards one where it would serve as a statewide fiber backbone. Nearly every component of this recent iteration of OARnet benefited from non-recurring stimulus funding in 2009. In addition, the state has continued to invest in OARnet. For example, in the most recent state budget, \$12 million was allocated to leverage OARnet to enhance connectivity at several of the state’s research institutions.⁶³ To cover the costs of its ongoing operations, OARnet is funded largely by the state and revenues received from services it offers. It has an annual budget of about \$20 million.⁶⁴

Takeaway. OARnet is yet another statewide research network that has expanded considerably over the last few decades. While the network has been used in limited

⁶¹ See OARnet, FAQs, <https://www.oar.net/resources/faqs>.

⁶² See OARnet, Last Mile Access, https://www.oar.net/services/integrated_network_services/last_mile_access/

⁶³ LBO Analysis at p. 49.

⁶⁴ See, e.g., Directive 2011-023 Re: Consolidation of Consortia, Ohio Board of Regents, <https://www.oar.net/files/about/images/Directive%202011-023%20Consolidation%20of%20Consortia.pdf>.

instances to enhance last-mile connectivity, its primary focus remains on furthering research and related activities. Such a narrow focus appears to have been key to its success, along with iterative expansion and consistent reinvestment in the network.

3.10 Utah (Utah Telecommunications Open Infrastructure Agency)

Overview. In 2002, 16 cities in Utah, under the aegis of the Utah Telecommunications Open Infrastructure Agency (“UTOPIA”), agreed to jointly build an open-access middle-mile network; 11 of those cities pledged funds in support. Each resident of the member cities was guaranteed access to a fiber connection. Construction of the network began in 2003, with completion projected within 3-4 years.⁶⁵

Performance. Starting in 2006, UTOPIA ran into financial trouble due to tepid demand and rising construction costs. Even sizeable federal grants from RUS (\$66 million) and NTIA (\$16 million) couldn’t stabilize the system. A sister organization, the Utah Infrastructure Agency (UIA), was created to raise additional funds. Between 2011 and 2015, UIA issued \$65 million in bonds for UTOPIA. A state audit in 2012 estimated that it had cost nearly \$500 million to build UTOPIA to that point, a figure that included debt service, grants, and funds to cover its operating deficiencies.⁶⁶

Over the next few years, UTOPIA struggled to continue forward. It explored partnerships with entities like Macquarie Capital, which proposed taking over the project

⁶⁵ Unless otherwise noted, information and data in the UTOPIA case study stems from *Understanding the Debate over Government-Owned Broadband Networks: Context, Lessons Learned, and a Way Forward for Policy Makers*, at p. 75-79, ACLP at New York Law School (June 2014), <http://comms.nyls.edu/ACLP/ACLP-Government-Owned-Broadband-Networks-FINAL-June-2014.pdf>.

⁶⁶ *A Performance Audit of the Utah Telecommunication Open Infrastructure Agency*, Office of the Legislative Auditor General (Aug. 2012), https://le.utah.gov/audit/12_o8rpt.pdf.

in exchange for hefty fees. At that point, UTOPIA was widely considered an unsuccessful attempt at building an expansive open-access middle-mile network.

In response, UTOPIA completely changed its business model. It was still obligated to deploy its fiber network to every resident in its original slate of member cities. However, officials decided to prioritize deployment in areas with the highest potential return on investment, namely businesses: “By focusing on growing business revenue, we can strengthen our financial standing and work towards operational break even...we’re not going to build where it doesn’t make financial sense.”⁶⁷ With regard to residences, UTOPIA began targeting areas for buildout where demand was high and costs were low, leaving many areas in member cities to wait for years for service.⁶⁸ As a result of this new approach to buildout, deployment won’t be completed across its member cities until 2023 or 2024 – almost 17 years later than initially promised and more than two decades after the project launched.⁶⁹

As a result of this dramatic shift in deployment strategy, UTOPIA appears to have finally stabilized its finances.⁷⁰ However, the system continues to carry significant debt – some \$285 million – and additional debt will likely be necessary to continue the buildout.⁷¹

⁶⁷ *When Will UTOPIA be in _____?*, Oct. 18, 2012, UTOPIA Fiber, https://www.utopiafiber.com/2012/10/18/when-will-utopia-be-in-_____/.

⁶⁸ *See, e.g., What’s Going on with UTOPIA?*, March 22, 2016, UTOPIA Fiber, <https://www.utopiafiber.com/2016/03/22/whats-going-on-with-utopia-2/>.

⁶⁹ *See, e.g., Common Misconceptions About UTOPIA Fiber*, Jan. 23, 2020, UTOPIA Fiber, <https://www.utopiafiber.com/2020/01/23/common-misconceptions-about-utopia-fiber/>; *Remaining Footprint Build-Out Timelines*, UTOPIA Fiber, <https://www.utopiafiber.com/buildout-timelines/>.

⁷⁰ *See, e.g., Financial Statements – June 30, 2020*, Utah Infrastructure Agency, <https://www.utopiafiber.com/wp-content/uploads/2021/01/UIA-FY2020-Financials.pdf>.

⁷¹ *Id.* at p. 19.

Such high debt levels led Fitch Ratings to note in January 2021 that, despite robust subscriber growth in 2020, UIA still has a relatively “weak[] financial profile” that, coupled with “high leverage,” supported the firm’s decision to rate the Agency’s credit as BBB-Stable⁷² (a rating of BBB- is on the borderline between “secure” and “vulnerable”).⁷³

Takeaway. The dramatic fall and still-ongoing rise of UTOPIA illustrates the pitfalls of pursuing an overly expansive middle-mile network right out of the gate. That UTOPIA has finally found relative financial success by shifting to a more targeted deployment strategy further underscores the importance of iterative network construction and of bringing service to areas where there is a clear need. This allows the system to find stable financial footing and enables planners to slowly expand the network.

3.11 Virginia (Mid-Atlantic Broadband Communities Corporation)

Overview. The Mid-Atlantic Broadband Communities Corporation (“MBC”) operates “nearly 2,000 miles of open-access fiber optic network, providing wholesale telecommunications transport, dark fiber and colocation services” to entities throughout Southern Virginia.⁷⁴ MBC was launched in 2004 with a specific focus on helping to close the rural digital divide in southern Virginia. The state targeted this area given its “losses in furniture manufacturing, textiles, manufacturing, and tobacco production.”⁷⁵ The state

⁷² Fitch Rates Utah Infrastructure Agency, *UT’s Telecom Revs ‘BBB-’; Outlook Stable*, Jan. 22, 2021, <https://www.fitchratings.com/research/us-public-finance/fitch-rates-utah-infrastructure-agency-ut-telecom-revs-bbb-outlook-stable-22-01-2021>.

⁷³ *Ratings Definitions*, Fitch Ratings (April 2021), <https://www.fitchratings.com/research/fund-asset-managers/rating-definitions-11-06-2020>.

⁷⁴ See MBC, About, <https://mbc-va.com/about-mbc/>.

⁷⁵ See MBC, History, <https://mbc-va.com/history/>.

hoped to leverage more robust broadband connectivity for economic development purposes in a part of the state that might otherwise go unnoticed.

Performance. MBC owes its existence in large part to state and federal grant funding. Some \$12 million in funding from the Virginia Tobacco Commission (“VTC”) and the federal Economic Development Administration (“EDA”) helped get this project off the ground in 2004.⁷⁶ Subsequent grants from the VTC totaling \$24 million helped fuel further expansion.⁷⁷ In 2010, MBC received \$32 million in federal stimulus grants to expand the network to additional anchor institutions.⁷⁸ In March 2021, MBC received \$800,000 from EDA “to begin the engineering, design and permitting of 206 miles of open-access middle-mile fiber routes in Southern and Central Virginia that will increase broadband capacity and boost the region’s ability to withstand future economic disruptions.”⁷⁹

Despite such significant government investment, MBC has operated at a loss for the last several years.⁸⁰ The operating loss has persisted as operating expenses have grown; operating revenue has been largely flat. This reflects a dynamic that prevails across the broadband space: operating expenses will continue to increase year after year regardless of whether the customer base increases. This puts enormous pressure on the parent

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *MBC Form 990 – 2018*, https://pdf.guidestar.org/PDF/Images/2019/270/076/2019-270076588-17028393-9O.pdf?_gl=1*_110xc7u*_ga*OT1wOTUxNDAwLjE2MjQoNjgxMzY.*_ga_oH865XH5JK*MTYyNDU1MTU2OS4oLjEuMTYyNDU1MTU5MC4w*_ga_5W8PXYYGBX*MTYyNDU1MTU2OS4oLjEuMTYyNDU1MTU5MC4w&_ga=2.106037315.1901688495.1624468136-920951400.1624468136.

organization to figure out how to plug these gaps lest the network fail due to financial underperformance.

Takeaway. The MBC network appears to be similar, in many ways, to the middle-mile network being proposed in California. Both seek to enhance broadband connectivity and bolster economic development. However, unlike the emerging system in California, MBC is not quite as expansive. MBC is focused mostly on rural and economically disadvantaged parts of the state; California is seeking to serve large swaths of the state. That MBC has operated at a loss for several years despite significant government funding is relevant to the Commission's present inquiry, particularly as the state contemplates a system that is many times larger and more ambitious than the more targeted effort in Virginia.

3.12 Washington (Northwest Open Access Network)

Overview. The Northwest Open Access Network ("NoaNet") "operates a fiber network totaling more than 3,300 fiber miles throughout Washington State, connecting the local [Public Utility Districts], anchor institutions and other independent communications networks to each other and to the major carrier connection points in Seattle and Spokane. This network touches all of the counties in the state and connects hundreds of communities and businesses, many of whom have never before had access to advanced telecommunication services."⁸¹ It was launched in 2000 by several public utility districts ("PUDs") that wished to bolster broadband connectivity in their service territories.⁸² To do

⁸¹ See NoaNet, Our Story, <https://www.noanet.net/about/our-story/>.

⁸² *Id.*

so, the PUDs were granted authority to provide wholesale services to partners, who would then deploy last-mile offerings to residents, businesses, and other entities. Now, NoaNet is the state’s “leading wholesale broadband provider.”⁸³

Performance. NoaNet started out small and slowly expanded as the PUDs that launched it built it out in an iterative manner. A major expansion that allowed NoaNet to reach much of the state was financed in large part by \$184 million in federal stimulus grants and matching funding in 2009 and 2010.⁸⁴ Several related projects funded by these allocations expanded NoaNet’s fiber by some 1,600 miles.⁸⁵

Despite reaching all parts of the state and helping to bring more people online, NoaNet continues to operate at a loss. Indeed, its losses have grown significantly since 2013, suggesting that NoaNet’s core business has not been able to generate the kind of returns needed to put the system on firm financial footing. Specifically, in 2019, NoaNet’s operating expenses outpaced its revenues by nearly \$6.6 million.⁸⁶ This was down from an operating loss of \$9.3 million in 2017 but exponentially greater than the loss of just \$227,000 in 2013.⁸⁷

⁸³ *Id.*

⁸⁴ See, e.g., *What the NoaNet-led BTOP Project Accomplished in Washington*, Dec. 23, 2020, NoaNet, <https://www.noanet.net/insights/case-studies/what-the-btop-accomplished-in-washington/>.

⁸⁵ *Id.*

⁸⁶ *Report of Independent Auditors and Financial Statements with Supplementary Information – Dec. 31, 2019 and 2018*, at p. 5, NoaNet, <https://portal.sao.wa.gov/ReportSearch/Home/ViewReportFile?arn=1027422&isFinding=false&sp=false#page=8>.

⁸⁷ *Id.* See also *Report of Independent Auditors and Financial Statements with Supplementary Information – Dec. 31, 2015 and 2014*, at p. 5, NoaNet, <https://portal.sao.wa.gov/ReportSearch/Home/ViewReportFile?arn=1018782&isFinding=false&sp=false#page=8>.

Takeaway. Like the MBC system in Virginia, NoaNet has had trouble generating positive cashflow as its middle-mile fiber footprint has grown. In the present context, NoaNet's financial struggles highlight the importance of prudent financial planning and of pursuing an iterative deployment so that new network infrastructure can establish itself and demonstrate that it can self-sustain before new networks are built elsewhere. If the network struggles, then it will be essential to detail the expected costs to the state – and to taxpayers – of propping up the system.

4. GUIDING PRINCIPLES REGARDING CALIFORNIA'S OPEN-ACCESS MIDDLE-MILE NETWORK

The preceding case studies support the following guiding principles that might inform how California's emerging middle-mile network is designed, deployed, and operationalized.

4.1 *Prioritize Initial Deployment to Unserved Areas*

Of the large-scale middle-mile networks profiled above, those that have succeeded over the long-term targeted a specific pool of customers to serve. For many of the networks discussed in the previous section, that pool consisted primarily of anchor institutions. Most of those systems expanded the focus of their network to ancillary offerings and customers only after that initial target audience was served – and satisfied with their service.

Applying this principle in the present context, California's middle-mile network would be best served focusing on truly unserved areas. This is appropriate for several reasons. First, as discussed by the ACLP in prior comments in this proceeding, such a focus squares with the plain language and clear intent of the statute authorizing the Commission

to engage in the instant inquiry.⁸⁸ Second, prioritizing unserved areas is a broadly embraced policy imperative. The rural-urban digital divide has lingered for far too long. Expeditious action is needed to finally plug gaps in availability.

Third, focusing on unserved areas first will ensure that funds are available to build out in these difficult-to-serve areas. Some areas remain unserved because of the high costs associated with deploying infrastructure in geographically remote and/or challenging environments. Available funding and other resources should be focused primarily, if not exclusively, on unserved areas until those areas are served by the forthcoming middle-mile network and by partner last-mile ISPs. Only then should remaining funding and resources be spent elsewhere, a practice that has served many other states well.

4.2 *Build Out the Network in an Iterative Manner*

Another aspect of successful middle-mile deployment is embracing an iterative deployment plan. In the infrastructure context, “iterative” means piecemeal – *i.e.*, building single components of a large system one at a time. Here, “iterative” means focusing on the highest priority areas first – truly unserved areas without any access options – and then moving down the hierarchy as appropriate.

An iterative approach to network deployment and maintenance has helped many of the systems described in the previous section sustain themselves over decades. Those that did not follow an iterative approach – namely KentuckyWired and UTOPIA – encountered numerous challenges and obstacles that delayed deployment, ran up budgets, and

⁸⁸ *ACLP Middle-Mile Replies – Sept. 21, 2021.*

otherwise hampered the ability of the projects to self-sustain. California would thus be well-served implementing an iterative approach to designing, deploying, and maintaining its middle-mile network.

The ACLP recognizes the timeframe associated with expending the funding allocated to the state's middle-mile network.⁸⁹ However, there is no requirement that the entire amount *must* be spent. Indeed, pursuing the iterative, incremental, and cautious approach recommended here – an approach informed by the myriad lessons learned in other states where large-scale middle-mile networks have been deployed – might result in a more modest and less expensive middle-mile network, but one that nevertheless facilitates last-mile service in unserved and underserved areas. Accordingly, it might be prudent to explore scenarios where the state accomplishes its supply-side goals without expending all of the funding allocated to its middle-mile project. If that happens, could leftover funds be “expended” in support of long-term maintenance of the system? Could they be “expended” in support of essential and much-needed demand-side activities (*e.g.*, digital literacy training; device and/or subscription subsidies)?

Ultimately, the state should not feel obligated to spend the entire allocation on middle-mile infrastructure unless its investments square with the clear intent of the statute and are made using the measured approach recommended here. Otherwise, some investments might result in the deployment of infrastructure that is unused or underutilized, an outcome that would not be beneficial to anyone.

⁸⁹ *Assigned Commissioner's Ruling*, at p. 7. R.20-09-001, CPUC (Sept. 23, 2021), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M409/K224/409224306.PDF>.

4.3 *Determine Whether Some Areas Can be Served Via a PPP with an ISP*

In some of the case studies above – notably Florida and Massachusetts – the availability of middle-mile infrastructure did little to bolster last-mile access. Instead, ISPs sought alternative routes to extending their networks into unserved and underserved areas. In Massachusetts, this shift was facilitated by the availability of state funding that was used to forge PPPs with private ISPs to bring service to unserved cities and towns. In Florida, the failed NFBA middle-mile network forced partner ISPs to search out other nearby middle-mile infrastructure partners, suggesting that the NFBA was ultimately redundant and overbuilt.

There might be instances in California where some areas could be served without the state deploying its own middle-mile infrastructure. Existing middle-mile infrastructure owned by a private entity, for example, might be close enough that, with the support of a state grant, extending an existing network into that area might be more efficient – in terms of cost and how quickly it can be built – than building the middle-mile network and then having a partner ISP deploy the last-mile. It might be worthwhile to explore whether such partnerships are possible in certain parts of the state.

4.4 *Assure Sufficient Flexibility in Network Planning and Deployment*

The failures of the NFBA and EAGLE-Net middle-mile networks highlight the importance of flexibility in route planning. In both instances, project managers forged ahead with initial construction plans even though there was evidence that the network would overbuild private infrastructure.

Flexibility in route planning, implementing an iterative approach to deployment, and prioritizing certain areas or consumers first all go together. In California, prioritizing truly unserved areas will give the state time to decide where additional middle-mile infrastructure might be necessary. During the period between initial deployment in priority areas and planning for the next round of construction, new investments and deployments by private entities might render some areas already served or on their way to being served, thereby necessitating a shift in the state's plans. This might very well happen given the array of government-funded broadband projects likely to be launched over the next few years. These include projects enabled by the Rural Digital Opportunities Fund; various tranches and programs stemming from the American Rescue Plan Act; the state's own Advanced Services Fund; and, potentially, a federal infrastructure program. In addition, new and emerging technologies, like 5G and low-earth orbiting satellites, could render some middle- and last-mile deployments unnecessary.

In short, sufficient flexibility should be built into the middle-mile route planning process to avoid wasteful spending on redundant or unnecessary deployments in certain areas.

4.5 *Put Aside Funds Sufficient to Cover Unexpected Challenges*

Some of the middle-mile networks profiled in section 3 encountered unforeseen challenges and delays. Notably, myriad obstacles delayed the construction of many parts of the KentuckyWired network, including costly and time-consuming negotiations over

access to private rights-of-way that were critical to the network's overall route.⁹⁰ As a result, project managers had to request additional funding from the state on several occasions.⁹¹ This contrasts with the more phased approach taken by some of the other networks discussed above, whereby network expansion and the provision of additional service offerings were funded by the state as part of the regular budget process, rather than on an emergency basis, as has been the case with KentuckyWired.

Deploying complex infrastructure in remote and geographically challenging areas is difficult and rife with uncertainty. Accordingly, California should put aside a sizeable amount of funding as a reserve to be tapped in the likely event that middle-mile deployment in certain areas requires additional funding. These funds could also be used to offset higher-than-expected operating expenses and other *sui generis* costs that might arise over the course of the network's life.

4.6 Create a Robust Program for Engaging Viable Last-Mile Partners

A middle-mile network is only successful if it supports last-mile connections. Middle-mile networks in Colorado, Florida, and Kentucky have struggled or failed due, in part, to an inability to attract viable last-mile partner ISPs. To avoid this outcome, California should create a robust program for vetting and engaging last-mile partners. Aspects of such a program might include:⁹²

⁹⁰ See, e.g., Lisa Gonzalez, *KentuckyWired: Partners, Poles, Problems Plague Project*, Oct. 24, 2017, Community Networks, <https://muninetworks.org/content/kentuckywired-partners-poles-problems-plague-project>; *Highway to Nowhere*.

⁹¹ *Highway to Nowhere*.

⁹² These principles might inform how the Commission designs the state's "program using federal moneys to connect unserved and underserved communities by applicable federal deadlines." *Assigned Commissioner's Ruling – Sept. 23, 2021*.

- Initial outreach and consultation with existing ISPs across the state to gauge their interest in potentially leasing access on the state’s middle-mile network. As discussed by the ACLP previously, such preliminary data-gathering can help to ensure that the state avoids building a “bridge to nowhere.”⁹³
- Strict vetting criteria to ensure that a partner ISP has demonstrated experience in providing broadband service to customers and the resources needed to continue providing reliable, secure service over the long-term. Such criteria might be developed in the first instance by the state so that the standards by which ISPs are judged are consistent across the state.
- Review of partnership proposals by an objective, expert third-party. This will ensure that the vetting process is insulated from any biases, political pressures, or other forces that might result in suboptimal outcomes.
- Refraining from attaching too many strings to funds allocated to last-mile partners. The imposition of onerous, unnecessary, or extraneous requirements (*e.g.*, speed requirement; service plan limitations; specific price-points) on grants allocated to last-mile partners might dissuade some ISPs from seeking partnership opportunities with the state and with individual municipalities. If that is the case, then the pool of partner ISPs will be greatly narrowed, leaving the state with fewer experienced firms from which to choose.

⁹³ *ACLP Middle-Mile Replies – Sept. 21, 2021.*

- Create funding and partnership opportunities that are broadly available to ISPs regardless of the technology used to deliver broadband service. Such a technologically neutral approach is critical to ensuring that last-mile service is deployed as quickly and efficiently as possible, and in a manner that is reflective of actual consumer demand and usage trends.⁹⁴

5. CONCLUSION

In these comments, the ACLP has sought to provide the Commission with lessons learned from 12 states that have pursued large-scale middle-mile projects and to use those lessons as the basis for guiding principles that might inform the CPUC's final recommendations. In general, expansive middle-mile networks are complex endeavors that require careful planning, continuous refinement of those plans to reflect changes in the marketplace, a flexible mindset to accommodate and implement necessary changes, and a commitment to partnering with experienced and expert ISPs to assure the delivery of robust last-mile service.

The ACLP commends the Commission for seeking additional comments on various aspects of its nascent middle-mile network. That the Commission wishes to learn from other states' experiences is encouraging and reflects a commitment to developing as robust and impactful a plan as possible for this once-in-a-lifetime project.

Dated: October 1, 2021

⁹⁴ For additional discussion on the importance of technology neutrality and how it reflects evolving consumer demand, see generally *ACLP Comments – July 2, 2021*.

Respectfully submitted,

/s/ Michael J. Santorelli

Michael J. Santorelli

Director

ACLP at New York Law School

Tel: (212) 431-2100

E-Mail: ACLP@nyls.edu

/s/ Alexander Karras

Alexander Karras

Senior Fellow

ACLP at New York Law School

Tel: (212) 431-2100

E-Mail: ACLP@nyls.edu