MUNICIPAL BROADBAND NETWORKS

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I. INTRODUCTION

Nine out of ten Americans describe high-speed internet service as either essential or important.[1] Even before the COVID-19 pandemic, during which internet connections served as a primary means of connecting to a socially-distanced world, internet access was considered critical for individual, social, and economic advancement.[2] More than fifteen years ago, President George W. Bush announced a goal of "universal, affordable access for broadband technology" by 2007.[3] However, as of year-end 2018, while

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[1] Kenneth Olmstead et al., *Americans Have Mixed Views on Policies Encouraging Broadband Adoption*, PEW RES. (Apr. 10, 2017), https://www.pewresearch.org/fact-tank/2017/04/10/americans-have-mixed-views-on-policies-encouraging-broadband-adoption/ [https://perma.cc/AR55-3J2V].

[2] My Say, *How Internet Access Can Boost the Economy and Social Equality*, FORBES (Apr. 25, 2014), https://www.forbes.com/sites/groupthink/2014/04/25/how-internet-access-can-boost-the-economy-and-social-equality/?sh=62c55e332f42 [https://perma.cc/8MDK-U9DN]; *see also To grow a digital economy, build an internet for everyone*, ALL. FOR AN AFFORDABLE INTERNET (Mar. 3, 2020), https://a4ai.org/to-grow-a-digital-economy-build-an-internet-for-everyone/ [https://perma.cc/JVU5-SW7K].

[3] James Gattuso et al, *Broadband by 2007: A Look at the President's Internet Initiative*, HERITAGE FOUND. (Oct. 26, 2004), https://www.heritage.org/government-

94.4 percent of Americans overall had access to 25/3 Mbps broadband, 22.3 percent of rural Americans did not.[4]

One popular solution for this coverage problem has been municipal broadband networks, where local governments construct or operate broadband to expand coverage or break broadband monopolies. The proposals have wide appeal: 70 percent of the public supports building municipal networks if existing options are unaffordable or not strong enough.[5] This article describes the technology, funding, and legal environment of municipal broadband, before reviewing two of the most contentious issues in implementing such networks.

II. MUNICIPAL BROADBAND BACKGROUND

A. The Technology

Broadband networks utilize fiber optics or cables to transmit data through wire networks underground, connecting customers to the internet at much faster speeds than using cable modems or telephone lines. These networks produce faster network connections than phone lines or modems because they maintain a constant connection with the network, as opposed to dial-up systems that require the user to establish a connection to the server each time they turn on their system.[6] Fiber-optic and cable Internet also use materials that are able to carry more bandwidth than traditional phone lines, allowing for faster data transmission.[7] These breakthroughs were critical for the evolution of the internet: the ease of access and use allowed people to use

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regulation/report/broadband-2007-look-the-presidents-internet-initiative [https://perma.cc/BCJ8-JQSJ].

[4] *2020 Broadband Deployment Report*, FED. COMM. COMM'N, 18 (April 24, 2020) https://docs.fcc.gov/public/attachments/FCC-20-50A1.pdf [https://perma.cc/VZ2W-6BVM]. 25/3 Mbps is the standard metric used by the FCC in determining whether an area has sufficient broadband access. *See id*. at 6. Critics allege that this is too low of a bar. *See* Karl Bode, *AT&T Fights Against New Broadband Definitions, Insists 10 Mbps Upstream is Good Enough*, TECHDIRT (Mar. 31, 2021), https://www.techdirt.com/articles/20210330/07290646515/att-fights-against-new-broadband-definitions-insists-10-mbps-upstream-is-good-enough.shtml [https://perma.cc/5YXQ-MV59].

[5] Olmstead et al., *supra* note 1.

[6] *Broadband: Bringing Home the Bits*, NAT'L RES. COUNCIL, 69 (2002), https://www.nap.edu/read/10235/chapter/5#69 [https://perma.cc/A7ZX-AR67].

[7] Tyler Cooper, *DSL vs Cable vs Fiber: Comparing Internet Options*, BROADBANDNOW (Jun. 15, 2020), https://broadbandnow.com/guides/dsl-vs-cable-vs-fiber [https://perma.cc/Z75M-UPGJ].

the internet for more casual tasks like web searches and instant messages, growing the online population.[8]

Broadband has typically suffered from high fixed costs because providers must build the underground cable networks themselves. For instance, a feasibility study for Spring Hill, Kansas (population: 6,976) in 2018 found that constructing a fiber network would cost $4.8 to $5.4 million.[9] This includes not only construction costs, but also bureaucratic barriers such as permitting.[10] However, the technology has also become more efficient in recent years. More advanced fiber optics have allowed for the use of 'microtrenching,' which cuts the costs of expansion by allowing for smaller cable deployments, and therefore, less costly construction.[11] Communities can also offer government buildings or infrastructure for network equipment, independently reducing construction costs by up to eight percent.[12] However, fixed costs are a persistent problem because fiber networks can typically operate only for thirty to forty years before becoming damaged or seriously outdated.[13]

Municipal networks can deploy this technology in a variety of ways. Public ownership entails government construction and operation of the fiber network through existing municipal authorities such as electric utilities or IT offices.[14] Municipalities can also pursue public-private models, where local governments sell access to infrastructure to private services or contract with private companies to provide networks.[15] Finally, communities can enter

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[8] NAT'L RES. COUNCIL, *supra* note 6, at 70.

[9] *Demographics*, CITY OF SPRING HILL, KS, https://springhillks.gov/214/Demographics (last visited Mar. 14, 2021) [https://perma.cc/NQ2G-UBRL]; *Broadband Feasibility Study, Prepared for City of Spring Hill, Kansas*, CTC TECH. & ENERGY, 4 (Feb. 2018), https://www.ctcnet.us/wp-content/uploads/2019/11/Spring-Hill-Broadband-Feasibility-Study-Final-20180201.pdf [https://perma.cc/WHJ5-KKEK].

[10] Joanne Hovis & Andrew Afflerbach, *Facilitating Broadband Construction*, BROADBAND COMMUNITIES MAG., 42 (Jan/Feb 2014), https://www.bbcmag.com/pub/doc/BBC_Jan14_FacilitatingConstruction.pdf [https://perma.cc/3XW5-PNUZ].

[11] Ravi Hichkad, *Technology Strategies for Municipal Fiber Broadband*, BROADBAND COMMUNITIES MAG., 54 (Jan/Feb 2019), https://www.bbcmag.com/pub/doc/bbc-magazine-2019-janfeb-techstrategies.pdf [https://perma.cc/Q8Y9-TB6B].

[12] Hovis & Afflerbach, *supra* note 10, at 41.

[13] Christopher Yoo & Timothy Pfenninger, *Municipal Fiber in the United States: An Empirical Assessment of Financial Performance*, PENN L. CTR. FOR TECH., INNOVATION, AND COMPETITION, 12 (2017), https://www.law.upenn.edu/live/files/6611-report-municipal-fiber-in-the-united-states-an [https://perma.cc/3C3L-6WUM].

[14] Lennard Kruger & Angele Gilroy, *Municipal Broadband: Background and Policy Debate*, CONG. RES. SERV., 1 (April 6, 2016), https://fas.org/sgp/crs/misc/R44080.pdf [https://perma.cc/UU2M-5XVK].

[15] *Id.*

cooperatives, which are non-profit, member-owned organizations that provide network access.[16] As of January 2020, over 560 communities are served by some form of municipal network, including more than 330 with broadband cooperatives.[17]

B. The Funding

Government-supported broadband expansion, either by paying private providers or creating public options, usually receives government funding through three types of mechanisms. First, direct appropriations from state governments, either through special allocations or from general funds, are used to help defray the costs of constructing networks.[18] Second, municipalities can draw on state-run universal service funds (USFs), which collect fees from internet providers to subsidize the expansion of coverage to underserved areas.[19] Third, states sometimes raise money through other unrelated sources of revenue, such as toll road revenue or civil penalties.[20] Sixteen states also use tax incentives or government bonds to finance network expansion.[21] States with funding programs in place experience broadband availability that is 1.2 to 2 percentage points higher than otherwise.[22]

The FCC also consistently wields federal funding to pay for expansions of broadband infrastructure, especially in rural areas. The FCC's Connect America Fund allocated $1.488 billion in 2018 towards rural homes and businesses, and the agency plans on allocating another $16 million through the Rural Digital Opportunity Fund in coming years.[23]

C. The Law

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[16] H. Trostle et al., *Cooperatives Fiberize Rural America: A Trusted Model for The Internet Era*, INST. FOR LOC. SELF-RELIANCE, 2 (Dec. 2019), https://ilsr.org/wp-content/uploads/2019/12/2019-12-Rural-Coop-Policy-Brief-Update.pdf [https://perma.cc/MM88-FJK9].

[17] *Community Network Map*, INST. FOR LOC. SELF-RELIANCE, https://muninetworks.org/communitymap (last visited Mar. 14, 2021) [https://perma.cc/A38M-VEC8].

[18] *How States Support Broadband Projects*, PEW CHARITABLE TRUSTS (July 31, 2019), https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/07/how-states-support-broadband-projects [https://perma.cc/R2EE-XZSL].

[19] *Id*.

[20] *Id*.

[21] *Id*.

[22] Brian Whiteacree & Robert Gallardo, *State broadband policy: Impacts on availability*, 44 TELECOMM. POL'Y 10 (2020) [https://perma.cc/L3VL-QVW4].

[23] FED. COMM. COMM'N, *supra* note 4, at 36-7.

As of 2020, twenty-two states restrict the ability of municipalities to build broadband networks either through outright bans or prohibitive regulations.[24] Ten states ban municipal broadband in areas already served by at least one commercial provider, or where a commercial provider is willing to provide service. [25] Four states require that municipal broadband be established via a referendum, which is often costly and invites attack by private competitors.[26] Six states also ban municipalities from using popular funding mechanisms, such as bonds, to finance the network, often foreclosing a public option entirely.[27]

In 2016, the Federal Court of Appeals for the Sixth Circuit ruled in *Tennessee v. FCC* that the FCC did not have the authority to preempt state laws that impede broadband competition.[28] This means that even a federal government supportive of municipal broadband cannot overcome state government resistance. Thus, state laws remain the primary legal framework for promotion or obstruction of municipal broadband. This translates into impact on a policy level: broadband availability in counties in states with restrictions on municipal or cooperative broadband is 1.8 to 3.1 percentage points lower than in counties without those restrictions.[29]

III. ISSUES IN BROADBAND IMPLEMENTATION

A. Financial Viability

Because they are often built in low-income or rural areas, municipal networks face challenges in achieving financial sustainability. [30] In one analysis of twenty municipal broadband networks in 2017, eleven networks were projected to lose money, five would require a century or more to become financially solvent, and two others had solvency timelines of sixty-one and sixty-five years.[31] Especially when compared with the normal useful lifespan

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[24] Kendra Chamberlain, *Municipal Broadband Is Roadblocked Or Outlawed In 22 States*, BROADBANDNOW (May 13, 2020), https://broadbandnow.com/report/municipal-broadband-roadblocks/ [https://perma.cc/PN25-G5CT].

[25] *Id*.

[26] *Id*.

[27] *Id*.

[28] Tennessee v. FCC, 832 F.3d 597 (6th Cir. 2016) [https://perma.cc/5MYF-Y4E4]; See also Daniel Fisher, *FCC Loses Bid To Preempt Municipal Broadband Laws in Tennessee, N.C.*, FORBES (Aug. 10, 2016), https://www.forbes.com/sites/danielfisher/2016/08/10/fcc-loses-bid-to-preempt-municipal-broadband-laws-in-tennessee-n-c/?sh=4faffb494e7f [https://perma.cc/T2G4-WB8H].

[29] Whiteacree & Gallardo, *supra* note 22, at 10.

[30] *See* Katie McAuliffe, *The false promise of 'municipal broadband' networks*, THE HILL (June 23, 2017), [https://perma.cc/Z7PN-KAYG].

[31] Yoo & Pfenninger, *supra* note 13, at 12.

of a fiber network of thirty to forty years, the investments have seemingly failed.[32]

When networks begin to fail financially, municipalities must face the choice of either continuing to operate the networks or selling the network, often at a loss. After selling its municipal network to Google, Provo, Utah still needed to pay off the $39 million bond used to construct its network, requiring monthly payments over a twelve-year period.[33] Groton, Connecticut borrowed $27.5 million to build its network, incurred $11 million in operating losses, and was only able to eventually sell the network for $550,000, leaving taxpayers liable for $38 million.[34]

Proposed solutions to the financial questions surrounding municipal networks include building broader networks to cover larger populations and eliciting further financial support from state governments.[35]

B. Competition

Municipal broadband is usually proposed or adopted in municipalities where no broadband network exists, or those in which consumers have only one option.

Where no current network exists, broadband can act as a lifeline to opportunity for communities without impeding on any private operation. From 1999 to 2006, when compared to communities with no broadband providers, areas with one to three providers experienced employment growth that was 6.4 percentage points higher.[36] Opponents could contend that introducing a public option may deter private entry into the market because companies will not want to compete with subsidized government plans. But even AT&T CEO Randall Stephenson said that where private companies were not planning to expand, municipal broadband was "a logical place for government to step in and provide a solution."[37]

Meanwhile, the second scenario is more common: seventy million Americans have only one broadband option.[38] This includes twenty-two

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[32] *Id*.

[33] George Ford, *The Impact of Government-Owned Broadband Networks on Private Investment and Consumer Welfare*, ST. GOV'T LEADERSHIP FOUND., 54 (Apr. 2016).

[34] *Id*. at 56.

[35] *Emerging Issues in Expanding Next-Generation Internet Access*, NEXT CENTURY CITIES, 9 (2017), [https://perma.cc/8G89-RDEY].

[36] Jed Kolko, *Does Broadband Boost Local Economic Development*, PUB. POL'Y INST. OF CAL., 22 (Jan. 2010), [https://perma.cc/R9HR-4XBB].

[37] Allan Holmes, *How Big Telecom Smothers City-run Broadband*, CTR. FOR PUB. INTEGRITY (Aug. 28, 2014), [https://perma.cc/3BCQ-CB48].

[38] *Profiles of Monopoly: Big Cable and Telecom*, INST. FOR LOC. SELF-RELIANCE, 39 (Aug. 2020).

million with access only to Comcast, twenty-four million with access only to Charter, and one million with access only to AT&T.[39] Without competition, companies may be able to raise prices, fail to invest in upgraded infrastructure, or otherwise neglect the needs of captive consumers.[40] Theoretically, a public alternative would reduce this monopoly power and drive down prices while improving services. This is especially true given that federal funds often act as subsidies for municipal networks, allowing them to offer lower prices due to a lower need to recoup large construction costs.[41]

Opponents of municipal broadband are quick to argue that broadband functions as a network good, meaning that large market share is sometimes needed to maintain profitability.[42] However, in a study of fourteen communities, in which five had municipal broadband, the presence of a public competitor reduced average costs for consumers by an average of $.06 to $0.52 per Mbps.[43] Another study found that in twenty-three out of twenty-seven communities, community-owned broadband was cheaper over a four-year timeframe.[44] This effect may be even larger insofar as private companies are more likely to use hidden fees such as early contract terminations or data overages.[45]

IV. CONCLUSION

Even as broadband access becomes more essential in the 21st century, this simple technology is still subject to complicated financial and policy restraints. For the foreseeable future, state governments will continue to play a significant role in the landscape of municipal broadband because they both control common funding streams and have legal authority to constrain local governments. While broadband technology may continue to evolve and cheapen, the role of legal restraints is not to be discounted. Moreover, continuing questions about financial sustainability and competition will likely persist in the debate over whether to deploy or encourage such technology.

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[39] *Id*. at 4, 6, 8.
[40] Kruger & Gilroy, *supra* note 14, at 4.
[41] Ford, *supra* note 33, at 8.
[42] *Id*. at 34.
[43] Becky Chao & Claire Park, *The Cost of Connectivity 2020*, NEW AMERICA OPEN TECH. INITIATIVE (July 15, 2020), [https://perma.cc/8G26-VM2Q].
[44] David Talbot et al., *Community-Owned Fiber Networks: Value Leadership: Value Leaders in America*, BERKMAN KLEIN CTR. FOR INTERNET & SOC'Y, 2 (2017), [https://perma.cc/6D6L-M8Q9].
[45] Chao & Park, *supra* note 43.