Appendix C - Overcoming Obstacles to Municipal Broadband Networks
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Abstract

Nineteen million Americans cannot access the Internet from home, and tens of millions more only have slow unreliable access. Meanwhile, nations who once looked at the U.S. as a leader in technological innovation are connecting greater portions of their people to the fastest communications technology on the planet - fiber optics. Unfortunately, less than 20% of Americans currently have home access to fiber optic communications. And the private sector has stopped building new fiber networks because investors don't want to wait the many years it takes to see a return.[1]

Fortunately, local governments have started to fill the gaps by building fiber networks and providing their communities with world-class broadband Internet access. But cable and telecom industry lobbyists have pushed states to enact legal restrictions against municipal broadband provision in order to protect their dominance over local high-speed broadband markets. A major force helping push these municipal broadband restrictions through state legislatures is the American Legislative Exchange Council (ALEC). Under the pretext of promoting "free markets" and "level playing fields" for its corporate constituents, ALEC drafts model bills for its member legislators to introduce in their respective state capitols. Currently, nineteen states have passed ALEC-backed laws restricting municipal broadband provision and more are considering the same.

This paper will discuss the nineteen state laws restricting municipal broadband and analyze their underlying policy rationales. In the process, relevant facts will be presented to challenge the laws' purported justification of "leveling the playing field." The paper concludes with a call for federal preemption of the state laws and a discussion of ways municipalities can circumnavigate them to proceed with limited fiber network deployments.

[1] One notable exception is Google Fiber, which has announced fiber broadband access in three markets to date - Austin, TX; Kansas City; and Provo, UT.

This research is timely based on the FCC's recent announcement of a "Gigabit City Challenge," calling for at least one gigabit-broadband connected community in all fifty states by 2015.[2] The aforementioned municipal broadband restrictions pose a direct threat to this FCC initiative by substantially limiting who can offer the desired services. Another recent event which underscores the timeliness of this research was FCC Chairman Julius Genachowski's statement on February 15, 2013, about state municipal broadband laws. While the Georgia legislature was deliberating becoming the twentieth state to restrict municipal broadband, Genachowski released a statement declaring:

> If a community can't gain access to broadband services that meet its needs, then it should be able to serve its own residents directly. Proposals that would tie the hands of innovative communities that want to build their own high-speed networks will slow progress to our nation's broadband goals and will hurt economic development and job creation in those areas.[3]

In agreement with Genachowski on this topic, this article advocates for federal preemption of state restrictions against municipal broadband and discusses ways for municipalities to circumvent such restrictions in the meantime.

1. Introduction

As more aspects of modern commerce and culture occur on the Internet, national economic growth will depend on maximizing access to advanced broadband communications.[4] While several technologies today offer broadband Internet access (i.e., cable, DSL, fiber-optics, wireless),[5]

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[2] FCC, FCC's Broadband Acceleration Initiative to Foster Gigabit Goal, available at http://goo.gl/5ukpGG

[3] FCC, Statement From FCC Chairman Julius Genachowski on Proposed Municipal Broadband Legislation, available at http://goo.gl/ms2iqi.

[4] Brett Frischmann, Infrastructure 335 (Oxford Press 2012) ("Without doubt, the value of the Internet as commercial infrastructure is immense" citing U.S. data showing the Internet has led to 3.05 million jobs, $175 billion in ISP payments, and $3.7 trillion in e-commerce). See also Johan Wibergh, Increasing Broadband Speed Boosts National GDPs, Ericsson Says (TechJournal, Sept. 27th, 2011), http://www.techjournal.org/2011/09/increasing-broadband-speed-boosts-national-gdps-ericsson-says. (report shows that doubling the broadband speed for an economy increases GDP by 0.3 percent).

[5] The FCC Broadband Speed Guide lists 4Mbps as the minimum speed required to stream HD-quality movies or

fiber-optics ("fiber" for short) offers the greatest potential symmetrical broadband speeds.[6] Furthermore, fiber has been called "future proof" because it is the most capacious communications conduit and impervious to phenomena which limit other conduits.[7]

It should be no surprise then that several countries are prioritizing widespread deployment of fiber-to-the-premises (FTTP) networks.[8] In contrast, U.S. broadband policy has shown little commitment to deploying fiber networks. The result is that the U.S. lags behind much of the developed world in per capita high-speed broadband access.[9] If the U.S. does not want to slip further behind, it must adopt a broadband policy that prioritizes FTTP network deployment to the maximum extent possible.[10]

Unfortunately, nineteen states have enacted restrictions against municipal broadband provision.[11] A major force in pushing these laws is the American Legislative Exchange Council (ALEC). ALEC is an organization which connects state legislators with corporations and their policy consultants to draft model legislation in numerous areas, including telecommunications.[12] Funded by major corporations

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university lectures. See FCC Broadband Speed Guide at http://www.fcc.gov/guides/broadband-speed-guide.

[6] Dale N. Hatfield, The Challenge of Increasing Broadband Capacity, 63 Fed. Comm. L.J. 43, 65-66 (2010) (discussing how the analog capacities of twisted pair copper, coaxial cable, wireless spectrum and fiber optics are on the order of 1MHz, 1-3GHz, 1-3GHz and 1,000-10,000GHz respectively, and further discussing how the various physical phenomena that affect transmission losses on the first three do not affect fiber, giving it the highest actual and theoretical symmetrical - equal speeds downloading and uploading - digital transmission capacity.) It is also worth noting that not all fiber networks are setup for symmetrical up and down speeds. However, it remains true that fiber offers the highest potential symmetrical broadband speeds.

[7] Id at 65-66.

[8] FTTP networks run fiber all the way up to each building served. Other types of fiber networks include fiber-to-the-node (like AT&T's U-Verse) which runs fiber to a central node for each neighborhood which then connects to each building served through pre-existing copper lines.

[9] Cite OECD and/or Berkman paper here. Also see Section II.A. supra

[10] To be sure, other types of networks should be part of the national mix, especially where substantial investment has already been made and high speeds are available. Also, some of the most rural locations might be better served with high speed wireless broadband. But I stress this should only be a solution in the most extreme cases, because wireless broadband should not be viewed generally as a substitute for wireline broadband.

[11] Community Broadband Networks, Community Network Map (see states in red), available at http://goo.gl/JDvC6C

[12] See The Center for Media and Democracy, ALECExposed.org, ALEC FAQs, available at http://goo.gl/ke5Pfp

including AT&T, Comcast and Verizon, along with a variety of conservative "think tanks" and trade groups, ALEC pushes legislation at both the state and federal levels which serves its funders' interests. These bills are often touted as promoting "free markets" and "level playing fields." In reality, they are protectionist and anti-competitive, as I will discuss below.[13]

This paper is organized into five parts. The first four parts are largely descriptive, setting the factual predicates for the final part's normative view of U.S. broadband policy vis-à-vis municipal broadband provision. Part 2 discusses the state of broadband in the U.S. and why so many unserved and underserved municipalities are seeking to build their own fiber networks. Part 3 discusses the qualities that make municipal broadband a unique solution to local broadband market deficiencies. The part concludes with a discussion of common criticisms advanced by municipal broadband opponents along with relevant facts that put their arguments in a broader perspective. Part 4 discusses obstacles faced by municipalities endeavoring to build their own networks, including ALEC and the state laws it has pushed to restrict municipal broadband. Finally, Part 5 presents my normative conclusions about the validity of anti-municipal broadband policies and recommendations for how municipalities can deploy fiber networks despite statutory restrictions.

2. The State of American Broadband

2.A. Progress and Neglect

The FCC's Eighth Broadband Progress Report released in 2012 reveals significant progress over the previous year, but also much room for improvement. First the good news. The number of U.S. residents with no access to wireline broadband access at home dropped from 26 million to 19 million.[14]

[13] See infra Section 4.C and 4.D
[14] See FCC, Eighth Broadband Progress Report para. 58 (2012).

Cable and DSL deployment and speeds have increased considerably.[15] And the U.S. leads the world in 4G LTE wireless broadband adoption.[16] Now the bad news. The adoption rate for high-speed broadband is only 27.6%.[17] And less than 20% of U.S. households have access to fiber.[18] As I will elaborate in the next section, this less-than-20% figure currently represents a ceiling for U.S. fiber deployment.[19]

The Broadband Progress Report also reveals demographics on those who go unserved. Compared to areas with access, unserved areas have lower median household incomes, higher proportions of people living in poverty and lower levels of education.[20] Rural and tribal lands constitute the bulk of these unserved areas. Lower adoption rates also correlate with lower median household incomes and rural and tribal areas.[21]

Another report which helps put America's broadband status in perspective is the FCC's biannual Internet Access Services Report.[22] The most recent report reveals that 54% of U.S. households are located within census tracts where only one fixed wireline provider offers high-speed broadband, while 12% are served by zero providers.[23] Accordingly, by definition, 66% of U.S.

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[15] Quantifying households with access to specific cable and/or DSL products is a difficult and imprecise process because the providers only report "deployment" numbers which might mean that a cable passes by or through a neighborhood but home connections have not been made. For example, Comcast reports its DOCSIS 3.0 product is deployed to 82% of U.S. households (Id. para. 6), but that does not mean all of those households have immediate access to it.

[16] See Note 17 at para. 118.

[17] Id. at para. 97. I chose the 6/1.5 speed tier to represent "high-speed broadband" because it is the lowest tier which meets the FCC's current definition of broadband (4 Mbps downstream, 1 Mbps upstream) without going under. Also see Note 4 supra.

[18] Id. at para. 59.

[19] See Part 2.B infra. See also Peter Svensson, Verizon Winds Down Expensive FiOS Expansion, USA Today (Mar. 26, 2010), available at http://www.usatoday.com/money/industries/telecom/2010-03-26-verizon-fios_N.htm.

[20] See Note 17 at para. 77.

[21] Id. at para. 120.

[22] The archive can be accessed at http://transition.fcc.gov/wcb/iatd/comp.html.

[23] FCC, Internet Access Services: Status as of December 31, 2011, at 9 (choosing the "[a]t least 6 Mbps

households see no competition for high-speed wireline broadband access. What's more, only 30% of U.S. households are in census tracts served by two two high-speed wireline providers.[24] In sum, 96% of U.S. households have little or no choice for high-speed wireline broadband access.

For a global perspective, consider the global broadband reports by the Organization for Economic Co-operation and Development (OECD).[25] According to the latest report, updated through June 2012, the U.S. ranks *fifteenth* in fixed wireline broadband subscriptions per 100 inhabitants.[26] The U.S. ranks *twentieth* in average advertised broadband download speeds, slipping three spots from the prior year.[27] *Thirteenth* is where the U.S. ranks in fiber subscriptions per 100 inhabitants (2.0).[28]

Why does the U.S., after playing the leading role in developing the Internet, now trail much of the developed world in broadband access? The answer is competition, or lack thereof.[29] The world's leading nations in broadband deployment - with the highest adoption rates, fastest speeds and lowest prices - have embraced policies that prioritize competition.[30] South Korea ranks at the top due to a national policy against telecom consolidation and in favor of competition and innovation.[31] Thanks to this policy, South Koreans have multiple choices for broadband providers because independent service

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downstream & 1.5 Mbps upstream" category to represent high-speed access.), available at http://goo.gl/mJIpWM.

[24] Id.

[25] OECD Broadband Portal, http://www.oecd.org/internet/broadbandandtelecom/oecdbroadbandportal.htm

[26] OECD, Fixed and wireless broadband subscriptions per 100 inhabitants (June 2012), available at http://goo.gl/pQOyuZ.

[27] OECD, Average advertised download speeds, by country (Sept. 2011) Updated on 13 July 2012, available at http://www.oecd.org/internet/broadbandandtelecom/oecdbroadbandportal.htm.

[28] See supra note 30.

[29] See generally Susan Crawford, *The Communications Crisis in America*, 5 HARV. L. & POL. REV. 245 (2011). Also see Josh Levy, *Hey America! We're Ranked #16 in Broadband!*, Huffington Post (Apr. 3, 2012), available at http://www.huffingtonpost.com/josh-levy/broadband-rankings-worldwide_b_1400630.html.

[30] Berkman Center for Internet and Society, Next Generation Connectivity: A Review of Broadband Internet Transitions and Policy From Around the World, 82-87 (February 2010), available at http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Berkman_Center_Broadband_Final_Report_15Feb2010.pdf

[31] Id.

companies are permitted by law to utilize the infrastructure owned by cable and telecom incumbents. This model, known as open access, ensures competition at the service level, lowering prices and promoting innovation.[32] Accordingly, the average monthly price for very high-speed broadband access in South Korea is about $40.[33] Thanks to similar policies, residents of Japan, Finland, France and Sweden enjoy similarly affordable high-speed broadband access.[34] The tiny fraction of Americans who even have such an option pay, on average, over three times more.[35]

Some defenders of America's broadband status quo argue that these other nations achieve such impressive broadband statistics because they are much smaller and more densely populated than the United States. But the densest American city, New York, ranks 15th in a study of twenty-two global cities in terms of affordable high-speed access.[36] Tellingly, the American city which ranks highest (tied for 2nd) is San Francisco, thanks to having multiple Internet service providers competing throughout the city with high-speed offerings.[37] Perhaps even more remarkable, the top two American cities with the fastest available broadband speeds are Chattanooga, TN, and Bristol, VA.[38] Both cities feature municipal fiber networks and neither city is dense by any measure. Yet both rank comparably with New York in terms of affordable high-speed broadband access.[39]

2.B. What's Missing? Competition and Fiber.

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[32] Id. Open access, however, is not a silver bullet solution for every network from its inception. For a discussion of open access in the context of municipal networks, see Mitchell, supra Note 70 at 34-40.
[33] Id at 72 (Figure 3.27. Average monthly price for very high speed tier, where "very high speed" is defined as "above 35Mbps" on page 70.) Also see discussion on page 72 for downward trend in U.S. broadband affordability since 2000.
[34] Id.
[35] Id.
[36] The Cost of Connectivity: A comparison of high-speed Internet prices in 22 cities worldwide 5, New America Foundation (July 19, 2012), available at http://oti.newamerica.net/publications/policy/the_cost_of_connectivity.
[37] Id at 6.
[38] Id at 7.
[39] Id at 5.

The primary suppliers of wireline broadband access in America are cable providers and incumbent phone companies.[40] Some argue that wireless is a viable substitute to wireline, but its lower usage caps, smaller devices, and less consistent reliability make it a better compliment than a substitute. [41] The FCC alluded to these factors in explaining why its most recent Broadband Progress Report excluded wireless from broadband deployment calculations.[42] So I will focus the remainder of my discussion and analysis on wireline broadband access, which is dominated in the U.S. by DSL over legacy copper telephone lines, cable modems over cable networks, and to a much lesser extent, fiber optic networks.[43]

Historical trends of consolidation and geographical market allocation within the cable and phone industries have effectively resulted in duopolies, consisting of one cable and one phone provider, controlling most local broadband markets.[44] The most recent example of this trend involves cross-marketing and asset swapping deals between phone and cable providers that further limit competition.[45] In 2011, Verizon Wireless struck deals with cable companies Comcast, Time Warner Cable and Bright House Networks whereby the latter would sell their unused wireless spectrum to Verizon in return for Verizon marketing their cable services (which compete with Verizon's FiOS fiber-to-the-home broadband service in some markets).[46] The deals send a strong signal that Verizon

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[40] Incumbent phone companies are the remaining firms which resulted from the divestiture of AT&T in 1982. After decades of reconsolidation since the divestiture, only two incumbent phone companies remain, AT&T and Verizon.
[41] Wireless network speed and reliability is highly dependent on the distance between a user and the nearest cell tower and the number of other users supported by that tower at any given time.
[42] See Note 18 at Paragraphs 31, 35 and Footnote 175.
[43] Verizon, an incumbent telephone company, is the only national provider of fiber-to-the-home broadband service, FiOS.
[44] Nate Anderson, So Long, Broadband Duopoly? Cable's High-speed Triumph, Ars Technica (January 3, 2011), available at http://arstechnica.com/tech-policy/2011/01/so-long-broadband-duopoly-cables-high-speed-triumph/
[45] http://stopthecap.com/2011/12/07/cable-companies-consumers-may-pay-the-price/
[46] See Phillip Dampier, FiOS Leaves Cities Behind As Verizon Lobbies for Cross-Marketing Deal With Cable Foes, Stop The Cap (Aug. 13, 2012), available at http://goo.gl/VlXBg1

has ceded the wireline broadband market to cable providers after halting FiOS expansion.[47] The result is cable industry domination of the U.S. wireline broadband market because the remaining competition from incumbent phone companies uses inferior DSL technology.[48]

One measure of cable's dominance over America's broadband market is the fact that 88% of new broadband subscribers in 2012 signed up with cable providers.[49] Another indication was disclosed in a 2012 market report by Bernstein Research, a market research firm with expertise in telecommunications.[50] The report, titled "Why We Like Cable... In a Single Chart," showed that cable is the only option for 51-57% of U.S. broadband subscribers desiring download speeds of at least 10 Mbps.[51] For subscribers wanting at least 25 Mbps, cable is the only option for 78-82% of the country.[52] It follows that, under the status quo, as the nation's demand for higher broadband speeds continues to grow, so will cable's dominance of the high-speed wireline market. Given the high degree of consolidation and geographic market allocation within the cable industry, cable's increasing dominance will result in increasing monopoly power.[53] As the only broadband network technology capable of outperforming cable, fiber offers the prospect of introducing competition into broadband markets monopolized by cable providers.

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[47] See Karl Bode, Verizon Again Confirms FiOS Expansion Is Over, DSLReports (Mar. 23, 2012), http://goo.gl/MytmXl. And Karl Bode, AT&T: The U-Verse Build is Over Like FiOS, If You Didn't Get it Already, You Probably Won't, DSLReprots (Feb. 9, 2012), http://goo.gl/agyWTa

[48] Anderson, supra Note 47.

[49] http://goo.gl/nBb097 (2,420,553 out of 2,743,585 new broadband subscribers signed up with cable companies in 2012).

[50] Craig Moffett, ranked the number one U.S. telecommunications analyst seven consecutive years, was a Senior Analyst at Bernstein Research when the report published . See http://goo.gl/fF3wUG

[51] Cite Bernstein Research handout Crawford distributed in class (doesn't appear to be confidential).

[52] Id.

[53] Susan Crawford, The Looming Cable Monopoly, 29 Yale L. & Pol'y Rev. Inter Alia 34 ("The major cable providers in this country do not compete with one another. The operators clustered all cable into regional monopolies during the summer of 1997... pursuing swaps and partnerships that put every market in the United States except four in the hands of a single operator.").

Some argue fiber access should not be a priority because cable already offers high broadband speeds.[54] It is true that DOCSIS 3.0, the latest broadband technology deployed by cable providers, is theoretically capable of speeds up to and beyond 100Mbps.[55] But fiber, in addition to supporting much higher speeds than cable, supports those speeds symmetrically for downloads and uploads. The implication of symmetrical high-speed broadband is that users can upload large data files with the same ease they download them, harnessing the full potential of the Internet's open two-way communications platform. This functionality might not resonate with adults who did not grow up with digital communications. But as current and future generations grow up with cell phones capable of capturing HD video, YouTube, Facebook and increasing digital media literacy, access to symmetrical broadband connections will facilitate seamless two-way consumption and production of digital communications. And as more developed nations prioritize fiber deployment,[56] failure to do so in the U.S. will result in relative disadvantages for Americans with respect to exploiting the Internet's full potential.

Another reason to prioritize nationwide fiber network deployment is to support wireless broadband improvements. Wireless networks rely on wireline infrastructure, called backhaul, to connect cell towers to each other and the Internet. Fiber's unrivaled transmission capacity makes it the ideal backhaul conduit for wireless networks. Consequently, expanding fiber deployment to more areas of the country would allow expansion of high-speed wireless service to more people.

A consequence of cable's domination over wireline broadband access and Verizon's cessation of FiOS expansion is that more than 80% of Americans lack fiber broadband connections.[57] With no

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[54] Klint Finley, You Don't Want Super-High-Speed Internet, Says Time Warner Cable, Wired (February 28, 2013), available at http://www.wired.com/wiredenterprise/2013/02/time-warner-cable.
[55] Hatfield, supra Note 5 at 12.
[56] Berkman Center, supra Note 33 at 229, Section 6.1: Major public investments.
[57] Recall that the Eighth Broadband Progress Report showed less than 20% of Americans have fiber broadband access. See Note 18 supra.

national providers building new FTTH capacity,[58] who will serve the rest?

3. The Case For Municipal Fiber Networks

Frustrated by lack of broadband access options, many local governments across the U.S. have taken matters into their own hands. These municipalities have decided to build their own fiber networks and either offer services directly through a public utility or contract with third-party service providers. These municipal networks are proving to be very beneficial for local communities.[59] Where the networks bring broadband access to an area for the first time, the benefits are obvious.[60] Where the networks are built to compete with existing cable or telephone networks - such networks are called "overbuild" - the increased competition invariably leads to lower prices for all residents, including those who stay with the incumbent network.[61] Sections B through D below discuss arguments in favor of municipal broadband networks. Section E discusses common arguments advanced by opponents.

3.A. Local Davids vs. Absentee Goliaths

Municipal networks are fundamentally different from private networks in several ways. One major difference is that municipalities build networks to serve local needs while private networks are built to generate profits for shareholders. According to one observer, the factors which compel municipalities to build networks include dissatisfaction with current service, spurring economic development, and improving local educational opportunities.[62] Private companies, on the other hand, are free to build wherever circumstances favor profitability and ignore everywhere else (i.e. areas with low

[58] Google recently increased the number of cities it will serve with FTTH from one to three (Kansas City, MO; Austin, TX; Provo, UT), so it could technically be considered a national provider. But I will refrain from classifying it as such until Google Fiber achieves a larger national footprint.

[59] Christopher Mitchell, Breaking the Broadband Monopoly: How Communities Are Building the Networks They Need, The New Rules Project (May, 2010), available at http://goo.gl/jk8z34

[60] Recall that 19 million Americans do not have any broadband access, See Part 2.A supra.

[61] Mitchell, supra Note 62 at 1, 10.

[62] Montgomery Van Wart, Dianne Rahm, and Scott Sanders, "Economic Development and Public Enterprise: The Case of Rural Iowa's Telecommunications Utilities," Economic Development Quarterly, May 2000, p. 139

population densities, struggling local economies or low technological literacy). It is only when a state or federal agency offers universal service subsidies that private providers venture into less profitable areas.[63] It follows that municipalities often build networks where private companies will not, under circumstances which make profitability exceptionally difficult.

Another major difference between municipal and private networks is the greater financial might behind the latter. For one measure, the market capitalizations of AT&T, Verizon, Comcast and Time Warner Cable are $200-billion, $138-billion, $108-billion and $26-billion respectively.[64] Compared to sovereign nations, they would rank 53rd, 61st, 66th and 109th respectively in terms of GDP.[65] These massive amounts of wealth dwarf those available to the average American city.

For a more comparable measure, consider network revenue potential. Network revenues are a product of average-revenue-per-user (ARPU) multiplied by the number of users. The average monthly ARPU based on consumer studies is about $146 for Verizon (FiOS) and about $109 for non Verizon FTTH providers.[66] So even before taking subscriber numbers into account, Verizon has a 34% advantage per subscriber, thanks to its massive scale. To add further perspective, Verizon generates monthly revenue from 5.4 million FiOS Internet subscribers nationwide.[67] In contrast, the largest municipal fiber network - Chattanooga, TN - reaches approximately 170,000 homes and businesses,[68] roughly the same number of new FiOS subscribers added in the fourth quarter of 2012 alone.[69]

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[63] Mitchell, supra Note 62 at 11.
[64] According to Yahoo! Finance as of March 8, 2013.
[65] List of countries by GDP, Wikipedia, available at http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)
[66] Michael Render, RVA Market Research & Consulting, via email, citing “2012 Consumer and Provider Broadband Studies”.
[67] Georg Szalai, Verizon's FiOS TV Subscriber Growth Slows in Fourth Quarter, The Hollywood Reporter (Jan. 22, 2013), available at http://www.hollywoodreporter.com/news/fios-tv-fourth-quarter-subscribers-414237
[68] http://chattanoogagig.com.
[69] See note 70 supra (“The telecom giant signed up 134,000 new pay TV subscribers, down from 194,000 in the year-ago period.”).

Combining a 34% advantage in ARPU with a 3,000% advantage in subscribers,[70] it is not difficult to see the massive economic advantage Verizon has over any municipal network it might compete with. For comparison, AT&T's U-Verse has an ARPU of $170 and eight-million subscribers,[71] while Comcast's ARPU is $149 with 22-million subscribers.[72]

3.B. Reaping Positive Externalities

Perhaps the most critical distinction between municipal and private broadband networks follows from the difference between municipalities and private companies themselves - the former exist for public service, the latter exist for profit. Consequently, each applies a different calculus in deciding how to build and operate a network. To fulfill their public interest mandates, municipalities consider a broad range of success factors including positive externalities like economic development, advancing education, improving health care, and providing public services more efficiently. In contrast, corporations need only consider profit to fulfill their mandates to shareholders.[73] To put this difference in more colloquial terms, municipal broadband networks cater to Main Street while private broadband networks cater to Wall Street. This is not to say that one is necessarily better than the other. It is to say that one is more in tune with local community needs and prosperity than the other.

The main consequence of this public versus private distinction is that private network operators are motivated to maximize the value extracted from their networks through market pricing. As a

[70] Since Verizon is free to cross-subsidize between markets it serves, Verizon's 5.4 million FiOS Internet subscribers can be considered to be attached to a single Verizon network for sake of this comparison.
[71] AT&T 4th Quarter 2012 Highlights, available at http://www.att.com/gen/press-room?pid=23672&cdvn=news&newsarticleid=35937
[72] Comcast Corporation Form 10-K at 50, Filed 02/21/13 for the Period Ending 12/31/12. Comcast only reports video ARPU which is comparable with AT&T U-Verse and Verizon FiOS ARPUs since all represent triple-play packages.
[73] Some free market advocates argue that private firms must also consider good will to remain competitive. While this is true in general, it is less of a factor in highly monopolized markets like broadband. Hence why 4 of the 20 most hated companies in America are broadband providers (Comcast, Cox Communications, Charter Communications, and Time Warner Cable). http://www.businessinsider.com/most-hated-companies-america-2011-6?op=1

network becomes more valuable and generates positive externalities for the community, a private provider will seek to extract as much of that additional value as possible by raising prices, which in turn limits accessibility of the network to some degree. In contrast, a municipality reaps the benefits of a network's positive externalities in a multitude of ways besides direct subscriber revenue, such as through improvements to local schools and education, providing public services more efficiently, and increasing access to health care throughout the community. These additional sources of value allow municipalities to maintain lower prices which in turn maximize accessibility of the network.

Improving educational opportunities is one example of a positive externality. As more educational resources emerge online, communities with ubiquitous high-speed connectivity will benefit from them most. Massive open online courses (MOOCs) like Coursera, edX, Khan Academy, and Udacity are offering courses from elite universities like Brown, Columbia, Duke, Harvard, MIT, Princeton and Stanford for free to anyone with Internet access.[74] These types of resources allow teachers to economize their classroom time by introducing students to new topics through online exercises so they come to class already engaged in the lessons.[75] But students need reliable high-speed broadband access at home to fully benefit from these teaching tools. Schools are also trying to reap cost and engagement advantages from online textbooks, but lack of high-speed broadband access can thwart these efforts as well.[76] According to a Pew Internet research study released in February 2013: "Teachers of the lowest income students are more than twice as likely as teachers of the highest income

[74] Laura Pappano, The Year of MOOC, New York Times (November 2, 2012), available at http://goo.gl/DzsYXa. edX is a joint venture between Harvard and Massachusetts Institute of Technology.
[75] Ron Barnett, Rise of Internet Learning Creates Digital Divide, USA Today (2/18/2013), available at http://m.usatoday.com/article/news/1925189?preferredArticleViewMode=single
[76] Margaret Kavanagh, Orange County Schools Work to Bridge Digital Divide, Orlando's Channel 13 News (2/13/2013), available at http://goo.gl/ElHDyf, See also T. Rees Shapiro, Fairfax schools to buy paper textbooks after pixel predicament, Washington Post (12/11/2012), available at http://goo.gl/MmSLrJ

students (56% v. 21%) to say that students' lack of access to digital technologies is a "major challenge" to incorporating more digital tools into their teaching."[77] One example of this challenge was expressed by an information technology advisor in Montgomery County, Maryland, in a memo advocating for a municipal fiber network: "Over 100 of our elementary schools have insufficient bandwidth to open recommended reading programs that provide individualized pacing and visual and audio interaction to better address individual learning styles and support students' mastery of the curriculum content."[78]

Another form of positive externality is local economic development from investment in new start up businesses or growing existing firms. Recruiting and training employees, marketing, logistics and back office functions all increasingly rely on affordable high-speed broadband access. In addition, there are increasingly more companies dealing exclusively in digital goods and services which can only exist where reliable high-speed broadband is available. For example, a company called Tapes Again which specializes in digital media reproduction and packaging moved from Boulder, Colorado, to Lafayette, Louisiana, to take advantage of Lafayette's fiber network (LUS Fiber) and its super fast symmetrical broadband speeds.[79] LUS Fiber also supports a cutting edge computing and visualization center, Louisiana Immersive Technologies Enterprise (LITE), which is used to create advanced simulations for clients from all sectors of the economy including the U.S. military.[80] A similar facility is taking advantage of the fiber network built by Chattanooga, Tennessee.[81]

3.C. Localism and Economic Benefits

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[77] Pew Research Center, How Teachers Are Using Technology at Home and in Their Classrooms (2013), available at http://www.pewinternet.org/Reports/2013/Teachers-and-technology.aspx
[78] http://www6.montgomerycountymd.gov/content/council/pdf/agenda/cm/2009/090921/20090921_EDMFP1.pdf
[79] Lisa Gonzalez, Publicly Owned LUS Fiber Network Attracts Another Business to Lafayette, Community Broadband Networks (2/28/2013), available at http://goo.gl/DiXtqq
[80] http://lafchamber.org/BusinessResources/Lafayette-Business-Industries/Technology
[81] http://www.utc.edu/simcenterignite/

The municipal broadband story is but one chapter in the larger story of localism and community self-determination. Localism is an economic and political philosophy that emphasizes localized power to provide for uniquely local needs and interests, as opposed to centralizing such power elsewhere. The premise is that local stakeholders sharing common local interests can solve local problems more efficiently. Localism also generates a direct economic benefit known as the local multiplier effect - a dollar spent at a locally owned business generates three times as much direct local economic activity as that same dollar would generate if spent with a competing national corporation.[82] Municipal networks trigger this multiplier effect in various ways - by hiring local construction and maintenance contractors, employing local residents, and attracting local investment capital to new and expanding businesses.[83]

Municipal fiber networks can also generate substantial cost savings for residents and local governments. After Bristol, Virginia, built a community-owned fiber network, 120 businesses reported an average of $2,951 in savings per year.[84] In Reedsburg, Wisconsin, 33 businesses reported $20,682 in average annual savings.[85] Residents of Glasgow, Kentucky, saved more than $32-million over the first seven years after their community built a fiber network.[86] And the local government of Montgomery County, Maryland, after building a fiber network to break its reliance on leasing third-party communication lines, dropped its cost from $3,652 per Mbps per year to $71.11 per Mbps per year.[87] In fact, the number of municipal networks that are saving communities large amounts of money, money that stays in the community, is too long to discuss here in detail as it continues to grow at a steady pace.

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[82] American Independent Business Alliance (AMIBA), See http://www.amiba.net/resources/multiplier-effect. Also see generally for the benefits of local business investment, Amy Cortese, Locavesting: The Revolution In Local Investing and How To Profit From It (Wiley 2011).
[83] Mitchell, supra Note 70 at 5.
[84] Id at 10.
[85] Id at 14.
[86] http://muninetworks.org/content/glasgow-network-saves-millions-citizens
[87] Id.

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3.D. Embracing Public Interest Policies - Open Access and Net Neutrality

Municipal ownership of broadband infrastructure allows for network management practices which prioritize public interest policies such as open access and net neutrality. These procompetitive practices serve the interests of municipalities concerned with maximizing accessibility and value of their networks.

Open access refers to a network management practice that allows independent service providers to access the network infrastructure under regulated non-discriminatory terms.[89] The premise is to not allow a monopoly over infrastructure extend into a monopoly over services relying on that infrastructure. Separating the content that flows through the network (bits of data) from the physical network itself lowers the barriers to entry for Internet service providers (ISPs), resulting in more service providers competing for subscribers. Such competition, in turn, leads to downward pressure on prices and upward pressure on service quality and innovation. While private companies fight to prevent open access obligations on their networks,[90] municipalities can use it to their advantage.[91]

Network neutrality is a network traffic management practice that embraces the Internet's original end-to-end design which requires that all traffic be treated equally. Without a network neutrality policy in place, Internet service providers (ISPs) are free to arbitrarily discriminate between Internet traffic sources. For example, an ISP can decide to give all traffic from a premium paying customer top

[88] To name a few more: Santa Monica, CA; Washington, DC; Montgomery County, MD; Scott County, MN; Oklahoma City, OK; Ponca City, OK; Kutztown, PA; Corpus Christi, TX; Powell, WY; See generally Community Broadband Networks, Community Network Map at http://muninetworks.org/communitymap.
[89] Open access is not a silver bullet solution for every network, especially not at inception and not for networks encumbered by excessive restrictions such as those discussed in Part 4 infra. But from a public interest perspective, open access is an ideal model which all networks should eventually strive for once circumstances become conducive.
[90] Cite Verizon v. FCC case
[91] Mitchell, supra Note 35.

priority over all other traffic, including that customer's competitors. Such practices undermine the founding principles which fueled the Internet through its amazing growth over the past few decades. However, private broadband providers are pushing to eliminate network neutrality rules because they hinder profit potential. Municipalities, on the other hand, are more inclined to enforce network neutrality to ensure fair access and competition among all users.[92]

3.E. The War Against Municipal Broadband

Municipal broadband has its critics. One thread of criticism selectively calls out examples of failed municipal broadband projects (while ignoring the successes). Other threads of criticism argue that municipalities have unfair advantages over private companies because of their governmental status, and their involvement in "free markets" distorts incentives for private investment. Lastly, another criticism simply claims that broadband markets are already highly competitive and do not need new entrants. But this argument requires a minimalist definition of broadband and fungibility between wireless and wireline, which I disclaimed in Part 2, so I will not address it further. The other three criticisms, however, hold more substance and will be discussed in turn.

3.E.i. Success Rate For Municipal Broadband Is Not Quite 100%

Building a broadband network is an entrepreneurial venture. As such, success is not guaranteed. Municipal broadband critics often seize on this point to make the case that municipal broadband is a bad idea in general.[93] But a search of the literature reveals relatively few examples of failed municipal broadband networks, several of which have ultimately become successful.[94] More importantly, the number of purported failures remains constant while the number of successes continues to grow. From

[92] Municipalities may still be inclined to prioritize certain traffic, but only for network uses with public interest implications such as emergency and healthcare services.
[93] http://www.theamericanconsumer.org/2012/04/19/the-costly-truth-of-municipal-broadband-networks/
[94] http://muninetworks.org/content/successes-and-failures

2001 to 2011, the number of municipal broadband networks grew from 16 networks in nine states to 108 networks in 33 states.[95] At the time of this publication, the number was up to 163.[96] Yet only eleven purported failures were found in the literature, the most recent of which is North Carolina's MI-Connection launched in 2007, which has since seen its financial health improve markedly.[97]

Opponents repeatedly cite debt as a basis for network failure, even during a network's early years when debt naturally follows initial investment. While debt clearly has negative implications, it is a natural condition of capital intensive ventures like building new infrastructure, especially early in the venture's life before revenue streams have fully developed. One observer calculated it takes two to three years for a new customer to pay off the cost of a new fiber connection.[98] This payback period is in addition to the time it takes to pay off the network itself, which can be many more years depending on size and complexity. Furthermore, it can take several years for a network to sign up the target number of subscribers required to meet projected financial goals. In sum, it can take from five to more than ten years for a new fiber network to breakeven. Critics neglect these factors when characterizing municipal broadband networks as failures due to early debt.

The debt-equals-failure argument also fails to account for a number of immediate benefits municipal fiber networks offer local communities. In monopolized markets, the new network spurs price and service competition from the incumbent. The FCC's 2010 National Broadband Plan admitted as much, finding "providers of broadband... generally offer faster speeds when competing with other wireline platforms... for example, available cable speeds are higher in areas in which cable competes

[95] http://www.freerepublic.com/focus/f-bloggers/2871660/posts
[96] http://muninetworks.org/communitymap
[97] MI-Connection (NC); iProvo (Provo, UT); FiberNET (Marietta, GA); Ashland, OR; St. Cloud, FL; LompocNET; Burlington, VT; Groton, CT; Networx (Memphis, TN); Alameda, CA; Monticello, MN, http://goo.gl/0XD4L8
[98] http://muninetworks.org/content/successes-and-failures

with DSL or fiber than in areas where cable is the only option."[99] Local governments and residents also enjoy immediate cost savings from added competition. As previously mentioned in Part 3.C, multiple communities have saved millions of dollars after incumbents lowered prices and local governments lowered costs by breaking their reliance on monopoly providers.

As the number of successful municipal broadband networks continues to grow, so do the number of ways in which these networks benefit local communities. Thanks to a municipal fiber network in Thomasville, Georgia, profits from municipal utility services have grown to the point that the city eliminated property taxes for funding city services.[100] Cities with municipal fiber networks are seeing companies move in from other states to take advantage of the faster speeds at lower prices.[101] Still others are creating villages to feed entrepreneurial activity with advanced infrastructure.[102]

3.E.ii.. The "Free Market" Myth

Some argue that governments have no place entering private markets lest they distort otherwise free enterprise. Because governments have different incentives and resources (i.e. tax revenue, public property rights), their involvement will distort price signals in the market, the argument continues. What this argument fails to account for are the billions of dollars private broadband providers have received, and continue to receive, in government subsidies and federal stimulus funds. According to the most recent FCC Universal Service Fund report, more than $5 billion in federal subsidies went to private broadband providers including AT&T ($1.33B), Verizon ($1.26B), CenturyLink ($1B) and Windstream ($320M).[103] These sums are in addition to millions of dollars in federal broadband stimulus

[99] FCC, National Broadband Plan: Connecting America (2010), available at http://www.broadband.gov/plan/)
[100] Thomasville City Council Votes to Eliminate Fire Tax, WSWG-TV (10/12/12), available at http://goo.gl/7TRbMS
[101] Mitchell, supra Note 4 at 5.
[102] http://www.makervillage.org
[103] http://goo.gl/Mq9Au3

funds which went to private companies. With so much federal money going to private broadband providers, broadband markets are not free to begin with.

3.E.iii. Leveling the Playing Field

Perhaps the criticism raised most often against municipal broadband, and the one which informs the legal restrictions discussed in the next section, is that municipalities enjoy a number of unfair advantages when competing against private firms. Rhetoric calling for a "level playing field" between municipal and private broadband providers is often used.[104] More specifically, opponents of municipal broadband assert that local governments can unfairly cross-subsidize networks with revenues from other municipal utilities (i.e., gas, power, water) and they enjoy unfair tax advantages over private competitors.[105] Furthermore, opponents contend that municipalities should not be able to play the roles of competitor and regulator simultaneously, lest they give themselves unfair competitive advantages.[106] These arguments raise valid issues which deserve thorough consideration.

But first it is worth noting that federal antitrust laws and, to a larger extent, Section 253 of the Telecommunications Act forbid the type of unfair competition that municipal broadband opponents claim as a threat. Section 253(a) reads: "[n]o State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service."[107] Section 253(c) further mandates local governments to manage public rights-of-way and other regulatory authority "on a competitively neutral and nondiscriminatory basis."[108] And while municipalities are immune to money damages in antitrust suits

[104] http://muninetworks.org/content/level-playing-field-0
[105] Kathryn Tongue, Municipal Entry Into the Broadband Cable Market: Recognizing the Inequities Inherent in Allowing Publicly Owned Cable Systems to Compete Directly Against Private Providers, 95 Nw. U. L. Rev. 1099, 1112
[106] Id.
[107] 47 USC 253(a).
[108] 47 USC 253(c).

under the Local Government Antitrust Act of 1984, they are still subject to injunctive antitrust remedies.[109] These sources of legal authority should inform the analysis of whether municipalities in fact wield unfair advantages over private competitors.

3.E.iii.a. Cross-subsidies

Private providers complain that it would be unfair for them to compete with municipalities that cross-subsidize their broadband networks with income from other municipal utilities.[110] There are two different but related threads to this concern. The first is the ability of cities to impose extra or hidden fees on captured customers of one utility, like gas or water, in order to subsidize the costs of providing broadband service.[111] The second concern is that the city, whether it imposes extra fees on other utilities or not, will use revenues from one utility with higher profit margins to fund price reductions for broadband service, which will be unprofitable during early years.[112] This latter concern is often referred to as predatory pricing - pricing below cost to get consumers who would otherwise not buy. Predatory pricing can be employed either alone or in conjunction with extra fees imposed on customers of other municipal utilities.[113]

These arguments ignore several key facts. First of all, private companies like Comcast and Time Warner Cable are free to cross-subsidize on an interstate level and often do. In fact, Comcast's growth from a single Mississippi cable system purchased in 1963 into a $100-billion national cable company is

[109] 15 U.S.C. §§ 34-36.
[110] Cite prelude to ALEC model telecom bill
[111] Tongue, supra Note 108.
[112] Any capital intensive venture will be unprofitable at the start as it earns revenue to pay off the upfront fixed costs along with incremental costs. Broadband networks are particularly difficult to payoff because initial costs are huge compared to the small monthly payments made by subscribers. Accordingly, payback periods are measured in years or even decades.
[113] Tongue, supra Note 108.

due largely to its use of income from earlier networks to subsidize the building of new ones.[114] This practice is a form of cross-subsidization. What's more, these private firms can tap into revenue streams from captured markets where they enjoy full or near monopoly power to subsidize the costs of new networks or to lower prices in markets where they face stronger competition. Another key fact is that the infrastructure used by incumbent phone and cable companies is often years or decades old, meaning its cost has already amortized substantially or completely.[115] Consequently, the costs of providing service for these firms come mostly from relatively inexpensive incremental upgrades and maintenance costs. As a result, these private firms enjoy massive profit margins, on the order of 80-90%, which generate large cash reserves that can be used to cross-subsidize other markets.[116]

Cross-subsidies are criticized more generally as promoting economic inefficiencies by encouraging misalignment of costs and benefits. If revenues from one service are allowed to support another service which would otherwise create economic loss, inefficiencies will be perpetuated to the detriment of optimal market equilibrium. Applying the inefficiency argument to broadband markets, however, requires a fair assessment of all relevant costs and benefits, not only those which easily translate into dollars. As discussed in Section 3.B, there is more to calculating value from a broadband network than subscriber revenues. Positive externalities, or spillovers, from local improvements in educational opportunities, increased entrepreneurial activity, and access to healthcare and public

[114] Susan Crawford, Captive Audience, Chapter 3.
[115] Amortization is the accounting process a company uses to account for the cost of an asset over time in order to more accurately reflect its contribution to revenue. Over time, the company assigns less cost to its fixed assets - infrastructure in this case - which results in greater profit margins for the same service.
[116] Adam Lynn, Cable Companies' Big Internet Swindle, Free Press (November 24, 2009) ("Some financial analysts and institutions have noted that the profit margin for cable Internet subscribers is on the order of 80 percent."); See also David Talbot, When Will the Rest of Us Get Google Fiber?, Technology Review (February 4, 2014) ("The cable distribution giants like Time Warner Cable and Comcast are already making a 97 percent margin on their "almost comically profitable" Internet services, according to Craig Moffet, an analyst at the Wall Street firm Bernstein Research.").

services all contribute to the real value of a broadband network.[117] Accordingly, any allegations of market inefficiency which ignore such factors is incomplete.

3.E.iii.b.. Unfair Tax Burdens

Another unlevel playing field argument points to disparate tax burdens. Tax laws - whether federal, state or local - often exempt municipal governments and entities which are often incorporated as nonprofits.[118] Some complain that this allows municipalities to charge lower prices because they enjoy a lower tax burden than their private competitors.[119] However, this line of argument neglects the fact that municipal utilities make what are called payments in lieu of taxes, or PILOTs, which can amount to larger sums than the taxes paid by similarly situated private competitors. A study comparing municipal power utilities to private counterparts showed that in 2010, the public utilities contributed 33% more to local governments in taxes, tax equivalents and other payments.[120] For a broadband example, between 2008 and 2010, Burlington Telecom, a municipal broadband provider marred by gross mismanagement, still paid the City of Burlington $500,000 more in PILOTs than the two incumbent providers, Comcast and Fairpoint, paid in combined taxes.[121] Other key considerations in comparing tax burdens are corporate tax credits, accelerated depreciation, and other tax write-offs which can add up to billions in tax savings for large corporations like AT&T and Comcast. In fact, instead of paying taxes in 2011, AT&T received a $420-million refund.[122]

3.E.iii.c. Competitor, Regulator, or Both?

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[117] Cite pages in Frischmann, Infrastructure, where he discusses valuing spillovers, and http://goo.gl/Oaxd1c
[118] Tongue, supra Note 108.
[119] Id.
[120] American Public Power Association, Payments and Contributions by Public Power Distribution Systems to State and Local Governments, 2010 Data, available at http://www.publicpower.org/files/PDFs/PilotReport2010.pdf.
[121] Christopher Mitchell, Learning From Burlington Telecom: Some Lessons for Community Networks, New Rules Project (August 2011).
[122] http://www.dslreports.com/shownews/ATT-Paid-No-Federal-Taxes-in-2011-Saw-420-Million-Refund-120912

Another major criticism against municipal broadband is the potential for municipalities to abuse their position as regulator to gain competitive advantages, specifically with respect to franchise fees and access to public rights-of-way.[123] A city might charge a competitor franchise fees, the argument goes, while exempting itself, thereby attaining a cost advantage. A city might gain a similar cost advantage by charging a private competitor fees to access public rights-of-way. Such possibilities, however, exist more in theory than reality. Both antitrust law and Section 253 of the Telecommunications Act offer redress to private companies who feel unfairly treated by abuses of municipal power. Aware of these potential liabilities and averse to the costs of litigation, municipalities often self-impose comparable fees when competing with private firms.

4. Obstacles to Municipal Broadband

The criticisms discussed above form the basis for a variety of legislative efforts to restrict municipal broadband provision. Nineteen states have enacted such restrictions and more have considered similar measures at the behest of cable and telecom industry lobbyists. This section will discuss these laws and a major force behind them.

4.A. Political Obstacles: Lobbyists and Astroturf

That American politics is dominated by special interest lobbying is undeniable.[124] One particularly invidious form of lobbying, known as astroturfing, involves the use of purported disinterested "grassroots" organizations to further the agendas of corporate constituents.[125] The apparent goal of

[123] Tongue, supra Note 108.
[124] See generally Lawrence Lessig, *Republic, Lost: How Money Corrupts Congress and a Plan To Stop It* (Twelve, 2011).
[125] See Center for Media and Democracy, Source Watch, available at http://www.sourcewatch.org/index.php/Astroturf

astroturfing is to lend an air of credibility to a lobby's agenda by funneling it through an organization which purports to be comprised of civic-minded citizens.

One organization alleged by many to be an astroturf operation is the American Legislative Exchange Council (ALEC). Born in 1975, ALEC claims to be a "nonpartisan public-private partnership of America's state legislators, members of the private sector and the general public" working "to advance the fundamental principles of free-market enterprise, limited government, and federalism at the state level."[126] While it has always operated as a 501(c)3 tax-exempt nonprofit, as of the time of this publication, ALEC was under an ongoing investigation by the Internal Revenue Service (IRS) for violating the rule against political lobbying by charitable nonprofits.[127]

For its part, ALEC claims it does not actively engage in lobbying. Presumably this is because the crafting of model legislation by its member state legislators and corporate representatives takes place within ALEC, not in legislators' offices. If the legislators then introduce and push these bills in their respective state capitols on their own volition, the argument goes, no lobbying has taken place. But certain ALEC procedures raise legitimate lobbying concerns. For example, ALEC's corporate members vote on model bill language and which bills get introduced to state legislatures.[128] This might be viewed as lobbying by the IRS. Another suspect ALEC activity is the flying of legislators to annual meetings where much of the collaboration between legislators and corporate constituents occurs.[129] This too could be considered lobbying.

Perhaps one reason ALEC finds itself under tight scrutiny stems from its involvement in the

[126] http://www.alecexposed.org/wiki/What_is_ALEC%3F
[127] Cite IRS law against 501(c)3 lobbying activities
[128] Common Cause ALEC movie (waiting on DVD for citation).
[129] Id.

passage of highly controversial voter identification laws and "stand your ground" gun laws.[130] The public backlash against ALEC over these laws led dozens of large corporate members to disassociate from the group in 2012.[131] It also led ALEC to disband its Public Safety and Elections task force, which was responsible for the controversial laws, declaring "[w]e are refocusing our commitment to free-market, limited government and pro-growth principles, and have made changes internally to reflect this renewed focus."[132] This leaves ALEC currently with eight task forces covering industry sectors including agriculture, education, energy, healthcare, and most relevant to this discussion, communications.[133]

ALEC's interest in communications is not surprising given that AT&T, Comcast, Time Warner Cable and Verizon - the four largest communications providers - are members.[134] With their input and the assistance of legislators from all fifty states, ALEC crafts model legislation designed to protect the interests of the nation's communication giants.

Below I discuss two main threads of ALEC telecommunications proposals. One addresses general deregulation of telecommunications. The other specifically addresses municipal broadband provision. I will briefly discuss the general deregulation proposal to offer a more complete picture of ALEC's involvement in telecommunications legislation. Then I will discuss the model municipal broadband legislation in depth, followed by a survey of state laws that have adopted all or part of ALEC's model bill.

4.B. ALEC's Model Telecommunications Deregulation Proposal

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[130] John Nichols, ALEC Disbands Task Force Responsible for Voter ID, 'Stand Your Ground' Laws, The Nation (4/17/2012), available at http://goo.gl/76Ir4f

[131] Annie-Rose Strasser, General Motors and Walgreens Leave ALEC, ("bringing the total up to 31 organizations that have left the group in just four months), Think Progress (7/26/2012), available at http://goo.gl/6vfzR2

[132] See Nichols Note 83 infra

[133] American Legislative Exchange Council website, http://www.alec.org/task-forces

[134] http://www.sourcewatch.org/index.php/ALEC_Corporations

ALEC's "Telecommunications Deregulation Policy Statement" seeks to eliminate existing state regulations which apply to legacy copper public switched telephone networks (PSTN) and make sure such regulations are not applied to new packet switched Internet Protocol (IP) networks. Most of the nationwide PSTN is owned by AT&T and Verizon as a result of mergers and acquisitions over the past few decades.[135] Consequently, they are subject to state common carrier regulations which apply to PSTN services, including rate restrictions, interconnection, and 'carrier of last resort' obligations.[136] But now that the future is clearly in IP broadband networks, and PSTN services are increasingly less profitable, the incumbents want to dictate the terms of transitioning from the old to the new.[137] Essentially, they want to abandon the old PSTN and focus entirely on IP, unregulated.[138] AT&T, Verizon and their cable counterparts want to avoid common-carrier regulations on IP networks because such obligations would open the floodgate to new competition. This explains why ALEC's Deregulation Policy Statement calls for no price restrictions, a "hands-off approach to wireless, broadband and VoIP regulation," limited universal service funding, elimination of telecom service taxes, "judiciously conservative application of antitrust law," and interestingly enough, *complete prohibition of local government provision of telecom or broadband service*.[139] In other words, the incumbent communications companies, which are already coordinating to compete less with each other,[140] want to eliminate any other potential competition.

4.C.ii. ALEC's Model Municipal Broadband Legislation

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[135] Benjamin text book at Chapter _
[136] Id.
[137] Bruce Kushnick, Comments From the Front -- Friends of AT&T Want New Digital Dead Zones, Huffington Post (March 7, 2013), available at http://goo.gl/vZSlMJ
[138] Id.
[139] http://goo.gl/sfg8jH
[140] See Section 2.B supra

In addition to the outright ban on municipal broadband called for in its Deregulation Policy Statement, ALEC offers a comprehensive model bill for states to regulate municipal broadband. ALEC's "Municipal Telecommunications Private Industry Safeguards Act" presents fourteen pages of detailed regulations aimed at "leveling the playing field" between municipal and private broadband providers.[141] Below I will discuss the model regulations which appear in the state laws discussed later.

4.C.ii.a. Public Hearings

The model bill proceeds to outline a series of steps a city must follow before it can offer broadband services, either directly or through a partnership. A municipality must 1) hold a public hearing; 2) hire a feasibility consultant to 3) determine whether average annual revenues will exceed average annual costs by a margin sufficient to service any debt obligations over the first five years; 4) hold two more public hearings to discuss the feasibility study, and 5) adopt the study by resolution.[142] While public hearings might appear innocuous at first, in effect they present a major competitive advantage to incumbent network operators who are given full access to the city's business plans and cost calculations. This enables private competitors to set prices they know the municipality cannot match, even before the new network opens for service. For example, if an incumbent broadband provider learns through public hearings that the costs of a new municipal network will require monthly subscriber fees of $70 in order to break even, the private network can drop its price below $70 months before the new network opens, thereby making it more difficult for the new network to attract subscribers. This can be fatal to a new network because attracting subscribers early on is critical for success. In contrast, municipalities have no rights to see the business plans of private competitors. So the public hearing provisions tilt the proverbial playing field in the incumbents' favor.

[141] http://goo.gl/cbZAK7
[142] Id.

4.C.ii.b. Imputed Cost Accounting

ALEC's model bill further requires that the municipality calculate its costs as if it were a private operator, including the same taxes, franchise fees, permitting fees, pole attachment fees and any "similar" fees.[143] In addition, the municipality is forbidden from setting prices below the sum of the aforementioned calculated cost *plus* the city's "actual direct costs" and "actual indirect costs" of providing the service.[144] In other words, ALEC insists that municipalities face all of the same costs its corporate constituents would face plus more. What's more, municipalities cannot offer introductory below-cost pricing, a common practice among the incumbents.[145] Under these provisions, a municipality that follows all the rules building its network could face the very real possibility of being outpriced by a private competitor who is not restricted from offering introductory below-cost pricing. And the municipality's hands would be tied. Again, the cost accounting provisions tilt the proverbial playing field in the incumbents' favor.

4.C.ii.c. Separate Accounting to Prohibit Cross-subsidies

Predictably, ALEC's model bill also addresses the cross-subsidy complaint advanced by many municipal broadband critics. It specifically prohibits a city from cross-subsidizing its cable television or broadband services with tax revenues, income from other municipal utilities, below-market rate loans from the city itself, or "any other means."[146] This provision could only be considered "leveling the playing field" if private providers were held to the same rule - no subsidizing one market with revenue from another or by "any other means." But this is not the case. Comcast and Time Warner Cable are free to borrow income derived from markets where they enjoy total or substantial monopoly power to

[143] Id.
[144] Id.
[145] Mitchell, supra Note 62 at .
[146] See Note 144 supra.

subsidize services in other markets.

Doubling down on these cross-subsidy restrictions, the model bill requires municipalities to establish and maintain separate accounting of broadband and cable television services to ensure that no balances cross between them.[147] So if a city decides to offer both Internet access and video programming over a new fiber network, it is forbidden from subsidizing one with the other, or even sharing any profits with other city departments. Yet private providers are free to do these things.

4.C.ii.d. Bonding Requirements

Other provisions of the model bill restrict the ways a city can meet bond obligations. Any bond issued to build a network can only be paid from revenues generated by the network.[148] So if the city's revenue projections fall short of the level needed to make bond payments, it must default rather than find other funds to satisfy the obligation. In contrast, if Comcast invests in a new network and adoption rates fall short of rejections, it can draw on any number of internal funds to cover the difference.

4.C.ii.e. Other Restrictions

Other clearly lopsided regulations which favor private firms are prohibitions against municipalities receiving universal service funds from the state,[149] leaving such funds solely for the benefit of private firms, and restrictions against municipalities servings any subscribers who reside outside its geographic borders,[150] a restriction which does not apply to private firms.

Against the backdrop of these ALEC proposals for municipal broadband restrictions, including total prohibition as suggested in its policy statement, an exploration of the state laws adopting these positions follows.

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[147] Id.
[148] Id.
[149]
[150]

4.D. Municipal Telecom Laws On the Books

Rather than go state by state, I will present the state laws in categories of restrictions. It is important to note that any regulation preventing a municipal network from directly offering a triple-play package (Internet + phone + video) severely restricts its ability to recoup its investment, especially in markets where competitors offer such a package. The first section will explore the varieties of bans against municipal networks. Following that are discussions about the various types of "level playing field" regulations.

4.D.i. Total and Partial Bans

State bans on municipal broadband come in several flavors. For example, **Nebraska**[151] and **Texas**[152] have absolute prohibitions against municipalities offering broadband services directly to the public on a retail or wholesale basis. Both states, however, allow municipalities to lease "dark fiber" - unused fiber optic infrastructure - which can be used by third-party service providers to offer telecommunications services.[153] This leaves the door open for public-private partnerships which we will discuss in Section 5. In contrast with the total bans in Nebraska and Texas, **Nevada** prohibits cities with more than 25,000 people[154], and counties with more than 55,000,[155] from offering broadband services. Construction of telecommunications facilities is permitted, however, upon completion of a cost-benefit analysis and determination that it will serve the public interest.[156] This too opens the door for public-private partnerships.

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[151] Nebraska Revised Statute 86-594, municipal broadband services authorized before January 1, 2005, are exempted. Explain the confusion over the language about public power utilities and how different sections prohibit each.
[152] Texas § 54.201 and § 54.202
[153] Texas, § 54.2025, Nebraska § 86-575
[154] Nevada NRS 268.086
[155] Nevada NRS 710.147
[156] See Id. Notes 116 and 117.

Arkansas applies a different set of caveats to its municipal broadband prohibitions. Only cities which own "an electric utility system or television signal distribution system" may provide broadband, but in no event may a municipality offer telephone service."[157] This directly disrupts the possibility of a municipality offering a triple-play package. Outside of these conditions, a city may build a network if it only offers service to emergency, law enforcement, education or healthcare providers.[158] **Missouri**, oddly enough, permits municipal networks to be built for broadband, but not phone or video service.[159] However, it too permits municipal networks for government use only.[160]

4.D.ii. Rights of First Refusal

Somewhere in between banishment and regulation lie state laws that allow private companies a right of first refusal. **Pennsylvania** forbids political subdivisions from offering broadband services without first requesting the services from private providers.[161] Under the text of the statute, as long as a private provider agrees within two months of receiving the request to offer the service within fourteen months, the municipality cannot build.[162] But the statute says nothing about affordability, presumably allowing the private provider to keep the municipality's plans at bay by simply agreeing to provide service, but at prices the requesting municipality refuses to pay. **Michigan** only allows municipalities to provide broadband services if they first issue a request for bids and receive less than three qualified bids from private providers.[163]

4.D.ii. States Following ALEC's Model Municipal Broadband Bill

[157] Arkansas Code § 23-17-409(b)
[158] Arkansas Code § 23-17-409(b)(3)
[159] Missouri § 392.410(7).
[160] Id.
[161] 66 Pa. Cons. Stat. § 3014(h)
[162] Id.
[163] 484.2252

Louisiana,[164] **North Carolina**[165] and **Virginia**[166] have enacted regulations identical to those detailed in ALEC's model bill discussed in Section 4.C.ii. It should not be surprising that Louisiana's bill was titled "The Local Government Fair Competition Act,"[167] and North Carolina's enactment carried the title "Level Playing Field/Local Government Competition."[168] To recap, these regulations cover public hearings, cross-subsidies, separate accounting, imputation of full private competitor costs, bond provisions and pricing restrictions. The roles played by ALEC and its corporate constituents in passing the Louisiana[169] and North Carolina[170] laws have been well documented. Virginia goes further by requiring municipalities to prove to the state communications commission that incumbent services are inadequate, providing the incumbent "reasonable time" to remedy such inadequacies,[171] and specifically prohibiting municipalities from pricing services below "comparable" incumbent services.[172] Adding an additional twist to the ALEC model, **Tennessee** restricts broadband and cable provision to municipalities already operating power utilities, on top of the full suite of restrictions mentioned above.[173]

South Carolina adopts one of the most onerous ALEC provisions - imputing full costs incurred by private providers onto the municipality, even if it would otherwise not incur such costs.[174] For example, if a city can secure a lower cost of capital than a private competitor, it must calculate its costs

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[164] RS §§ 45:844.41-48
[165] NC § 160A-340
[166] VA § 15.2-2108.6, § 15.2-2108.11, § 56-265.4, § 56-484.7:1
[167] 2006 Louisiana Laws - RS 45:844.41.
[168] North Carolina General Assembly, House Bill 129 / S.L. 2011-84.
[169] Brendan Greeley and Alison Fitzgerald, Psst... Wanna Buy A Law, Bloomberg Businessweek (12/11/2011), available at http://www.businessweek.com/magazine/pssst-wanna-buy-a-law-12012011.html
[170] Christopher Mitchell and Todd O'Boyle, The Empire Lobbies Back: How National Cable and DSL Companies Banned the Competition in North Carolina, Institute for Local Self-Reliance and Common Cause (January, 2013), available at http://www.ilsr.org/killing-competition-nc
[171] Virginia § 56-265.4
[172] Virginia § 56-484.7:1(C)
[173] Tennessee §§ 7-52-601 et seq
[174] South Carolina § 58-9-2620

as if it was paying the higher rate. The statute also forbids municipalities from receiving any financial benefits not available to private competitors.[175] So if the state decides to offer infrastructure grants or subsidies specifically to local governments, municipal networks could not receive them.

In addition to full cost imputation, **Alabama** embraces another one of ALEC's primary "level playing field" restrictions - separate cost and revenue accounting to ensure no cross-subsidization occurs.[176] To be extra sure, Alabama further mandates that any form of debt incurred to build a municipal network must be paid solely from network revenues.[177]

4.D.ii. Prohibitions on Retail Services

Several states prohibit municipalities from offering retail telecom services to the public, confining municipal networks to open access wholesale business models. **Utah**[178] is one example where this restriction has proven extremely challenging for one of the nation's largest community networks.[179] Several other states set this type of restriction as a baseline but then carve out exceptions for municipalities that meet other requirements.[180] For clarity, I will list those states under the sections which discuss the enabling requirements. In addition to prohibiting direct municipal broadband service to end users, **Washington** limits municipal provision of broadband service to public utility districts in existence as of June 8, 2000.[181]

Wisconsin adds a unique anticompetitive twist.[182] Notwithstanding restrictions on municipal

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[175] Id.
[176] Alabama § 11-50B-5
[177] Alabama § 11-50B-9
[178] Utah § 10-18-201
[179] Mitchell, supra Note 70 at 35-36, discussing UTOPIA, a publicly owned fiber network in Utah forced to utilize an open access model because of the state's prohibition against municipal provision of retail broadband service.
[180] i.e. Colorado (C.R.S. 29-27-103), Wisconsin (66.0422)
[181] RCW 54.16.330
[182] Wisconsin 66.0422

triple-play services, local governments in Wisconsin are permitted to build broadband infrastructure only if the municipality "offers use of the facility on a nondiscriminatory basis," "itself does not use the facility to provide broadband service to end users," and determines that the new network "does not compete with more than one provider of broadband service."[183] In other words, if a municipality just wants to offer broadband service, it can only do so on a wholesale basis, and only if there is no more than one other broadband provider in the area, presumably including wireless. So a municipality served by outdated DSL service plus wireless would be foreclosed from offering broadband.

4.D.iii. Public Hearings and Referendums

As discussed in Section 4.C.ii, public hearings and referendums appear innocuous at first glance but effectively give private competitors significant advantages over municipalities. **Florida's** public hearing requirements are exceedingly detailed, including a plan to become profitable within four years.[184] Florida also requires public disclosure of projected numbers of subscribers, geographic areas to be served, specific types of services to be offered, full costs and revenues for the first four years, and projected upgrade plans - precisely the type of information that enables a private provider to out-price and out-strategize a new competitor. **Colorado** prohibits municipal network construction or telecom services unless the public votes for it through a referendum.[185] While Colorado's referendum provision only requires a simple majority vote, **Minnesota** goes further by requiring a 65% supermajority vote before a municipality can offer telecom infrastructure or services.[186]

4.E. Municipal Broadband Laws on the Horizon

In March, 2013, Georgia almost became the twentieth state to enact restrictions against

[183] Id.
[184] FL 350.81
[185] C.R.S. 29-27-201
[186]

municipal broadband networks. After a similar bill failed to pass in 2012, the Georgia legislature again voted on a bill named "Municipal Broadband Investment Act" that would prohibit municipalities from building broadband infrastructure in areas where at least one person receives at least 3Mbps download speed (increased from the original proposed text of 1.5Mbps).[187] ALEC's role in the Georgia legislation is well documented.[188] So one can expect a similar persistence by ALEC in Georgia as was seen in North Carolina between 2008 and 2011.[189]

5. Overcoming Obstacles to Municipal Fiber Networks

Before presenting my normative arguments, I will summarize the factual premises discussed in the previous three sections. First, while reasonable observers may differ about the overall status of broadband in the U.S., ample evidence supports the conclusion that many local markets lack competition for high-speed wireline broadband access. As cable providers continue to monopolize local broadband markets, the best prospect for introducing competition comes from new entrants, municipal or private, deploying fiber. While broadband provision is not prudent for all municipalities, the number of successful municipal fiber networks continues to grow. Consequently, local communities and governments are realizing significant direct and indirect benefits which flow from the access-maximizing economics of publicly owned networks. However, credible concerns have been raised about the potential for municipalities to abuse their dual roles as competitor and regulator to achieve unfair advantages. Mitigating this threat are existing federal antitrust and telecommunications statutes. Yet incumbent cable and telecom providers have successfully lobbied nineteen states to enact exceedingly

[187] Christopher Mitchell, Georgia Bill to Limit Internet Investment Dies on House Floor, Community Broadband Networks (March 8, 2013), available at http://goo.gl/LUxFbR
[188] Brendan Fischer, Community-Owned Internet, Long Targeted by ALEC and Big Telecom, Under Fire in Georgia, PRWatch (March 7, 2013), available at http://goo.gl/RA9Vj9
[189] Cite Empire Lobbies Back

burdensome municipal broadband restrictions under the rubric of “leveling the playing field.” Evidence indicates, however, that private providers already enjoy major economic advantages over municipalities without the additional state laws, which effectively tilt an already tilted playing field further in the incumbents’ favor.

5.A. Entrepreneurship to the Rescue

Americans are ingrained from an early age to believe they can accomplish anything through ingenuity and hard work. This spirit of entrepreneurship at the core of American identity provides sufficient justification for allowing municipalities to provide local communities with fiber-optic broadband networks. The core value of entrepreneurship is the freedom for all to propose, test and implement creative solutions to perceived problems. Municipal broadband fits this description - local governments, accountable to their communities, responding to perceived problems in local broadband markets by offering alternatives to the status quo. The increasing monopolization of local broadband markets by cable providers, as discussed in Section 2.B, is a serious problem inviting entrepreneurial solutions. Therefore, general permission for municipalities to enter or compete in broadband markets should not be questioned. Rather, the question should be how to ensure such competition is fair and in the best interests of consumers. As long as municipalities adhere to fair competition regulations under antitrust laws and Section 253 of the Telecommunications Act, they should be free to provide broadband service, just as they often provide roads, parking, power and water in many instances. To the critics who argue it is bad policy to risk scarce public finances on risky ventures like broadband, my counterargument is that it is worse policy to deprive communities of their right to self-determination.

5.B. High Time for Federal Preemption

Based on the foregoing conclusions, I propose federal preemption of the state laws discussed in

Part 4. This would give municipalities the power to decide whether to build public fiber networks, a decision that should be made by local officials in tune with local needs and accountable to local residents.

Federal preemption can be achieved in two ways. The first is for Congress to enact new legislation, pursuant to its Commerce Clause power, clearly expressing its intent to preclude states from enacting barriers to municipal broadband provision.[190] This approach was attempted in 2007 when Senator Lautenberg introduced the Community Broadband Act.[191] Although the bill failed to reach a vote, as of the time of this publication, Lautenberg is working on a new version for reintroduction.[192]

There are several reasons to believe Lautenberg's bill will receive more attention the next time through Congress. First, the last three FCC Broadband Progress Reports dating back to 2010 have concluded that broadband is not being deployed in a timely manner.[193] In contrast, the progress reports released during the time frame of the 2007 bill reached the opposite conclusion - that broadband was in fact being deployed in a timely manner.[194] Moreover, the FCC's recent Gigabit City Challenge[195] and comments by the Commission's Chairman have placed new emphasis on enabling innovative solutions to increase fiber deployment in the U.S..[196] And finally, municipal broadband success stories continue to

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[190] Section 253 of the Telecommunications Act grants the FCC preemption power. But the Supreme Court ruled in *Nixon v. Missouri Municipal League* (2005) that such power did not extend to state regulations of municipalities. In *Missouri Municipal League*, the Supreme Court ruled that Section 253, which states "[n]o State or local statute... may prohibit or have the effect of prohibiting the ability of *any entity* to provide any interstate or intrastate telecommunications service" (emphasis added), was not clear enough to indicate Congress's intent to constrain "traditional state authority to order its government." The Court cited *Gregory v. Ashcroft* for the proposition that Congress must be "unmistakably clear in the language of the statute" when enacting legislation that may "upset the usual constitutional balance of federal and state powers," such as federal agency power to preempt state laws. Taken together, the holdings imply Congress could enact federal preemption if the statute is "unmistakably clear."
[191] 110th Congress (2007-2008),, S.1853 (Community Broadband Act of 2007).
[192] Comments made by Charles Benton at National Conference for Media Reform, Denver, April 6, 2013.
[193] See Sixth, Seventh and Eighth Broadband Progress Reports, available at http://goo.gl/SEgBGS.
[194] See Id, Fourth and Fifth Broadband Progress Reports.
[195] See Note 1 supra.
[196] See Note 2 supra.

accumulate thanks to advocates like Christopher Mitchell at the Institute for Local Self-Reliance.[197]

The second way to achieve federal preemption is for the FCC to assert its Section 706 powers which mandate the Commission to "take immediate action to accelerate deployment" of "advanced telecommunications capacity" by "removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[198] While this power has yet to be tested in litigation, and incumbents would undoubtedly challenge it through litigation, Section 706 can be read as granting the FCC an affirmative duty to take immediate action when it determines "advanced telecommunications capability is [not] being deployed to all Americans in a reasonable and timely fashion."[199] This was precisely the FCC's determination in its three most recent Broadband Progress Reports.[200] Therefore, I believe the FCC should exercise its broad mandate under Section 706 to preempt the state laws discussed in Part 4.

5.C. Navigating Municipal Broadband Restrictions

To end on a positive note, I will discuss ways in which municipalities may proceed with limited fiber deployment despite the statutory restrictions discussed in Part 4. Because federal preemption could take many years to enact, there are steps municipalities can take in the meantime to address inefficiencies in local broadband markets.

5.C.i. Institutional Networks and Incremental Deployment

Municipalities can save millions of dollars by building institutional networks, or I-nets, for internal government use. Most local governments are responsible for multiple agencies with multiple

[197] See generally http://muninetworks.org/.
[198] Telecommunications Act § 706. For a detailed discussion of the FCC's preemption powers, see Matthew Dunne, Let My People Go (Online): The Power of the FCC to Preempt State Laws That Prohibit Municipal Broadband, 107 Colum. L. Rev. 1126.
[199] Telecommunications Act § 706(b).
[200] See Note 221 infra.

facilities and personnel scattered across the community. This makes governments some of the largest consumers of communications services. One observer estimates that a community of 40,000 residents consumes $1.1 million in communications services annually.[201] Accordingly, municipalities can potentially save large sums of money by supplying their own I-nets rather than leasing them from private telcos. Fortunately, no state listed in Part 4 prohibits municipalities from building broadband infrastructure for government use. So local governments in all fifty states are free to build fiber networks to connect schools, hospitals, police stations, firehouses, and any other facilities utilized to provide public services. These fiber networks can also be designed to support citywide Wi-Fi networks that provide mobile broadband access to government employees working in the field such as police and firemen.[202]

Several successful municipal networks started as I-nets which later expanded into public uses. Corpus Christi, Texas, initially built its citywide Wi-Fi network as an I-net to enable remote parking meter monitoring after a meter reader employed by the city was attacked by a dog.[203] After realizing that meter reading only used 10% of the network's capacity, the city formed a nonprofit, Corpus Christi Digital Community Development Corporation (now called ConnectCC), to manage the network and find additional uses. As a result, the city now uses the network to track emergency vehicles for efficient dispatching, send architectural plans wirelessly to firefighters in the field, and deploy wireless cameras throughout the city for safety and traffic monitoring.[204] And the the network still has extra capacity to provide Wi-Fi access in twenty-one hotspots around the city, including the city's beaches.[205] Best of all, the city estimates $50-million in savings over twenty years from its I-net.[206]

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[201] Mitchell, Breaking Broadband Monopoly at 14.
[202] Wi-Fi networks rely on wireless nodes which must be connected together and to other networks. Using fiber for these connections maximizes the capacity and speed of the Wi-Fi connections.
[203] Eric Null, Municipal Broadband: History's Guide, at 13
[204] Id.
[205] Id. Also see http://www.connectcc.com/hotspots.html for ConnectCC hotspot map.
[206] Id at 16.

Bristol, Virginia, is another example of a thriving municipal broadband network which started as an I-net.[207] In the process of rebuilding the power grid after a storm inflicted extensive damage, the municipal power utility, BVU, installed a fiber network to help increase grid efficiency and reliability.[208] Upon realizing that expanding capacity was relatively inexpensive once the initial network was in place, BVU began offering broadband services to businesses and residents throughout the community.[209] But Bristol was only able to offer broadband service to the public after lobbying the Virginia legislature to amend the state's municipal telecom statute with a grandfather clause which exempted the city's network from the regulations.[210]

These examples demonstrate that I-nets can be good investments based on the potential cost savings for local governments and improving communications services within government agencies (i.e., education, health, safety, etc.). I-nets can also serve as a first step towards more expansive networks which ultimately serve the public directly. Expansion opportunities will obviously be subject to the state's regulations as discussed in Part 4. But Bristol demonstrated that these laws can be amended. While Bristol might be a special case because its circumstances allowed for a narrow carve-out which left the statute wholly intact, there is no reason legislatures cannot be lobbied for additional concessions in the future. Moreover, one can speculate that if a critical mass of municipalities in a state built fiber I-nets, each with substantial over-capacity, political pressure from the public could galvanize to have municipal broadband restrictions lifted or scaled back. Regardless, fiber I-nets should be seriously

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[207] Christopher Mitchell, Broadband at the Speed of Light: How Three Communities Built Next-Generation Networks, Institute for Local Self-Reliance (April, 2012), available at.

[208] For a discussion about fiber-optic power grid management, see José Morales Barroso, The "Intelligent Grid": Electric Power Grid and Telecom Convergence, available at http://goo.gl/7t6QYN, ("The "smart grid" is based on the usage of smart energy technologies—the application of power control by means of digital information systems (smart meters and smart appliances) that communicate through the Internet with the electricity power providers—to optimize electrical power system generation, delivery, and end-use energy demands.").

[209] Mitchell, Note 130 supra.

[210] Virginia S. 875 (2003), available at http://leg1.state.va.us/cgi-bin/legp504.exe?031+ful+SB875ER.

considered by all municipalities looking to improve their communities.

Even in states without municipal broadband restrictions, I-nets can be a wise investment for municipalities considering larger network projects. In this context, an I-net can be viewed as a first step in an incremental deployment. The benefits of this approach are many. First, a limited deployment like an I-net carries lower financial risk than a full citywide network because it requires a smaller initial investment. Second, developing technical expertise and demonstrating success on a smaller scale I-net can build public confidence in future network expansions which will be costly and require public support. Given the high costs, risk and uncertainty in building large networks, incremental deployment is a wise approach all municipalities should consider.[211]

5.C.ii. Dark Fiber and Public-Private Partnerships

Another permission found in all of the state laws discussed in Part 4 is that municipalities can build and lease dark fiber. Dark fiber is simply unlit fiber or the portion of a fiber network minus the equipment required to pass information through it. While it is uncertain how much dark fiber capacity exists, much of it was installed during the pre-dot-com bubble economic boom years.[212] However, after the bubble burst in 2000, large amounts of fiber remained unlit, even today. Some of this dark fiber was built by municipalities but remains unused. Where this is true, in states discussed in Part 4, municipalities can lease their dark fiber to third-party service providers, essentially forming public-private partnerships to offer broadband service to the public. Public-private partnerships have their own set of challenges which will be discussed below.

[211] The preceding paragraph was informed by a conversation I had with Joanne Hovis, President of CTC Technology & Energy and President of the National Association of Telecommunications Officers and Advisors (NATOA), who consults with municipalities planning to build networks. Her experience has been that incremental network builds have much higher success rates than large one-time builds.
[212] Fierce Telecom, Fiber Hunter: How to Improve Internet Access by Digging Up Forgotten Fibe Lines (March 7, 2012), available at http://goo.gl/BtK1oE

For municipalities which lack dark fiber from past installations, building new dark fiber is an option. All of the states discussed in Part 4 either expressly permit building new dark fiber or are silent on the issue. This opens the door for municipalities to build entire dark fiber networks, or in the alternative, to incorporate dark fiber installation in the normal course of municipal construction projects. Examples of the latter include installing dark fiber alongside new or widened roads, in and around new buildings and essentially anywhere the city plans to dig up the ground for other reasons. With this approach, municipalities can achieve wide fiber network coverage at lower cost than building a network all at once.[213] The downside is the longer time it can take to build useful network loops. Regardless, the cost-benefit proposition of incorporating dark fiber installation in other municipal construction projects makes it a policy worth serious consideration by all municipalities planning for the future.[214]

5.C.iii. Public-Private Partnerships

Public-private partnerships offer a viable option for municipalities restricted from direct broadband provision to the public. These municipalities can essentially build dark fiber networks at will as long as they contract with a third-party service provider. But public-private partnerships are no panacea. For one, the presence of a middleman reduces revenue potential for the city, making it more difficult to pay off initial investments. Second, the interests of both parties - the municipality and the service provider - can be difficult to align, especially since they often have different goals. The municipality is most concerned with signing up subscribers as quickly as possible so it can pay off its debt, which requires maintaining high quality of service from day one. Service providers, on the other

[213] The cost of fiber alone, without installation below or above ground, is in the neighborhood of $0.08 - $0.12 per foot. Adding installation can multiply that cost 10 - 20 times per foot depending on physical characteristics of the location. However, these installation costs can be shared with or allocated to a separate construction project that would already be taking place, hence lowering the overall costs of installing the fiber. For a more detailed discussion of dark fiber, see http://www.tuolima.com/news/otdr-optical-fiber-pros-cons.html.
[214] See Note 234 supra.

hand, especially smaller ones serving smaller markets, tend to skimp on service in order to maximize profits.[215] Therefore, municipalities planning to form public-private partnerships should negotiate for service quality and customer service guarantees from the service provider. Despite these challenges, municipalities under the most onerous restrictions discussed in Part 4 should consider public-private partnerships to deploy fiber broadband networks in their communities.

Conclusion

While reasonable people may differ over how to characterize the state of American broadband on a national scale, evidence clearly shows that many local markets are controlled by cable monopolies. Municipal fiber networks offer a unique solution to this problem, but nineteen states have enacted restrictions against it under the rubric of "leveling the playing field" between municipalities and private companies. But the facts are clear - private broadband providers already have major advantages over municipalities when it comes to broadband provision. Consequently, the state laws restricting municipal broadband accomplish the opposite of their purported goal. Rather than leveling the playing field, the laws effectively tilt it further in the incumbents' favor. In order to correct this inequitable situation, federal preemption of these state laws should be enacted, either by Congress or the FCC. In the meantime, there are a number of ways in which municipalities can still deploy fiber to improve their communities.

[215] Mitchell, supra Note 62.