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The Politics of Good Enough: Rural Broadband and Policy Failure in the United States

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The U.S. rural–urban digital divide has been a policy concern for more than a decade. The issue has intensified with the COVID-19 pandemic and the requirement that people live, work, and study online from home. This is not possible for more than 42 million Americans, most notably those in rural communities, who lack access to high-speed Internet (broadband). Despite a policy of universal service and billions of dollars for deployment, policy makers have been unable to close the rural–urban digital divide. To understand this disjuncture between policy and deployment, this article analyzes current U.S. rural broadband policies as developed and implemented by the Federal Communications Commission. Drawing on critical political economy and theories of policy failure, I argue that rural broadband policy has failed in three capacities: meaning, mapping, and money. These failures occur because of a "politics of good enough" that dominates U.S. rural broadband policy.

Keywords: rural broadband, broadband policy, telecommunications policy, FCC, policy failure

COVID-19 has made the consequences of the digital divide painfully apparent for tens of millions of Americans without Internet access. Its impact is acutely felt in rural communities, where at least 22.3%, and potentially as many as 50%, of rural Americans lack broadband access (Busby & Tanberk, 2020; Federal Communications Commission [FCC], 2020; Meinrath, 2019).[2] This amounts to between 15.8 and 35 million people who are unable to work, shop, and study from home—activities the connected majority take for granted. Moreover, people may be less likely to social distance as direct result of un- or underconnection (Arbel & Casey, 2020).

Connecting rural America to modern technological infrastructure has been a vexing issue for policy makers since the 1920s, when the country grappled with "rural electrification" (Brown, 1980). In

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[2] The FCC defines rural as an area entirely outside of an urban area with a population of 25,000 or greater (47 C.F.R. §54.600(b)(1)).

the 1940s and 1950s, the debate over rural connectivity extended to telephony (Kline, 2000). Today, the issue of "rural broadband" has troubled policy makers for more than a decade. In contrast with urban areas, which tend to be well-connected, but where access issues persist because of income gaps and cost (Chao & Park, 2020), rural communities tend to lack the infrastructure necessary for connectivity. Rural broadband is what economists call a "market failure": a socially important service that the private market is unwilling to provide because of a lack of return on investment (Copps, 2009; see also Bator, 1958 Pickard, 2015). Rural America is simply too sparsely populated and vast for profitable infrastructure investment. Broadband providers have long refused to connect rural and remote communities because of the costs associated with the connections (Crawford, 2019). For this reason, the 1996 Telecommunications Act established the Universal Service Fund (USF) to subsidize providers willing to serve "high cost" areas. Today, the USF allocates at least $5 billion annually to rural broadband deployment.

As the COVID-19 pandemic has made clear, despite significant capital investment, a policy of universal service, and the FCC's 2010 plan to connect a plurality of Americans by 2020, the rural–urban digital divide persists. Its persistence exacerbates what is known as the "rural penalty"—the literal and figurative costs of living, working, and studying in rural communities and away from the centers of culture and business (Hite, 1997; Parker, Hudson, Dillman, & Roscoe, 1989). Worse, with the coming of 5G and increasing deployment of fiber optics in urban America, the rural–urban divide may actually be growing (van Dijk, 2020), leaving tens of millions "stuck in the dial-up age" (Levitz & Bauerlein, 2017).

The discrepancy between the policies designed to improve rural broadband and the reality of un- and underconnection lived by so many suggests that the rural–urban digital divide is as much a policy issue as one of markets and technology. Understanding the disjuncture between policy and practice and identifying who benefits by keeping the digital divide intact is crucial to solving one of the most pressing infrastructure issues facing the country. Accordingly, this article analyzes current rural broadband policies as developed and implemented by the FCC, the agency responsible for U.S. telecommunications regulation. Drawing on critical political economy and theories of policy failure, I argue that rural broadband policy has failed in three capacities: meaning, mapping, and money. These failures occur because of a "politics of good enough," which dominates rural broadband policy. This politics is used to justify the use of inadequate speed definitions for broadband, the insufficient reporting requirements for ISPs, the deployment of subpar technologies, and annual million-dollar subsidies to the largest telecommunication companies in return for poor connectivity.

In this article, I integrate existing critiques of rural broadband policy and introduce new ones, theoretically rooted in critical political economy. I begin with a literature review covering rural broadband and industry influence in regulatory decision making, before discussing the methods of analysis. Then, I examine and explicate the three failures of rural broadband policy that define the politics of good enough, and I conclude with recommendations for rural broadband policy reform.

Literature Review

Rural Broadband

The digital divide in rural America tends to be one of infrastructure availability rather than network access due to cost.[3] The FCC (2020) estimates that at least 22.3% of rural Americans lack access to a broadband connection, in contrast with 5.6% of urban Americans.

The lack of infrastructure in rural America is not a new phenomenon. Both electricity and telephony required substantive government intervention through the creation of the Rural Electrification Administration (REA) in 1936 and corresponding federal investment (Brown, 1980). The REA was mandated to connect rural communities first with electricity in the 1930s and 1940s, and then with telephony in the 1950s (Kline, 2000). It was thought these would be the "distance killing" technologies necessary to correct for the rural penalty (Malecki & Moriset, 2003; Parker et al., 1989). Most agree that universal rural electrification and telephony would have been impossible without strong investment—both politically and economically—by the federal government. Economist Laurence Malone (2008) hailed the REA as "one of the most immediate and profound successes in the history of federal policy-making" (p. 5). Unfortunately, a lack of policy attention to advanced telecommunications (re: broadband) has been observed since at least 1989, when Parker and associates concluded,

> There is no inherent technical reason for the historic "rural penalty" of geographical remoteness. Yet the rural penalty persists because policies affecting telecommunications and economic development have not kept pace with the times and taken sufficient account of changing rural economic needs. (p. 5)

Here, Parker and colleagues (1989) connect the market failure of rural telecommunications to the failure of policy to keep up with technological change. This work anticipated a generation of research on the rural–urban digital divide. Studies from the early 2000s demonstrated how rural communities are less connected than their urban counterparts (Norris, 2001; Stenberg, 2009; Strover, 2003). Later studies pointed to the need for digital inclusion practices (LaRose et al., 2012), highlighted successful community interventions (Strover, 2019), and explored the benefits of broadband in rural America (Deller & Whitacre, 2019). To this point, scholars have identified eight distinct benefits of rural broadband: economic development (Grubesic & Mack, 2017; Malecki & Moriset, 2003); income growth and business location (Kim & Orazem, 2017; Stenberg, 2009; Whitacre, Gallardo, & Strover, 2014); precision agriculture (Gallardo, 2016); increased housing values (Deller & Whitacre, 2019); rural education (Gallardo, 2016); telemedicine (Bauerly, McCord, Hulkower, & Pepin, 2019); and civic engagement (Whitacre, 2017).

Despite abundant literature on the digital divide and the importance of broadband to rural communities, and despite the importance of policy to rural connectivity, few studies have examined rural

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[3] To be sure, there are also crippling affordability issues regarding broadband in rural America. BroadbandNow (2019) reports that rural Americans pay 37% more for broadband (when they can get it) than urban Americans.

broadband subsidy programs or rural broadband policy. Of those that have, only a handful assess the policies and programs of the FCC, which plays the defining role in rural broadband policy and subsidization. Instead, most rural broadband policy studies focus on the programs of the United States Department of Agriculture (USDA) (Dinterman & Renkow, 2017 Kandilov & Renkow, 2010). Only Glass and Tardiff (2019) have recently analyzed the FCC's USF programs. In their comprehensive 2019 study of the Connect America Fund (CAF) Phase II Reverse Auction, the authors champion the reverse auction over the earmarked grants to specific companies in the first two phases of the CAF:

> The auction lowered the cost of providing broadband service in unserved areas by attracting new providers. It steered towards higher speed/low latency technologies when there was sufficient interest in serving specific geographic areas. Because of its success, the CAF-II auction could serve as a model for future auctions that could be expanded in scope to offer basic services that cut across utility industries. (p. 15)

Other studies take a step back from analyzing specific policy programs. Crawford (2019), for instance, critiques the United States' lack of fiber-driven policy focus and contends that any policy or program supporting nonfiber technologies fails to account for future use. Like Crawford, others have addressed rural broadband policy in its totality, most notably Strover (2003, 2019), who has argued vociferously for the need for dedicated policies toward both rural broadband deployment and adoption/inclusion. Grubesic and Mack (2017) also focus on deployment and include policy recommendations such as permitting municipal broadband, additional spectrum allocation, encouraging competition, and preserving net neutrality.

What these studies make clear, both in their findings and research gaps, is that more research is needed on extant rural broadband policy, specifically the role of the FCC in rural broadband policy making. This study aims to fulfil these knowledge gaps by focusing specifically on the FCC's policies and programs for rural broadband deployment.

Regulatory Capture

Before assessing the FCC's rural broadband policies, I examine the role that industry plays in telecommunications policy making. The article's principal argument is that rural broadband policy favors the telecommunications industry over those of the rural publics and the public interest. This path dependency is nothing new. Industry influence over regulators, most notably the FCC, has been widely documented (Crawford, 2013; Horwitz, 1989; Pickard, 2015; Popiel, 2018, 2020). Generally, this research has fallen under the rubric of "regulatory capture" (e.g., Carpenter & Moss, 2014). Carpenter and Moss (2014) define regulatory capture as "the result or process by which regulation, in law or application, is consistently or repeatedly directed away from the public interest and toward the interests of the regulated industry, by the tent and action of the industry itself" (p. 13). Such influence can be wielded overtly, such as in lobbying (Crawford, 2013; Popiel, 2018) and the "revolving door" (Popiel, 2020), or discreetly, through the enactment of "policy silences" (Freedman, 2010) and "discursive capture" (Pickard, 2015; Popiel, 2018).

Critical scholars have long critiqued the FCC for succumbing to regulatory capture, most recently in enabling mergers (Crawford, 2013) and repealing network neutrality (Pickard & Berman, 2019). In his iconic work on regulatory capture in telecommunications, Horwitz (1989) argues for a nuanced understanding of regulatory reform, suggesting that "capture" may not be the correct term given that telecommunications policy has always favored industry. He explains how the FCC historically protected the interests of AT&T—the telephone monopoly until the 1980s. A notable example involves folding new technologies into the regulatory structure of previous technologies (like telephony) and therein under the auspices of AT&T. As he writes, "Regulation was a conservative mode of state activity, largely protective of the established corporate interests and traditional services of the telecommunications industry" (p. 196).

Regulatory capture has long been theorized and indirectly attributed; however, causality has been difficult to ascertain "because regulators can always deny corporate influence on a vote or decision, claiming they believe the policy advances the public interest" (Popiel, 2020, p. 344). As result, many critique capture theory, with Carpenter and Moss (2014) arguing that capture theory fails if it does not prove industry action and intent. Recently, scholars have begun to add empirical weight to capture theory. Popiel's (2020) quantitative topic modeling and qualitative document analysis of two decades' worth of FCC communication revealed deeply entrenched discursive differences between FCC commissioners based on party affiliation and participation in the revolving door.

Despite its empirical deficits, capture theory underscores the uncomfortably close relationship between the agents of power in industry and government. Still, it fails when "policy analysts are . . . quick to see capture whenever an interest group appears to benefit from regulation" (Carpenter & Moss, 2014, p. 20). Taking heed of critical scholars' propensity to signal capture at the expense of evidence, this study falls within the more nuanced view expounded by Horwitz (1989), Carpenter and Moss (2014), and others, wherein the relationship between industry and government is seen as historical and chronic rather than acute and punctuated. It thus gives "new purchase on an old program" (Carpenter & Moss, 2014, p. 21), documenting another instance in a decades-long trend of FCC decision-making that benefits the telecommunications industries.

Method and Theory

I conducted a thematic coding analysis of FCC rural broadband policies and public comments to FCC deliberations into rural broadband between 2009 and 2020. Seven key policies moments were analyzed: the 2009 Rural Broadband Strategy (GN Docket No. 09-29); the 2010 National Broadband Plan (GN Docket No. 09-51); the 2011 Connect America Fund (WC Docket No.10-90), 2015 allocation of CAF Phase II funds (WC Docket No. 15-509) and 2018 CAF Reverse Auction (AU Docket No. 17-182); the 2016 Alternative Connect America Model (WC Docket No. 10-90/FCC 16-33); and the 2019 Rural Digital Opportunity Fund (RDOF; WC Docket No. 19-126). I also analyzed selected public comments from the Rural Broadband Strategy and the RDOF. These policy moments were chosen because they represent the decisive actions the FCC has taken to bridge the rural–urban digital divide. They also represent a historical chronology, from the FCC's first inquiry into rural broadband—the Rural Broadband Strategy (2009)—to its most recent attempt to correct the rural–urban digital divide, RDOF (2020). Given Horwitz's (1989) argument that FCC policies have always favored incumbent providers and critical political economy's focus on power elites, when analyzing public comments, the decision was made to concentrate exclusively on industry comments (rather than public or civil society comments). This focused analytical attention on the relationship between industry and the FCC regarding issues of broadband resource distribution.

Thematic coding analysis involves searching for patterns in a series of texts (Herzog, Handke, & Hitters, 2019). The researcher begins by identifying individual incidents with a corpus of texts. These incidents are then inductively coded. The codes are combined to form patterns, which are brought together into more abstract themes, which ultimately form the argument (Herzog et al., 2019). The end result is robust hermeneutic analysis. The initial coding process yielded 32 themes, ranging from vague descriptors such as "policy" to groupings such as "communities" to specific items such as "mergers," "rural broadband," and "interagency cooperation." Three dominant themes emerged: meanings, mapping, and money. The analysis served to identify, explicate, and critique the themes that characterize FCC policies concerning the assignment of resources that encourage rural broadband deployment. The goal was a better understanding and explanation of the discord between rural broadband policy and deployment. The three themes identified are grounded in the theories of critical political economy and linked by the notion of policy failure.

At its broadest, policy failure, or the more specific, regulatory failure, occurs when established policies and regulations fail to accomplish a stated goal (Baldwin, Cave, & Lodge, 2012; Horwitz, 1989; Pickard, 2013). For instance, regulation, which is meant to uphold the public interest, fails when it is captured by industry interests. Horwitz (1989) calls this the "perversion of the public interest" (p. 27), connecting regulatory failure and capture theory.

Critical policy scholars, such as Victor Pickard (2013), have related policy failure and market failure: "Failure to act in the face of market failure . . . amounts to 'policy failure' especially from a public interest perspective" (p. 339). Pickard argues that policy failure occurs because of policy's "market ontology." Policy making in the U.S. is gripped by a neoliberal ideology that comes with the unshakable belief in the salience of the free market. A paradox therefore exists in the world of contemporary communication policy making. On the one hand, neoliberal ideology demands a free and unfettered market based on the assumption that it will bend to the rational will of the consumer (Harvey, 2005). On the other hand, there are market failures, which illustrate the fallibility of the market. Market failure demands regulatory intervention, especially for public or socially desirable goods such as broadband.

Theories of policy failure, capture theory, and market failure have immediate connections with critical political economy of communication (CPEC; Mosco, 2009; Wasko, Murdock, & Sousa, 2011). CPEC is predicated on the critical interpretation of power and control in the distribution of resources. As Mosco (2009) explains, "Political economy is the study of the social relations, particularly the power relations, that mutually constitute the production, distribution, and consumption of resources, including communication resources" (p. 2). In our context, broadband is the communication resource. Approaching broadband in this way allows us to interrogate why broadband is not universal, unlike water and electricity, in the U.S. and to determine what structures and power dynamics stymie broadband's universality.

I argue that the failures of rural broadband policy are defined by a politics of good enough that permeates explanations of how regulators and industry justify regulations (the failure of meanings), where broadband is deployed (the failure of mapping), and how subsidies are allocated (the failure of money). This politics benefits incumbent telecommunication companies and disadvantages rural communities.

Findings

Meanings

The FCC defines broadband as an "always-on" Internet connection with a minimum download speed of 25 Mbps and upload speed of 3 Mbps (depicted as "25/3"; FCC, 2020). This definition was enacted in 2015, when the FCC raised the threshold from 10/1. The 25/3 definition has generated considerable opposition for being slow and failing to align with today's data usage and need (Falcon, 2020).

In meeting the 25/3 definition, the FCC considers the technologies by which Americans access the Internet—fiber, coaxial cable, digital subscriber lines (DSLs), fixed wireless, and satellite—as competitive and interchangeable, with the exception of cellular (FCC, 2019). This belief in interchangeability is based on a policy position of "technological neutrality," which means that policies cannot discriminate against (or favor) a specific technology (Maxwell & Bourreau, 2014). Although intended to protect technological innovation, when coupled with a low-speed definition of broadband, this policy principle tends to favor incumbent telecommunication companies—the phone companies using DSL (e.g., Frontier, CenturyLink)—and satellite Internet providers (e.g., Hughes, Viasat) over next-generation technologies such as fiber optics.

Many argue that neither DSL nor satellite is capable of handling the bandwidth necessary to meet current daily usage, such as streaming and video conferencing (Crawford, 2019; Gallardo & Whitacre, 2019). DSLs are the copper wires laid down or hung up decades ago to provide telephone service. Today, it is the most prevalent broadband technology in rural America, accessible to 75% of rural American households (Gallardo & Whitacre, 2019). However, DSL is slow, with a recent study pointing to a median speed of 10/1, far below the FCC's definition (Gallardo & Whitacre, 2019). Satellite Internet, which covers 99% of the country, is notoriously slow, is expensive, comes with small data caps, is plagued by high latency (the delay between the transmission and reception of data), and is subject to inclement weather. The FCC (2018a) reports an average advertised speed of 15–25 Mbps download and 1–3 Mbps upload. Whitacre, Gallardo, Siefer, and Callahan (2018) argue that if satellite Internet is removed as a replacement, "the number of Americans without access to 25/3 speeds would nearly double" (para. 8). The FCC's definition of broadband, however, is low enough for DSL and satellite networks to qualify for subsidy and regulatory favor (see Zimmer, 2018).

Technological neutrality has been the policy position of the FCC since at least 1997, when it was enshrined in the work creating the USF (FCC, 1997).[4] Since then, commentators to FCC inquiries into rural

[4] Technological neutrality was also assumed in the 1996 Telecommunications Act, although the term does not appear as such.

broadband have gone to pains to remind the commission of this position. When the FCC invited comment on its 2009 Rural Broadband Strategy, multiple companies, such as Sprint (mobile), NextLink (fixed wireless), and Hughes (satellite), advocated for technological neutrality. Hughes (2009), in fact, pointed out that the FCC takes a technologically neutral perspective specifically because "satellite platforms may be inadvertently excluded by facially neutral requirements" (p. 9). The satellite industry found support in the NTCA—The Rural Broadband Association, the trade association of small and rural telecommunications providers:

> If there were an economically feasible way that the most remote customers could be provided broadband through any method other than satellite, rural carriers would undoubtedly be doing so. Rural carriers currently use a variety of technologies to reach customers: DSL, fiber to the home/fiber to the curb, wireless . . . satellite and cable modem. (NTCA—The Rural Broadband Association, 2009, p. 13)

Ten years later, technological neutrality was the crux of U.S. Cellular's filings to the 2019 RDOF docket. The mobile provider argued for retention of the principle and a reduction in performance tiers "so that broadband providers planning to offer services below the Gigabit speed—regardless of the technology they will use—have a fair opportunity to compete in the RDOF Phase I auction" (U.S. Cellular, 2019, p. 11). Filing in the same docket, Viasat added, "Excluding satellite providers through a high subtractive latency penalty would be disastrous for the Commission's efforts to expand access to supported broadband services, as well as inconsistent with the principles of technological and competitive neutrality" (Latham & Watkins, 2019, p. 3)

Threaded throughout these comments is an assumption that policy makers should be wary of making the standard for rural broadband so high that it will depress investment and therefore stymie deployment. As the National Rural Telecommunications Cooperative (2009) explained,

> Agencies should avoid any hard-line data speed standards and any "gold standard" level of service. Without question, the faster a service is the better. But in this case, great is the enemy of good. With millions of Americans lacking broadband, the goal should be to ensure access to best reasonable level of service, given all circumstances. . . . Consumers should not be forced to wait a longer period for a "gold" or "platinum" level of service that may never arrive. (p. 9)

These reminders were not lost on the FCC, and technological neutrality is found in the 2009 Rural Broadband Strategy, the 2010 National Broadband Plan, the 2011 USF Order, and, years later, the 2019 RDOF Order. As the commission noted in 2009,

> Every rural area presents its own special challenges, and a particular technological solution may be well-suited to one situation and poorly-suited to another. Decision makers therefore should proceed on a technology-neutral basis—by considering the attributes of all potential technologies—in selecting the technology or technologies to be deployed in a particular rural area. (Copps, 2009, p. 6)

On the surface, technological neutrality is neither harmful nor an example of capture. It privileges community needs by not forcing every community to adopt a particular (and often expensive) technology and privileges innovation. It finds support with consumer and public interest groups, such as the Consumer Federation of America and Consumers Union, which "urge[d] the Commission to adopt a least cost, technology neutral, no regrets approach to serving the un- and underserved in rural America and low-income inner city neighborhoods" (Cooper & Murray, 2009, p. 1), and with small provider associations such as the NTCA—The Rural Broadband Association, which cautioned against protecting networks that are "built to fail" in delivering next-generation speeds (NTCA—The Rural Broadband Association, 2019). Policies should not be built around particular technologies, lest they risk undercutting superior technologies yet to be developed (Maxwell & Bourreau, 2014). All petitioners agree on this point. When technological neutrality is paired with a slow speed threshold, such as the current standard of 25/3, however, it supports a politics of good enough by justifying the deployment and subsidization of outmoded technologies. Specifically, technological neutrality and the 25/3 definition keeps DSL and satellite providers at the table. ADTRAN made this point in its 2019 RDOF filing:

> Technological neutrality does not mean that all access technologies should be subsidized regardless of their ability to support the broadband services and applications needed by consumers. Rather, it means that the ability of a given proposed service to meet the required performance should be evaluated without regard to the underlying access technology. (ADTRAN, 2019, pp. 4–5)

Put differently, policies must be technologically neutral to privilege future innovation, but they must not be "technologically blind" (O'Hara, 2019). This analysis has revealed how, when coupled with slow speed thresholds, technological neutrality facilitates the politics of good enough through the very meaning of broadband.

Money

The USF, administered by the Universal Service Administrative Company (USAC), is the marquee vehicle for rural broadband subsidy. The USF is a cross-industry subsidy for operational expenses, wherein telecommunications companies pay into the fund (through a levy passed on to subscribers), and funds are subsequently meted back out to telecommunication companies (often the same ones) to connect unserved areas; to providers to subsidize low-income consumers; and to schools, libraries, and healthcare centers to subsidize connectivity. Fees are levied on interstate telephone operations of telecommunication companies, including landline telephone service, cell phone service, and the vaguely worded broadband connections that are deemed "interstate" (FCC, 2011). In 2019, USAC distributed $8.3 billion to support broadband deployment across the country (not just to rural communities) through four programs:

1. Connect America Fund (broadband providers serving high-cost areas): $5 billion;
2. Lifeline (low-income households to reduce the cost of subscriptions): $981 million;
3. E-Rate (schools and libraries for connectivity): $1.98 billion; and
4. Rural Health Care (rural hospitals and health care facilities for connectivity): $251 million (Universal Service Administrative Company, 2019).

The Connect America Fund is the hallmark program of USAC and the primary vehicle for rural broadband subsidization. CAF contains four subprograms:

- Connect America Phase II ($1.2 billion/year, 2015–2020),
- Connect America Phase II Auction ($148 million/year, 2018–2027),
- A-CAM ($1.04 billion/year, 2016–2025),
- A-CAM II ($490 million/year 2019–2028), and
- Mobility Fund II ($453 million/year—now defunct).

Joining these are the recently announced $20.4 billion RDOF, which will replace the Connect America Phase II program in 2020/2021, and the $9 billion 5G Fund for Rural America, which will replace the Mobility Fund. Because the CAF program is the largest, it is the focus of this analysis and critique.

The Connect America Fund II

The second phase of CAF ("CAF-II") began in 2015, when USAC allocated $10 billion over six years (2015–2020) to "price cap carriers." Price cap carriers are the largest telecommunications carriers—the legacy phone companies such as AT&T, CenturyLink, Windstream, and Frontier—with a predominantly nationwide footprint. The FCC identified 10 such providers, identified unserved and underserved rural areas, calculated a cost per location (between $52.50 and $198.60), and offered providers a set amount of money to provide service to these areas based on the cost to the subscriber (FCC, 2014a). Price cap carriers were chosen because at the time, it was reported that 83% of rural unconnected people lived in price cap territories (FCC, 2011). The decision to simply give price cap carriers money rather than hold a competitive auction is rooted in both politics and history. The FCC's justification exemplifies Horwitz's (1989) argument about regulation privileging industry interests:

> We conclude that the Connect America Fund should ultimately rely on market-based mechanisms . . . to ensure the most efficient and effective use of public resources. *However, the CAF is not created on a blank slate, but rather against the backdrop of a decades-old regulatory system* [emphasis added]. The continued existence of legacy obligations, including state carrier of last resort obligations for telephone service, complicate the transition to competitive bidding. (FCC, 2011, para. 165)

Price cap providers could pick and choose how much money they wanted to receive and which areas they wanted to serve. Not surprisingly, price cap carriers chose to serve the most populated areas, ensuring a surer return on investment. AT&T, for instance, only accepted funds for areas that surpassed what it received in CAF I (FCC, 2015). A total of $10.5 billion ($1.67 billion/year) was offered, and price cap carriers accepted $9 billion, or approximately $1.5 billion/year (Table 1). As an example, the FCC offered CenturyLink $514,334,045/year to connect 1,190,016 locations. It eventually accepted $505,702,762/year to serve 1,174,142 locations in 33 states, declining funding for locations in California, Mississippi, Oklahoma, and Wisconsin.

Table 1. Recipients of CAF-II.

Company	Amount accepted (per year)	Total over 6 years (2015–2021)
CenturyLink	$505,702,762	$3,030,000,000
AT&T	$427,706,650	$2,560,000,000
Frontier	$283,401,855	$1,700,411,130
Windstream	$174,895,478	$1,040,000,000
Verizon	$48,554,986	$291,329,916
Fairpoint Communications	$37,430,669	$224,584,014
Consolidated Communications	$13,922,480	$83,534,880
Cincinnati Bell	$4,449,130	$26,694,780
Hawaiian Telecom Inc.	$4,424,319	$26,545,914
Micronesian Telecom	$2,627,177	$15,762,702
Total	$1,500,896,506	$9,005,379,040

Source: FCC (2015).

To receive funding, price cap carriers first must be designated as Eligible Telecommunications Carriers (ETCs) by the respective state commissions, which includes providing voice services. A holdover from the days of telephony, by definition, this excludes "overbuilders" that do not intend to offer a voice package (FCC, 2011). Having been designated an ETC and accepted CAF-II funding, price cap carriers were required to build out broadband to 40% of funded locations by the end of 2017, 60% by 2018, 80% by 2019, and 100% by 2020.

Broadband for CAF-II recipients was defined as 10/1, not the national standard of 25/3. This was raised from 4/1 in the initial 2011 proposal (FCC, 2011), but it was not raised a second time, even after the FCC declared 25/3 to be the definition of broadband in 2015. The aim was for 4 million rural households to have 10/1 by the completion of the program in 2020. Reaching a 10/1 threshold is not an onerous condition for these largest providers. Technologically, this can be done via DSL without the need to deploy more expensive fiber optics. As a result, many communities receiving CAF-II found themselves stuck with 10/1, while communities that received CAF-II reverse auction funding and A-CAM funding were connected at a minimum of 25/3 (Dawson, 2018).

Even with these low requirements, certain price cap carriers failed to meet buildout expectations. In January 2020, CenturyLink (2020) notified the FCC that it had failed to meet its deployment targets for 23 states. Frontier (2020) admitted that it had failed to meet benchmarks in 13 states. This was the second time in as many years that both companies had failed to live up to their CAF-II promises (Brodkin, 2020). These admissions were not met with sanctions from the FCC.

Connect America Phase II Reverse Auction

In the original CAF-II plan, price cap carriers were offered $10.5 billion and accepted $9 billion. The remaining funds were put into a reverse auction (Auction 903), where all eligible carriers (and not just price cap carriers) could bid to serve areas declined during CAF-II. A total of $1.488 billion for 10 years

(2018–2028) or $148.8 million in annual support was distributed to 103 bidders. The bids covered 713,176 locations in 45 states (FCC, 2018b). According to the FCC, more than 99.7% of these locations will receive at least 25 Mbps download speeds (FCC, 2018b). Unlike the original CAF-II, which only benefited the largest telephone companies, all types of ISPs were eligible to bid on the reverse auction, including satellite providers, cable operators, and electrical cooperatives. Indeed, the top four winners would all have been ineligible for telephone-based subsidies (Table 2).

Table 2. Top Four Winners of the CAF-II Reverse Auction.

Bidder	Technology	Amount/yr	Commitment
AMG Technology (d/b/a NextLink)	Fixed Wireless	$28 million	Baseline (25/3) & Above baseline
WISPER Inc	Fixed Wireless	$22 million	Above baseline
RECC	Fiber	$18 million	Gigabit
Viasat	Satellite	$12 million	Baseline

Source: FCC (2018b).

One of the largest recipients of the reverse auction was the Rural Electric Cooperative Consortium (RECC), an amalgam of 21 electrical co-ops that committed to gigabit speeds. In contrast, the largest overall winner, AMG Technology (d/b/a NextLink), a fixed wireless company that won $281 million, committed to simply providing baseline (25/3) or an unspecified above baseline (FCC, 2018b). Viasat, a satellite provider, was the only bidder in the top four to offer only baseline (25/3) service. It won $122 million despite lackluster speeds and high latency. Hughes, a competitor to Viasat, went so far as to argue that Viasat lied to the FCC about its connectivity potentials to be eligible for the reverse auction. Hughes virtue signaled its decision not to compete in the reverse auction for this reason: "Viasat participated in the CAF-II auction knowing the applicable technical requirements, and knowing that it could not meet them. In contrast, knowing those requirements, Hughes declined to participate" (Hughes Network Systems, 2019, p. 1). Although the FCC dismissed Hughes complaint, that Viasat was not only permitted to compete in the auction, but also came out successful, illustrates the pervasiveness of the politics of good enough and its concrete policy consequences. It reflects the FCC's historical propensity to favor incumbents' current rural networks rather force them to upgrade.

A political economic critique of the subsidization of rural broadband through CAF-II and CAF-II reverse auction reveals unequal distribution of resources in terms of both dollars and expectations. Here, the 10 largest incumbents received $1.5 billion a year without competition and with minimal build-out requirements, while all others combined received $148 million/year. Many of the price cap companies are not upgrading their copper wires to fiber and are using DSL and fixed wireless to deliver 10/1 speeds (Dawson, 2018). In contrast, the reverse auction received high praise from scholars and industry watchers for lowering the cost of service, attracting new providers, and ushering in higher speeds (Glass & Tardiff, 2019). It was so highly regarded that it became the basis for the RDOF program set to begin in 2021. Although the RDOF has been lauded for its reverse auction approach, critics worry that it will replicate existing inequalities in rural deployment because it will rely on incorrect data that systematically disfavor rural communities.

Mapping

To determine what areas of the country are "served" and "underserved" by fixed broadband and therein establish which areas are eligible for subsidy, the FCC collects deployment data from ISPs through a document known as "Form 477." ISPs complete and submit Form 477 twice a year, and the data are used in the FCC's annual Broadband Deployment Report. The information from Form 477 is also used to populate the national broadband map, a searchable online map managed by the FCC.

The FCC's broadband map, like all cartographic projects, is a contested attempt at representation. There is considerable power in deciding not only what gets counted as a data point, but also who gets counted (Monmonier, 1991; Specht & Feigenbaum, 2019). Whoever controls the map controls the power of representation and has the perception of truth on their side: "As mapping platforms often pre-determine places, and their meanings, they shape users' spatial imaginations and limit what is possible to map" (Specht & Feigenbaum, 2019, p. 47). For broadband, mapping determines what areas get funding and who gets left out.

The 2020 Broadband Deployment Report reported that 22.3% of rural Americans lack access to a fixed home broadband connection of 25/3 (FCC, 2020). This was based on data collected from 2018 (there is typically an 18-month lag between collection and publication). According to the FCC, the percentage of unconnected rural Americans shrank from 32.3% to 22.3% between 2016 and 2018. The FCC claimed victory with this reduction, proclaiming, "The digital divide continues to narrow as more Americans than ever before have access to high-speed broadband" (FCC, 2020, para. 2). Here we see the FCC laying claim to solving the digital divide literally because of a colored-in map.

Exposing the politics of the national broadband map, multiple critics have noted that the percentages of deployment are highly inaccurate because of fatal structural flaws in Form 477. According to the Government Accountability Office (2018) and other sources (Bode, 2018; Meinrath, 2019), Form 477 has three structural flaws. The first flaw is the granularity of the collected data. The data are reported by census block rather than by residence or business. A census block is the smallest geographic area used by the Census Bureau, and the country has 11,166,336 census blocks. In a city, a census block is usually a city block, but it can be substantially larger in rural areas. The largest census block in the country is in Alaska and measures more than 8,500 square miles. Because ISPs report data by the census block rather than by individual household, a census block is considered entirely "served" as long as at least one edifice receives broadband. Consequently, if an ISP serves only one house in a census block, it can claim on Form 477 that the entire block has broadband. Moreover, an ISP does not have to be actively serving a census block for it to be considered as served as long as it can serve the block within 10 business days. This lack of granularity means the FCC has grossly overestimated how much of the country—rural or urban—has access to broadband.

Census blocks serve to generalize and amalgamate information, two of the "little white lies" that all maps tell (Monmonier, 1991). The use of census blocks presents a distorted view of enhanced connectivity, a form of "Machiavellian bias [that] can easily manipulate the message of a choropleth map" (Monmonier, 1991, p. 42). The use of census blocks disproportionately impacts rural areas because they represent much larger blocks than urban areas. As Busby and Tanberk (2020) explain,

> Urban areas, due to dense populations, tend to have census blocks that are narrow in square miles, whereas rural areas, with less population density have wider and less concentrated blocks. This increases the probability of those blocks having outstated coverage, because while one house could reach a wired line, the next house (which could be acres away) might not. Despite this, under the current system, it will still be counted. (para. 8)

Maps have always reflected the bias of the cartographer (Monmonier, 1991). In the FCC's broadband map, the bias is toward those who control the connections: telecommunication companies.

The second flaw in Form 477 is the data collection process. ISPs self-report the data, which the FCC does not audit. To make matters worse, ISPs are only required to report *advertised* rather than *actual* speeds (FCC, 2019), giving the impression that communities are receiving much faster speeds than what consumers are actually experiencing. This serves DSL and satellite networks, where there is considerable discrepancy between the theoretical speed limit of a connection and the actual speeds received, based on factors such as distance from the network node and the age of the network.

The third flaw recalls the myth of technological neutrality. Here, the FCC considers satellite broadband as "fixed" broadband and therefore interchangeable with cable, DSL, and fiber (FCC, 2019). This fungibility—especially in the case of satellite, which struggles to meet 25/3—gives an inflated impression of national broadband deployment (Zimmer, 2018). By including satellite as a broadband option, however, the FCC can lay claim to more Americans connected to the digital grid.

The implications of these flaws in Form 477 and the FCC's broadband mapping methodology are tremendous for rural communities. First and foremost, Americans are given the mistaken impression that the country is well served by broadband providers and that competition is healthy. Even more egregious are the implications for future funding. When an area is considered "served" by a broadband provider, that area is ineligible for further FCC subsidy. At least $5 billion in funding is available for rural broadband deployment, but dozens, if not hundreds, of communities are deemed ineligible because of the inaccurate data collected by Form 477.

Louisa County, a rural county in central Virginia with a population of 36,778 spread across 511 square miles, exemplifies this calamity. According to the FCC, Louisa is 100% served with broadband provision of at least 25/3 (Figure 1).

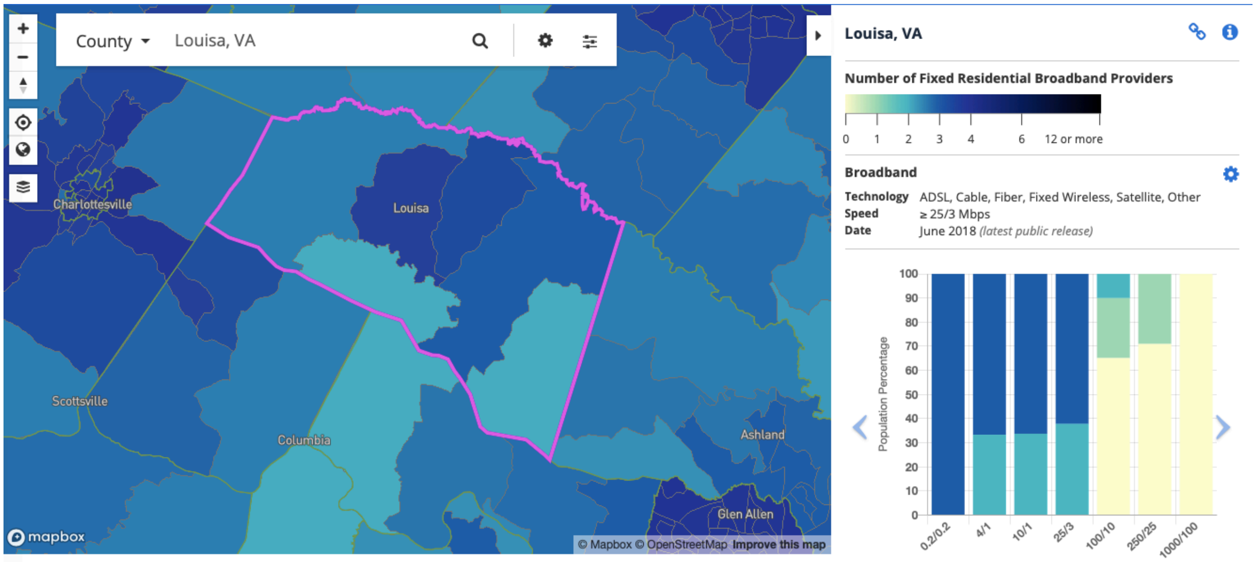

Figure 1. Broadband deployment in Louisa County, Virginia (accessed Oct. 2019).Source: FCC (n.d.).

When satellite is removed, the level of connectivity drops by 40% (Figure 2).

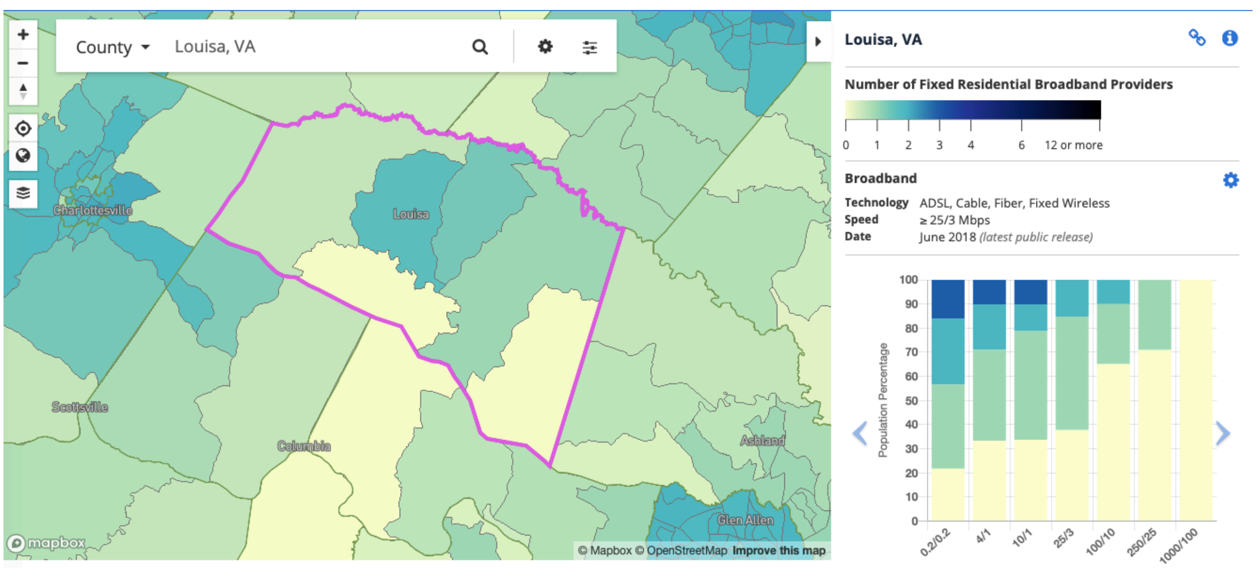

Figure 2. Broadband deployment in Louisa County, Virginia, without satellite (accessed Oct. 2019).Source: FCC (n.d.).

When we drill down even further, crowdsourced speed tests compiled by M-Lab (2019) report an average download speed of 3.9 Mbps and average upload speed of 1.69 Mbps in the county. These averages do not meet the broadband standards of 2015, let alone 2020. Despite these errors, the commission considers Louisa fully served in the national broadband map.

There are important political economic reasons for why the FCC has little interest in changing the provisions of the map.[5] As Karl Bode (2018) reported in a scathing critique of the broadband map for *Verge,* ISPs "are heavily incentivized to overstate speed and availability to downplay industry failures" (para. 3) so as to continue to garner regulatory favor. This echoes the language of critical cartographers, who note that "behind the map-maker lies a set of power relations, creating its own specification" (Harley, 1988, p. 287). Keeping the map as is, the FCC can claim that America is being well served by ISPs and therein sidestep the need to take regulatory action.

Conclusion

In the history of telecommunications policy, priority has always been given to incumbent telephone providers (Horwitz, 1989). Rural broadband policy follows this trend, favoring the largest telecommunication companies by bolstering their bottom line through subsidy, enabling outdated networks, and permitting them to boast about nationwide coverage. Not only have the FCC and ISPs taken credit for closing the digital divide where no credit is due, but they have also condemned dozens, if not hundreds, of localities to broadband obscurity.

When read in concert, the three failures of rural broadband policy—meaning, money, and mapping—underscore a recurrent and dominant politics of good enough at the FCC. According to the FCC, 10/1 is "good enough," DSL is "good enough," satellite is "good enough," and census blocks are "good enough" for rural communities. This belief serves the material interests of incumbent providers by justifying their broadband deployment strategies, while simultaneously disenfranchising rural communities and stymieing efforts to close the digital divide.

The focus on rural broadband in this article is by no means meant to denigrate or marginalize the other digital divides present in urban areas and among minority, low-income, and tribal communities (van Dijk, 2020). Moreover, issues presented in this article, particularly that of mapping, transgress rural geography. This is not a zero-sum game, however, and reform is needed across the board. Nevertheless, policy and market treatments differ between rural and urban deployment for the reasons explained earlier. As such, a dedicated policy intervention into rural broadband policy is warranted, but not at the expense of urban issues. Attention must be paid to both the deployment of broadband infrastructure in rural communities and the cost of access in both rural and urban areas.

Through a comprehensive analysis of rural broadband policies, this study sheds light on the politics of rural connectivity. More specifically, it demonstrates how major telecommunications companies continue

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[5] In March 2020, Congress passed the Broadband DATA Act, ordering the FCC to improve its data collection methods. The FCC has refused to do so until it receives funding.

to benefit from FCC favor and remain eligible for the $5 billion allocated annually for rural broadband deployment despite failing to live up to consumer and regulatory expectations. With RDOF set to begin at the end of 2020, the politics of rural connectivity is even more crucial to understand. With $20.4 billion at stake, it is vital that the mistakes of the past—documented in this article—are not replicated.

The private market has failed to connect the country, and federal policies are deeply skewed to favor incumbents. To connect the unconnected, we need to reinvent broadband policy from the bottom up. Based on this research, recommendations to reform rural broadband policy include:

- improving broadband mapping by capturing data at the address level and permitting crowdsourced submission through trusted speed testing sites;
- raising the speed threshold to 100/100 (and keeping technological neutrality);
- punishing companies that fail to deliver; and
- ending favoritism for incumbent providers.

COVID-19 has demonstrated that broadband is essential for education, commerce, health, safety, democracy, and quality of life. It also exposed the social costs for millions of rural Americans without access to this vital infrastructure. To achieve the goal of universal service promised by the Telecommunications Act and underscored by the billions of dollars spent annually, the U.S. must democratize rural broadband policy.

References

ADTRAN. (2019). *Comments*. Retrieved from https://ecfsapi.fcc.gov/file/10920244720800/ADTRAN %20RDOF%20Comments%209-20-19.pdf

Arbel, T., & Casey, M. (2020). Those without broadband struggle in a stay-at-home nation. *PBS*. Retrieved from https://www.pbs.org/newshour/nation/those-without-broadband-struggle-in-a-stay-at-home-nation

Baldwin, R., Cave, M., & Lodge, M. (2012). *Understanding regulation: Theory, strategy, and practice*. Oxford, UK: Oxford University Press.

Bator, F. M. (1958). The anatomy of market failure. *Quarterly Journal of Economics*, *72*(3), 351–379.

Bauerly, B., McCord, R., Hulkower, R., & Pepin, D. (2019). Broadband access as a public health issue: The role of law in expanding broadband access and connecting underserved communities for better health outcomes. *The Journal of Law, Medicine & Ethics*, *47*(2), 39–42. https://doi.org/10.1177/1073110519857314

Bode, K. (2018). *How bad maps are ruining American broadband*. Retrieved from https://www.theverge.com/2018/9/24/17882842/us-Internet-broadband-map-isp-fcc-wireless-competition

BroadbandNow. (2019). *Digital divide: Broadband pricing by state, zip code, and income 2019*. Retrieved from https://broadbandnow.com/research/digital-divide-broadband-pricing-state-zip-income-2019

Brodkin, J. (2020). *CenturyLink, Frontier took FCC cash, failed to deploy all required broadband*. Retrieved from https://arstechnica.com/tech-policy/2020/01/centurylink-frontier-took-fcc-cash-failed-to-deploy-all-required-broadband/

Brown, D. (1980). *Electricity for rural America: The fight for the REA*. Westport, CT: Greenwood Press.

Busby, J., & Tanberk, J. (2020). *FCC underestimates Americans unserved by broadband Internet by 50%*. Retrieved from https://broadbandnow.com/research/fcc-underestimates-unserved-by-50-percent

Carpenter, D., & Moss, D. (2014). Introduction. In D. Carpenter & D. Moss (Eds.), *Preventing regulatory capture* (pp. 1–22). Cambridge, UK: Cambridge University Press.

CenturyLink. (2020). *In the matter of Connect America Fund.* Retrieved from https://ecfsapi.fcc.gov/file/10115181431157/200115%20CenturyLink%20Notice%20WC%2010-90.pdf

Chao, B., & Park, C. (2020). *The cost of connectivity 2020.* Retrieved from https://www.newamerica.org/oti/reports/cost-connectivity-2020/

Cooper, M., & Murray, C. (2009). *Comments of the Consumer Federation of America and Consumers Union*. Retrieved from https://ecfsapi.fcc.gov/file/6520203357.pdf

Copps, M. (2009). *Bringing broadband to rural America*. Retrieved from https://apps.fcc.gov/edocs_public/attachmatch/DOC-291012A1.pdf

Crawford, S. (2013). *Captive audience.* New Haven, CT: Yale University Press.

Crawford, S. (2019). *Fiber: The coming tech revolution—And why America might miss it*. New Haven, CT: Yale University Press.

Dawson, D. (2018, January 22). Big telcos and rural customers. *POTs and PANs*. Retrieved from https://potsandpansbyccg.com/2018/01/22/big-telcos-and-rural-customers

Deller, S., & Whitacre, B. (2019). Broadband's relationship to rural housing values. *Papers in Regional Science, 98*(5), 2135–2156. https://doi.org/10.1111/pirs.12450

Dinterman, R., & Renkow, M. (2017). Evaluation of USDA's Broadband Loan Program: Impacts on broadband provision. *Telecommunications Policy, 41*(2), 140–153. https://doi.org/10.1016/j.telpol.2016.12.004

Falcon, E. (2020). *The American federal definition of broadband is both useless and harmful*. Retrieved from https://www.eff.org/deeplinks/2020/07/american-federal-definition-broadband-both-useless-and-harmful

Federal Communications Commission. (n.d.). *Fixed broadband deployment*. Retrieved from https://broadbandmap.fcc.gov/#/

Federal Communications Commission. (1997). *In the matter of Federal-State Joint Board on Universal Service*. Retrieved from https://transition.fcc.gov/Bureaus/Common_Carrier/Orders/1997/fcc97157.pdf

Federal Communications Commission. (2011). *Report and order and further notice of proposed rulemaking*. Retrieved from https://www.fcc.gov/general/connect-america-fund-caf

Federal Communications Commission. (2014. *Report and order, declaratory ruling, order, memorandum opinion and order, seventh order on reconsideration, and further notice of proposed rulemaking*. Retrieved from https://www.fcc.gov/document/fcc-releases-connect-america-fund-omnibus-order-and-fnprm

Federal Communications Commission. (2015). *Connect America Fund Phase II funding by carrier, state, and county*. Retrieved from https://www.fcc.gov/document/connect-america-fund-phase-ii-funding-carrier-state-and-county

Federal Communications Commission. (2018a). *Measuring fixed broadband.* Retrieved from https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-eighth-report

Federal Communications Commission. (2018b). *Connect America Fund Phase II: Bids*. Retrieved from https://auctiondata.fcc.gov/public/projects/auction903/reports/prs_all_bids

Federal Communications Commission. (2019). *Form 477*. Retrieved from https://us-fcc.app.box.com/v/Form477Instructions

Federal Communications Commission. (2020). *2020 broadband deployment report*. Retrieved from https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2020-broadband-deployment-report

Freedman, D. (2010). Media policy silences: The hidden face of communications decision making. *International Journal of Press/Politics, 15*(3), 344–361. doi:10.1177/1940161210368292

Frontier. (2020). *Comments*. Retrieved from https://ecfsapi.fcc.gov/file/10115075584633/FTR%20YE%202019%20CAF%20Letter%201.15.20.pdf

Gallardo, R. (2016). *Responsive countryside: The digital age and rural communities*. Starkville: Mississippi State University Extension.

Gallardo, R., & Whitacre, B. (2019). A look at broadband access, providers and technology. Retrieved from https://pcrd.purdue.edu/files/media/008-A-Look-at-Broadband-Access-Providers-and-Technology.pdf

Glass, V., & Tardiff, T. (2019). The Federal Communications Commission's rural infrastructure auction: What is hidden in the weeds? *Telecommunications Policy, 43*(8), 1–15. https://doi.org/10.1016/j.telpol.2019.04.005

Government Accountability Office. (2018). *Broadband Internet: FCC's data overstate access on tribal lands*. Retrieved from https://www.gao.gov/products/GAO-18-630

Grubesic, T., & Mack, E. (2017). *Broadband telecommunications and regional development*. London, UK: Routledge.

Harley, J. B. (1988). Maps, knowledge, power. In D. Cosgrove, S. Daniels, & A. Baker (Eds.), *The iconography of landscape* (pp. 277–312). Cambridge, UK: Cambridge University Press.

Harvey, D. (2005). *A brief history of neoliberalism*. Oxford, UK: Oxford University Press.

Herzog, C., Handke, C., & Hitters, E. (2019). Thematic analysis. In H. Van den Bulck, M. Puppis, K. Donders, & L. Van Audenhove (Eds.), *The Palgrave handbook of methods for media policy research* (pp. 385–402). Cham, Switzerland: Palgrave Macmillan.

Hite, J. (1997). The Thunen model and the new economic geography as a paradigm for rural development policy. *Review of Agricultural Economics, 19*(2), 230–240. https://doi.org/10.2307/1349738

Horwitz, R. B. (1989). *The irony of regulatory reform: The deregulation of American telecommunications*. Oxford, UK: Oxford University Press.

Hughes Network Systems. (2009). Exparte. Retrieved from https://ecfsapi.fcc.gov/file/6520205084.pdf

Hughes Network Systems. (2019). *CAF-II Metrics Order petitions for reconsideration*. Retrieved from https://ecfsapi.fcc.gov/file/1040932062890/April%205%20HNS%20Ex%20Parte.pdf

Kandilov, I., & Renkow, M. (2010). Infrastructure investment and rural economic development: An evaluation of USDA's broadband loan program. *Growth & Change, 41*(2), 165–191. https://doi.org/10.1111/j.1468-2257.2010.00524.x

Kim, Y., & Orazem, P. F. (2017). Broadband Internet and new firm location decisions in rural areas. *American Journal of Agricultural Economics*, *99*(1), 285–302. https://doi.org/10.1093/ajae/aaw082

Kline, R. (2000). *Consumers in the country: Technology and social change in rural America*. Baltimore, MD: Johns Hopkins University Press.

LaRose, R., DeMaagd, K., Chew, H., Tsai, H. S., Steinfeld, C., Wildonman S., & Bauer, J. (2012). Measuring sustainable broadband adoption: An innovative approach to understanding broadband adoption and use. *International Journal of Communication*, *6*, 2576–2600. Retrieved from https://ijoc.org/index.php/ijoc/article/view/1776/811

Latham & Watkins. (2019). Notice of exparte. Retrieved from https://ecfsapi.fcc.gov/file/1012361275828/ Viasat%20RDOF%20ex%20parte%20letter%20(1-22-20).pdf

Levitz, J., & Bauerlein, C. (2017). Rural America is stranded in the dial-up age. *Wall Street Journal*. Retrieved from https://www.wsj.com/articles/rural-america-is-stranded-in-the-dial-up-age-1497535841

Malecki, E., & Moriset, B. (2003). *The digital economy: Business organization, production processes, and regional developments*. Abingdon, UK: Routledge.

Malone, L. (2008). Rural Electrification Administration. *EHNet.* Retrieved from https://eh.net/encyclopedia/rural-electrification-administration/

Maxwell, W., & Bourreau, M. (2014). Technological neutrality in Internet, telecoms and data protection regulation. *SSRN.* doi:10.2139/ssrn.2529680

Meinrath, S. (2019). *Broadband availability and access in rural Pennsylvania*. Retrieved from https://www.rural.palegislature.us/broadband/Broadband_Availability_and_Access_in_Rural_Pennsylvania_2019_Report.pdf

M-Lab. (2019). *Louisa*. Retrieved from https://datastudio.google.com/reporting/ 1djtGEuqV4Qwrj26GQTN_xzp3rsMYYcmv/page/YW8NB?s=rzD5rHYkLT4

Monmonier, M. (1991). *How to lie with maps.* Chicago, IL: University of Chicago Press.

Mosco, V. (2009). *The political economy of communication*. Thousand Oaks, CA: SAGE Publications.

National Rural Telecommunications Cooperative. (2009). *Comments*. Retrieved from https://www.fcc.gov/ecfs/filing/5515348757

Norris, P. (2001). *Digital divide: Civic engagement, information poverty, and the Internet worldwide*. Cambridge, UK: Cambridge University Press.

NTCA—The Rural Broadband Association. (2009). *Comments*. Retrieved from https://www.fcc.gov/ecfs/filing/5515348780

NTCA—The Rural Broadband Association. (2019). *Reply comments of NTCA—The Rural Broadband Association*. Retrieved from https://www.fcc.gov/ecfs/filing/1021587925248

O'Hara, B. (2019). *Comments of the National Rural Electric Cooperative Association*. Retrieved from https://www.fcc.gov/ecfs/search/filings?proceedings_name=19-126&q=filers.name:(*NRECA*)&sort=date_disseminated,DESC

Parker, E., Hudson, H., Dillman, D., & Roscoe, A. (1989). *Rural America in the information age*. Lanham, MD: University Press of America.

Pickard, V. (2013). Social democracy or corporate libertarianism? Conflicting media policy narratives in the wake of market failure. *Communication Theory*, *23*(4), 336–355. https://doi.org/10.1111/comt.12021

Pickard, V. (2015). *America's battle for media democracy*. Cambridge, UK: Cambridge University Press.

Pickard, V., & Berman, D. (2019). *After net neutrality.* New Haven, CT: Yale University Press.

Popiel, P. (2018). The tech lobby: Tracing the contours of new media elite lobbying power. *Communication, Culture and Critique, 11*(4), 566–585. https://doi.org/10.1093/ccc/tcy027

Popiel, P. (2020). Let's talk about regulation: The influence of the revolving door and partisanship on FCC regulatory discourses. *Journal of Broadcasting & Electronic Media, 64*(2), 341–365. doi:10.1080/08838151.2020.1757367

Specht, D., & Feigenbaum, A. (2019). From the cartographic gaze to contestatory cartographies. In P. Bargues-Pedreny, D. Chandler, & E. Simon (Eds.), *Mapping and politics in the digital age* (pp. 39–55). New York, NY: Routledge.

Stenberg, P. (2009). *Broadband Internet's value for rural America*. Retrieved from https://www.ers.usda.gov/publications/pub-details/?pubid=46215

Strover, S. (2003). The prospects for broadband deployment in rural America. *Government Information Quarterly*, *20*(2), 95–106. doi:10.1016/S0740-624X(03)00038-8

Strover, S. (2019). Public libraries and 21st century digital equity goals. *Communication Research and Practice*, *5*(2), 188–205. https://doi.org/10.1080/22041451.2019.1601487

Universal Service Administrative Company. (2019). *2019 annual report*. Retrieved from https://www.usac.org/about/reports-orders/annual-report/

U.S. Cellular. (2019). *Reply comments*. Retrieved from https://ecfsapi.fcc.gov/file/1021019362798/2019%201021%20USCC%20RDOF%20Reply%20-%20FINAL%20As%20Filed.pdf

van Dijk, J. (2020). *The digital divide.* Cambridge, UK: Polity Press.

Wasko, J., Murdock, G., & Sousa, H. (2011). Introduction. In J. Wasko, G. Murdock, H. Sousa (Eds.), *The handbook of political economy of communication* (pp. 1–10). Chichester, UK: Blackwell.

Whitacre, B. (2017). Fixed broadband or mobile: What makes us more civically engaged? *Telematics and Informatics*, *34*(5), 755–766. doi:10.1016/j.tele.2017.02.006

Whitacre, B., Gallardo, R., Siefer, A., & Callahan, B. (2018). *The FCC's blurry vision of satellite broadband*. Retrieved from https://www.dailyyonder.com/fccs-blurry-vision-satellite-broadband/2018/03/26/24739/

Whitacre, B., Gallardo, R., & Strover, S. (2014). Broadband's contribution to economic growth in rural areas: Moving towards a causal relationship. *Telecommunications Policy*, *38*(11), 1011–1023. https://doi.org/10.1016/j.telpol.2014.05.005

Zimmer, J. (2018). FCC concludes satellite Internet is good enough for rural broadband. *BroadbandNow.* Retrieved from https://broadbandnow.com/report/satellite-Internet-good-enough-rural-broadband/