



Profiles of Monopoly: Big Cable and Telecom

By H. Trostle and Christopher Mitchell, Updates from Ny Ony Razafindrabe,
Michelle Andrews, and Katie Kienbaum
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About the Institute for Local Self-Reliance

The Institute for Local Self-Reliance (ILSR) is a 42-year-old national nonprofit research and educational organization. ILSR's mission is to provide innovative strategies, working models, and timely information to support strong, community rooted, environmentally sound, and equitable local economies. To this end, ILSR works with citizens, policymakers, and businesses to design systems, policies, and enterprises that meet local needs; to maximize human, material, natural, and financial resources, and to ensure that the benefits of these systems and resources accrue to all local citizens. More at www.ilsr.org.

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Table of Contents

Introduction.....	1
Comcast.....	4
Charter.....	6
AT&T.....	8
Verizon.....	11
CenturyLink.....	13
Frontier.....	16
Windstream.....	19
Conclusion.....	21
Resources.....	24
Endnotes.....	25
Appendices.....	32

Introduction

We first published this report in 2018. This edition uses current data to update the maps and the analysis featured in the original. We have also included the telephone company Windstream in this 2020 update.

The market has spoken: The market is broken. This research sets the stage to explore how national forces are at work in local communities. Nationally, cable companies maintain monopolies on high-speed Internet access. The large telecommunication companies, such as AT&T and Verizon, invest mainly where they face cable competition.¹ Admittedly, cable service is available to the vast majority of Americans, in large part because of historic municipal franchise requirements for buildout. However, available data suggests that government programs to encourage rural investment from the biggest companies have generally failed whereas cooperatives and smaller firms have thrived with available subsidies.

This research began with the simple desire to explore where the largest providers offer service and how they have carefully minimized head-to-head competition with each other, particularly when looking solely at the cable companies or the telephone companies. We came to believe others would find it helpful not just to see these territories but also to include some basic facts, such as the number of households with access to broadband as defined by the FCC or basic revenues for the providers.

Monopolies and Broadband Internet Access

Millions of Americans still do not have a real choice when it comes to their Internet service. In urban areas, a relative majority can choose between two or more providers — usually the monopoly cable company and the often slower monopoly phone company. In rural areas the situation is worse. Residents and businesses are often lucky to have access to high-quality

Internet access at all. No matter where you go, people tend to be confused about their options. Even policymakers tasked with improving access lack basic information as to which service providers are in each geographic region.

In this report, we provide detailed information about broadband competition by sifting through data on claimed broadband availability of seven of the largest Internet Service Providers (ISPs) through a series of maps. Two of the ISPs are cable companies: Comcast and Charter (largest and second largest, respectively). The other five ISPs are the five largest telecommunication companies, formerly telephone companies (telcos): AT&T, CenturyLink, Frontier, Verizon, and Windstream. We classify their broadband service areas and identify where each ISP faces no competition in providing broadband speeds of 25 Megabits per second (Mbps) download and 3 Mbps upload, the Federal Communications Commission's (FCC) definition of broadband.²

Charter and Comcast rely on coaxial cable to provide Internet service. This type of network can offer fast downloads and slow-to-moderate speed uploads — easily supporting broadband. The telcos, however, primarily use two types of technology: DSL and Fiber-to-the-Home (FTTH). DSL is based on copper telephone lines and often cannot deliver broadband-level speeds, especially in rural areas. FTTH is considered the gold standard of high-speed Internet service. It provides the most reliable connection and fastest download and upload speeds as well as the most robust upgrade path. For that reason we also present corresponding maps of the five telcos' FTTH service areas.

Since 2015, the federal government has given the large telcos \$1.5 billion in subsidies each year through the Connect America Fund to bring high-speed Internet service to rural areas. Large telcos only need to provide speeds of at least 10 Mbps (download) and 1 Mbps (upload) in order to receive the subsidy.

Despite the Connect America Fund, the large providers have rarely invested in next-generation services in areas where they do not face competition.

The telcos' widespread, legacy DSL networks, especially in rural areas, often do not support broadband service and, as such, the majority of their rural DSL networks rarely appear on maps showing connections that meet the broadband definition. The Connect America Fund will continue to provide these subsidies through 2020, but areas that have already received the basic upgrades funded by it will need additional subsidies immediately to avoid falling further behind.

This demonstrates a key point: The largest telephone companies have far different incentives than smaller firms, whether private, cooperative, or public. Large firms appear to invest in modern networks solely where they face competition and provide the minimum allowable under subsidy programs elsewhere. Cooperatives and municipal networks as well as locally owned private networks tend to invest in longer-term, next-generation services that well exceed the minimum definition of broadband.³ Compare the fiber maps of the telcos in this report to the map in Appendix G of fiber networks built by rural cooperatives.

Since we originally published this report two years ago, the percentage of people reported in Comcast and Charter service areas who could not access broadband from any other provider has fallen. At the same time, the percentage of people who can only access broadband from the biggest telecommunications companies (those who cannot choose a local provider for broadband service) has remained relatively stable. This suggests that the large telcos and other broadband providers are slowly expanding to compete with cable companies in cities while maintaining relatively smaller monopoly regions in less urban areas. Due to the lack of precision of federal data, we believe that much of this competition may be a mirage - where many people do not actually have a choice or where the new choice is not truly competitive with the capacity offered by cable. Consider that 33 million people live in census blocks where, at best, they can only choose between a DSL service likely advertising between 25 and 40 Mbps download and either Comcast or Charter, which start at more than 100 or even 200 Mbps for the base package. This is considered competition.

The Data

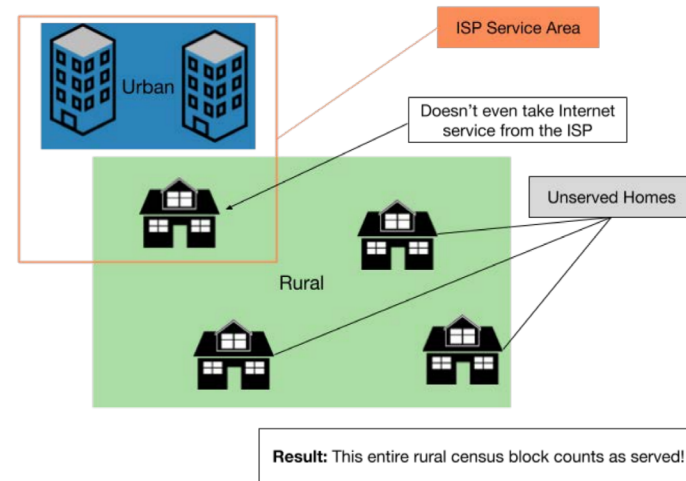
Our primary source of information is the FCC Form 477 Data June 2019 v1. The FCC releases updates to this form every six months. ISPs self-report this information to the FCC down to the census block level. The result overestimates actual broadband availability and ISPs' service areas.

Census blocks are the smallest unit of measurement in the U.S. census, but they vary in both land area and population. An ISP may classify a census block as served even if only one resident could receive service.⁴ This methodology leads to an overstatement of broadband service available (see Figure 1). Competition is also overstated (see Figure 2).

We have deep hesitations about using this data because of its many inaccuracies, but there is no other feasible option. In any event, this provides a conservative baseline for the problems in the market — though we believe the true level of competition is worse than this analysis shows, neither is tolerable in a country that claims to support a market-driven solution for supplying broadband Internet access.

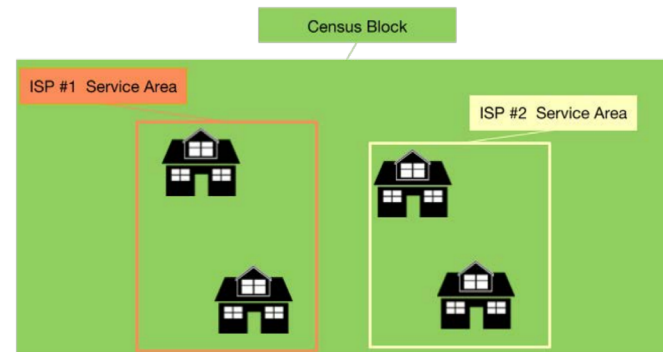
Throughout this analysis, we include all fixed wireless Internet access providers (WISPs) that claim to offer 25 Mbps / 3 Mbps broadband service as competitors to the cable and telecom companies. Fixed wireless data, however, appears to be inaccurate at a higher rate than other technologies in this data set. WISPs are often smaller firms that have legitimate challenges in completing the unnecessarily complex and poorly managed FCC data collection process. The result is that more than a few have claimed to offer faster speeds than what they actually advertise.⁵ We, however, do include fixed wireless providers because the FCC uses the fixed wireless broadband data in their estimate of national terrestrial fixed broadband access.⁶ Additionally, fixed wireless is often a superior option to DSL in rural regions and some urban areas.⁷

We do not include geostationary satellite service providers because the technology is highly dependent on terrain and weather, has very poor latency, and is often more expensive than terrestrial ISPs. Further, households and businesses have unequivocally rejected satellite Internet access where there is a single alternative. Unlike many cable and telephone companies, satellite service bases pricing on both speed and data usage, making it difficult to estimate monthly bills.⁸ Satellite service is also excluded by the FCC in the official estimates of fixed broadband coverage published in the National Broadband Deployment Progress reports.⁹ At the time of this writing, there is no publicly available data on low earth orbit satellite systems.



Designed by H. Trostle, Research Associate, Institute for Local Self-Reliance, July 2018.

Figure 1: Diagram of FCC Broadband Data Overstatement



Each address has only one option for service

Designed by H. Trostle, Research Associate, Institute for Local Self-Reliance, July 2018.

Figure 2: Diagram of FCC Broadband Data Competition Overstatement

Comcast Xfinity

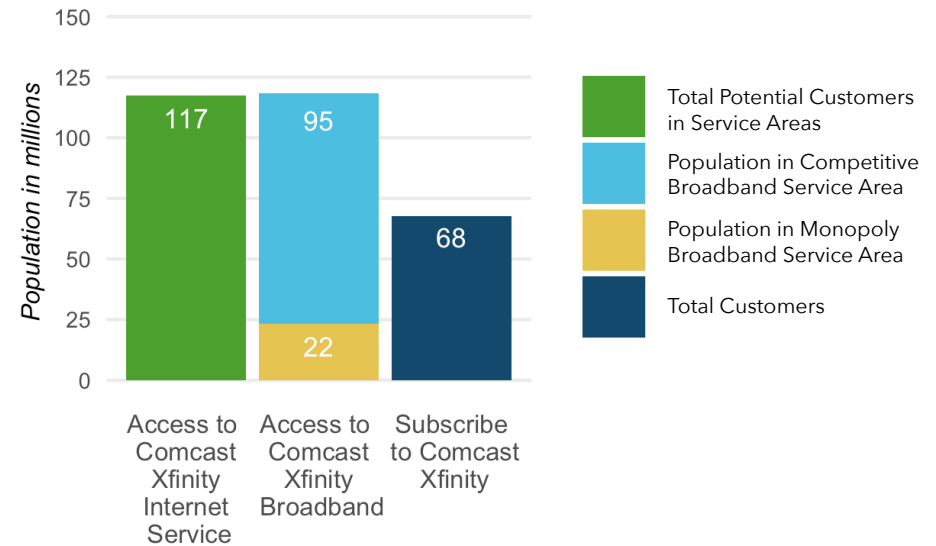
Comcast is the largest residential ISP and also the largest cable company in the U.S. Approximately 117 million people in 39 states live in Comcast's residential Xfinity Internet service area.¹⁰ Practically all of these people have access to broadband-level service through Comcast Xfinity, but about 22 million of these people have no other option for broadband service.¹¹ This is a decrease from our previous report which found that approximately 30 million people had no other option. Almost half of that new competition has come from fixed wireless operators, some of which have made bold claims of coverage that have not been independently verified. Fiber is only claimed in 30% of the newly competitive census blocks, often by AT&T or CenturyLink, which tend not to extend fiber to all households within census blocks, as best we can tell. Overall, fewer than half of Comcast's customers live in census blocks where fiber is available to at least some subscribers.

Per Comcast, approximately 27 million households, or about 68 million people, subscribe to Comcast's Internet service (average U.S. household was 2.52 people in 2019).¹² These households may not actually subscribe to broadband speeds because that service tier may be unaffordable.

According to Comcast's 2020 first quarter results, revenue from Internet access was \$5 billion, and capital expenditure was about \$1.9 billion for the entire company and about \$1.3 billion for the Cable Communications division. Annual revenue from Internet access was approximately \$19 billion, and the annual capital expenditure was about \$10 billion for the entire company and about \$6.9 billion for Cable Communications in 2019.¹³

Comcast receives no federal Connect America Fund subsidies but has received subsidies from some states, like Vermont and Massachusetts.¹⁴

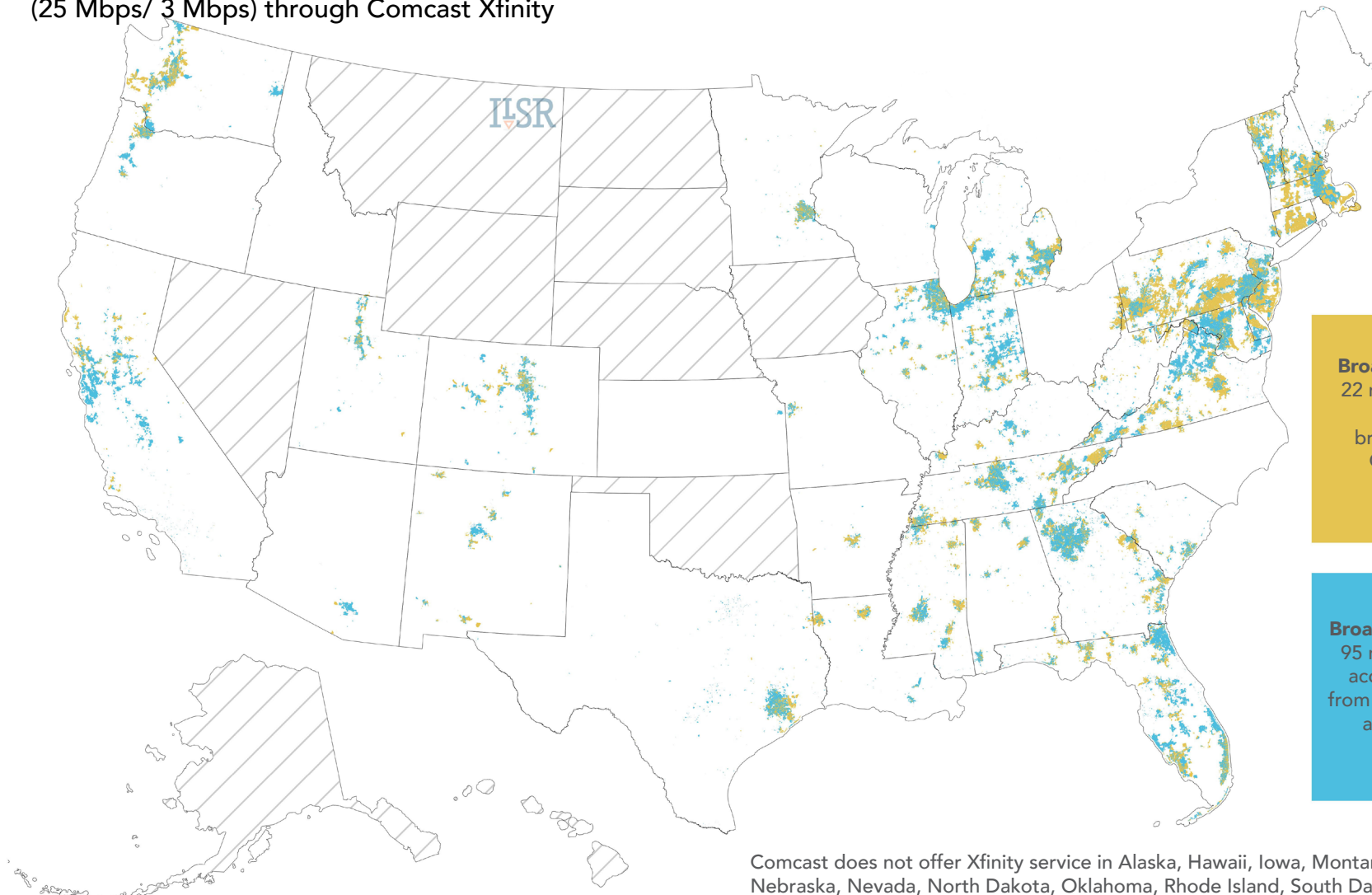
Comcast Xfinity Quick Facts



Comcast's Captured Customers

22 million people only have access to broadband (25 Mbps/ 3 Mbps) through Comcast Xfinity

Internet customers: 27 million households (~68 million people)
2020 first quarter revenue: \$5 billion from Internet services



Broadband Monopoly
22 million people only have access to broadband through Comcast Xfinity

Broadband Competition
95 million people have access to broadband from Comcast Xfinity and at least one other provider

Comcast does not offer Xfinity service in Alaska, Hawaii, Iowa, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Rhode Island, South Dakota, or Wyoming

Design: Ny Ony Razafindrabe, Institute for Local Self-Reliance

Source: [FCC Form 477 June 2019 v1](#); [Comcast 1st quarter results 2020](#)

This is a best case scenario. FCC Form 477 data [overstates broadband availability and competition](#).



Charter Spectrum

Charter is the 2nd largest cable company in the U.S. Approximately 109 million people in 41 states can subscribe to Charter Spectrum residential Internet service.¹⁵ All of these people have access to broadband-level service through Charter Spectrum.¹⁶ About 24 million have no other option for broadband service. This is a decrease from our previous report which found that 38 million people had no other option. In the census blocks reporting new competition, more than half report fixed wireless and only 23% report fiber. AT&T is responsible for most of those new fiber claims and tends not to extend fiber to all households within census blocks, as best we can tell from available data. Overall, only 41% of Charter customers live in census blocks where fiber is available to at least some subscribers.

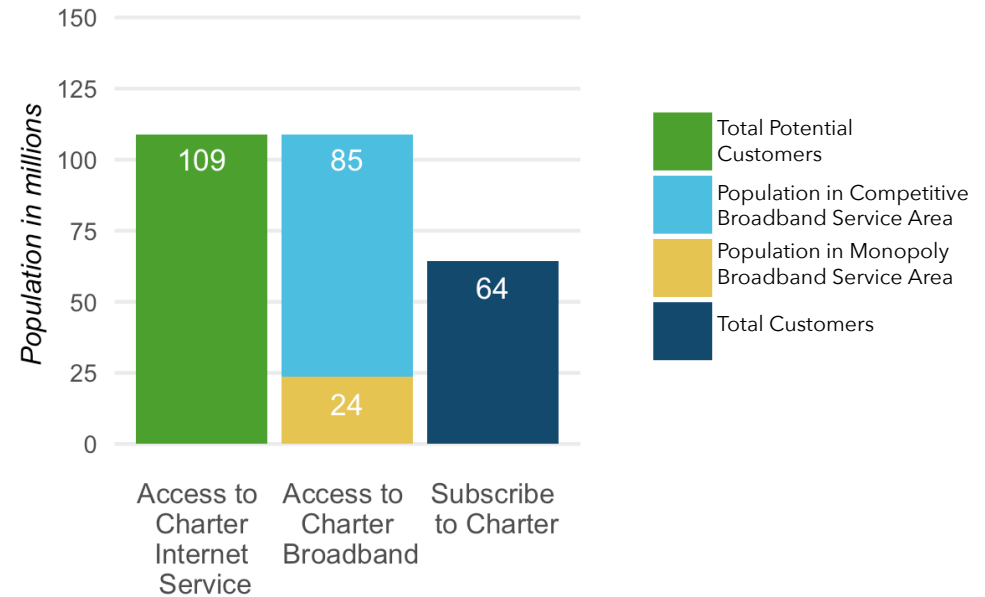
According to Charter, approximately 25 million households, or about 64 million people, subscribe to Charter Spectrum Internet service (average U.S. household size was 2.52 people in 2019).¹⁷

According to Charter's 2020 first quarter results, revenue from residential Internet access was \$4.4 billion and capital expenditure was about \$1.5 billion for the entire company and about \$1.4 billion for the cable division. Annual revenue from residential Internet access was approximately \$17 billion, and the annual capital expenditure was about \$7.2 billion for the entire company and about \$6.8 billion for the cable division in 2019.¹⁸

Charter receives no federal Connect America Fund subsidies.

In 2018, the New York Public Service Commission ordered Charter to sell the Time Warner Cable system which the company had bought in 2016 because it failed to meet the state's broadband expansion goals.¹⁹ However, Charter settled with the state agency the next year and agreed to expand and contribute funds for broadband access in order to stay in New York.²⁰

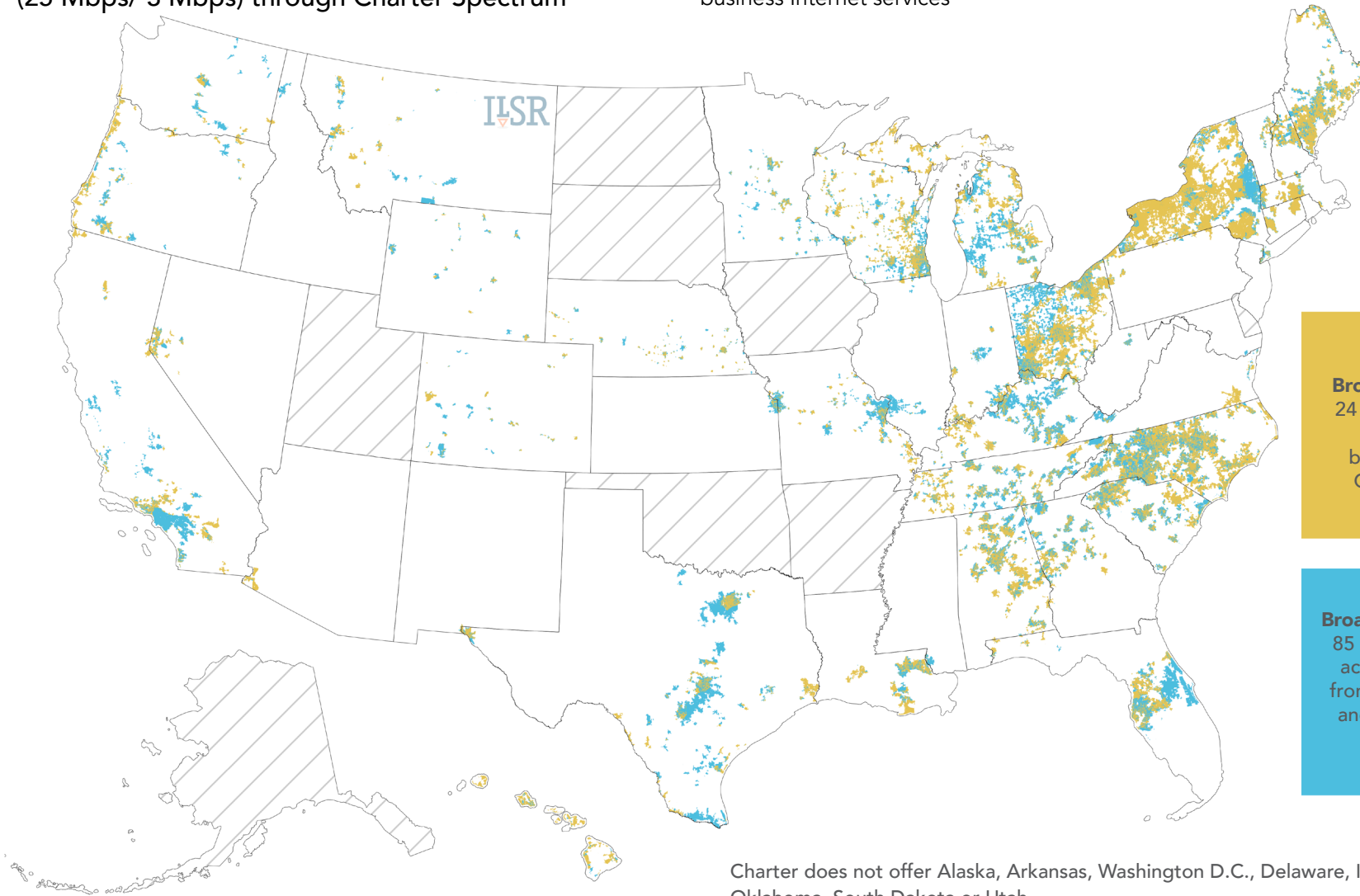
Charter Spectrum Internet Service Quick Facts



Charter's Captured Customers

24 million people only have access to broadband (25 Mbps/ 3 Mbps) through Charter Spectrum

Internet customers: 25 million households (~64 million people)
2020 first quarter revenue: \$4.4 billion from residential and small business Internet services



Broadband Monopoly
24 million people only have access to broadband through Charter Spectrum

Broadband Competition
85 million people have access to broadband from Charter Spectrum and at least one other provider

Charter does not offer Alaska, Arkansas, Washington D.C., Delaware, Iowa, North Dakota, Oklahoma, South Dakota or Utah

Design: Ny Ony Razafindrabe, Institute for Local Self-Reliance
Source: [FCC Form 477 June 2019 v1](#); [Charter 1st quarter results 2020](#)
This is a best case scenario. FCC Form 477 data [overstates broadband availability and competition](#).



AT&T

AT&T is the largest telecommunications provider in the world and the largest DSL provider in the U.S. AT&T has also invested in FTTH, almost entirely in urban areas. This analysis does not include any of AT&T’s mobile wireless customers.

AT&T claims 134 million people in 21 states can subscribe to AT&T’s residential Internet service.²¹ The DSL service area covers 129 million people, but the FTTH service area covers 39 million people; these service areas overlap.

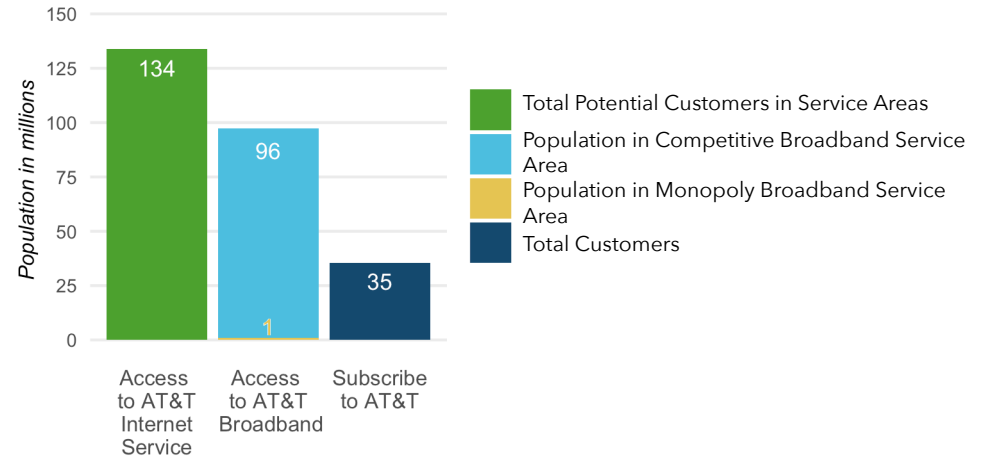
About 73 percent of people (97 million) in the total service area have access to broadband-level service through AT&T.²² Of these people, at least 1 million have no other other option for broadband service. This is an increase from our previous report which found that 745 thousand had no other option. The data suggests that AT&T has almost exclusively upgraded its networks to offer broadband-level service only in areas where it faces competition.

Approximately 14 million households and some small businesses, or about 35 million people, subscribe to Internet service from AT&T (average U.S. household size was 2.52 people in 2019).²³ These households may not actually subscribe to broadband speeds because that speed tier may be unavailable at their address or it may be unaffordable.

According to AT&T’s 2020 first quarter results, revenue from Internet access was \$2.1 billion and capital expenditure for the entire company, including video and wireless, was \$5 billion. Annual revenue from Internet access was approximately \$8.4 billion, and the annual capital expenditure for the entire company was about \$20 billion in 2019, a number inflated by a federal contract to build FirstNet.²⁴

Through the Connect America Fund, AT&T receives \$427.7 million each year from 2015 to 2020 to serve 1.1 million homes and businesses.²⁵ That is \$2.5 billion total. In order to receive this subsidy, AT&T only needs to provide download speeds of 10 Mbps and upload speeds of 1 Mbps — far less than broadband service. AT&T’s Internet service subsidized by the Connect America Fund service is quite costly with monthly bandwidth caps.²⁶

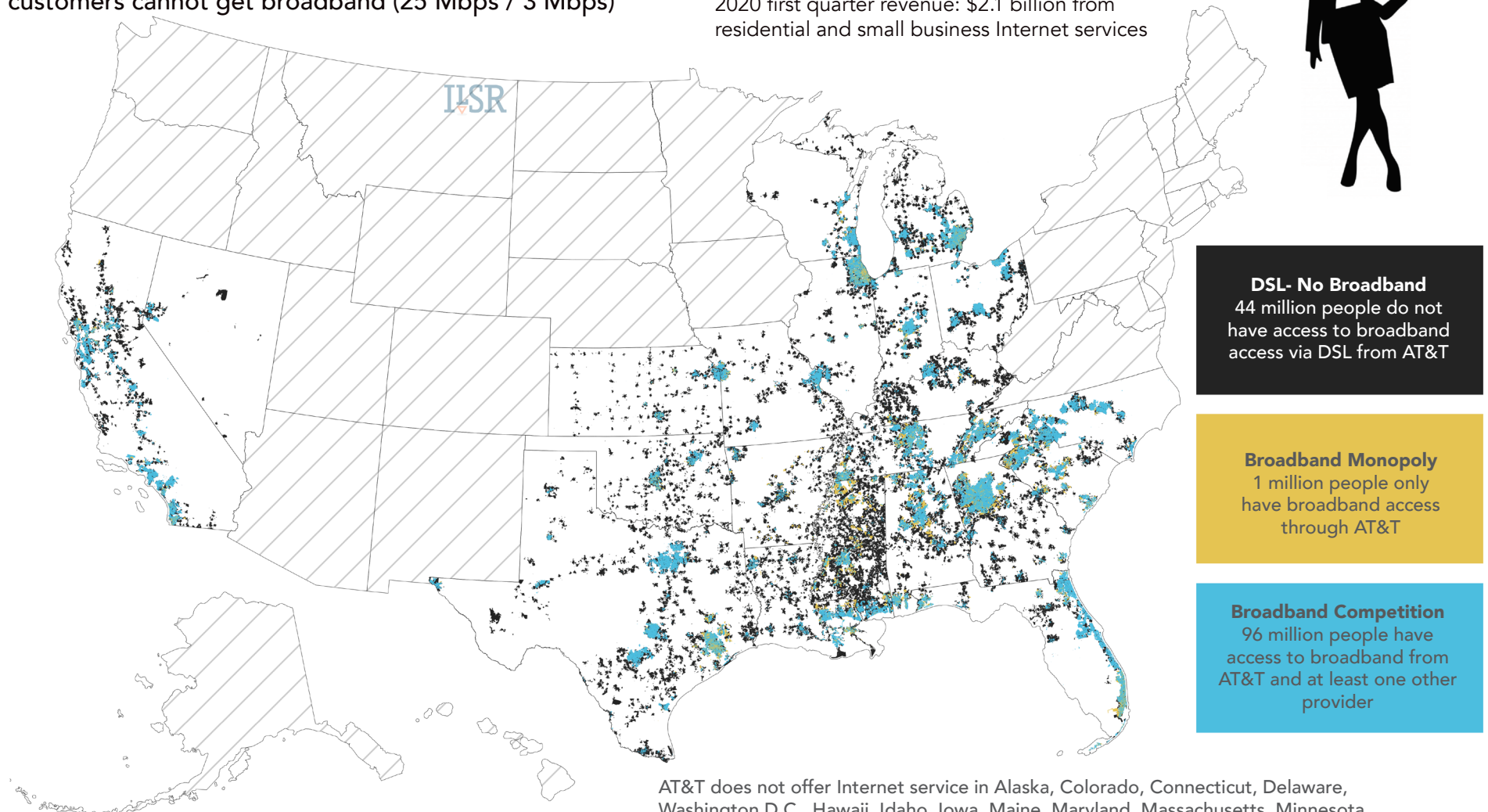
AT&T Internet Service Quick Facts



AT&T's Captured Customers

AT&T has a widespread DSL network, but many of these DSL customers cannot get broadband (25 Mbps / 3 Mbps)

Internet customers: 14 million households (~35 million people)
2020 first quarter revenue: \$2.1 billion from residential and small business Internet services



DSL- No Broadband
44 million people do not have access to broadband access via DSL from AT&T

Broadband Monopoly
1 million people only have broadband access through AT&T

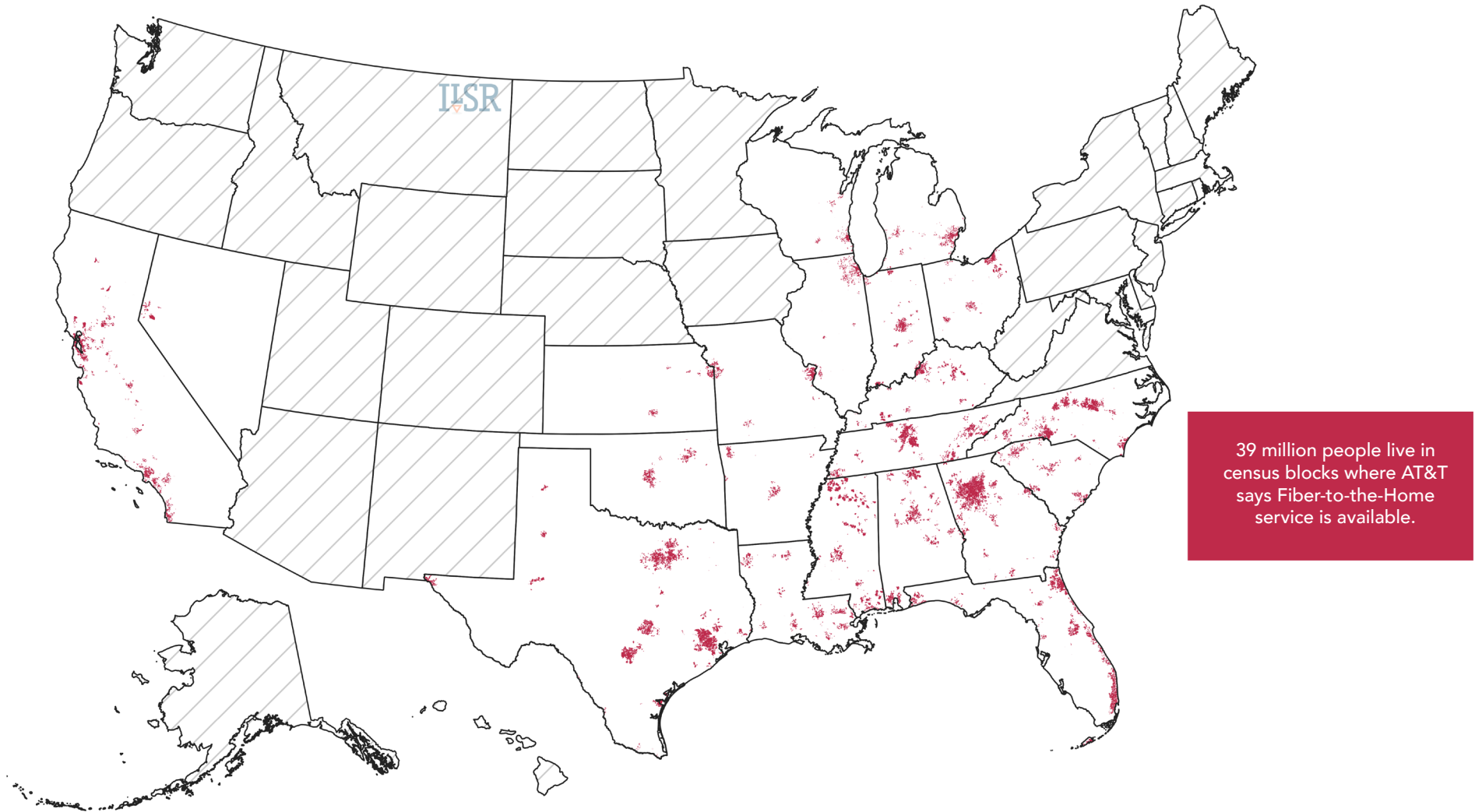
Broadband Competition
96 million people have access to broadband from AT&T and at least one other provider

AT&T does not offer Internet service in Alaska, Colorado, Connecticut, Delaware, Washington D.C., Hawaii, Idaho, Iowa, Maine, Maryland, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming.

Design: Michelle Andrews, Institute for Local Self-Reliance
Source: [FCC Form 477 June 2019 v1](#), [AT&T 1st Quarter Report 2020](#)
This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition.](#)



AT&T's Broadband Fiber-to-the-Home



Design: Michelle Andrews, Institute for Local Self-Reliance
Source: [FCC Form 477 June 2019 v1](#), [AT&T 1st Quarter Report 2020](#)
This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition.](#)



Verizon

Verizon is the 3rd largest DSL provider in the U.S. and has heavily invested in its FTTH network, Fios, throughout its service area and in areas it has since sold off to Frontier. This analysis does not include any of Verizon's mobile wireless customers.

Verizon has reported that approximately 57 million people in 9 states and D.C. can subscribe to Verizon's Internet service.²⁷ The DSL service area covers 50 million people, but the FTTH service area covers 37 million people; these service areas overlap.

About 64 percent of people (37 million) in the total service area have access to broadband-level service through Verizon.²⁸ Approximately 195 thousand people have no other option for broadband service. This is a slight increase from our previous report which found that 185 thousand people had no other option. This means that Verizon has almost exclusively deployed Fios to areas where it faces cable competition.

Of that population, 6.5 million households, or about 16 million people, subscribe to Internet service from Verizon (average U.S. household size was 2.52 people in 2019).²⁹ These households may not actually subscribe to broadband speeds because that speed tier may be unavailable at their address or it may be unaffordable.

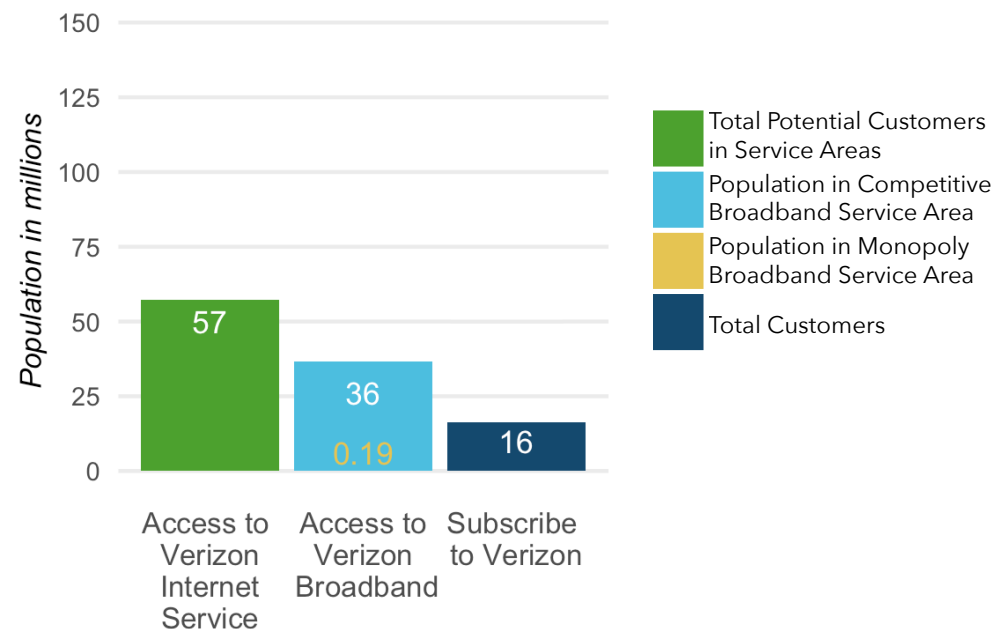
According to Verizon's 2020 first quarter results, revenue from the Fios division was \$2.8 billion and the capital expenditure for the entire company was about \$5.3 billion. In total in 2019, annual revenue from the Fios division was approximately \$11 billion, and the annual capital expenditure was about \$18 billion for the entire company.³⁰

Verizon turned down most Connect America Fund dollars in 2012 and 2015. The areas where Verizon did accept funding, the company sold to Frontier and passed along the Connect America Fund money. Verizon has been in the process of selling much of its rural wireline network to competitors.³¹ Verizon

later bid for and won approximately \$9.5 million in the Connect America Fund Phase II reverse auction. The company also received more than \$70 million in the partially Connect America-funded New NY Broadband Fund to expand broadband access in New York.³²

New York City is currently pursuing action against Verizon. The company was supposed to deploy FTTH throughout the city by 2014. Many in the city, however, remain without access to this service. Verizon places the blame on landlords: apartment buildings require landlord permission to install fiber. New York City filed suit in 2017. The case is pending.³³

Verizon Internet Service Quick Facts

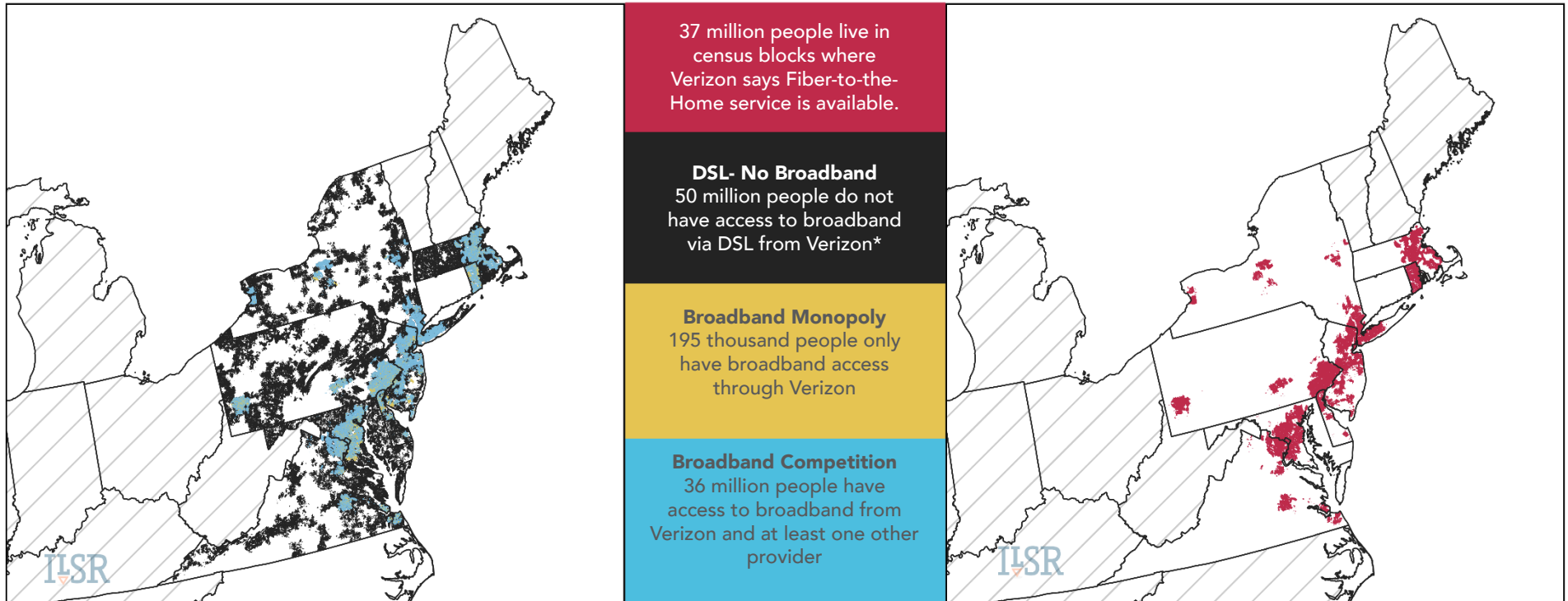


Verizon's Network

Broadband (25 Mbps / 3 Mbps) is only available from Verizon on its Fiber-to-the-Home network. The network is only available in New England and the Mid-Atlantic.

Internet customers: 6.5 million households (~16 million people)
 2020 first quarter revenue: \$2.8 billion from Fios services

verizon[✓]



Verizon only offers Internet service in Connecticut, Delaware, Washington D.C, Maryland, Massachusetts, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, and Virginia.

*50 million people in total have access to Verizon DSL.

Design: Michelle Andrews, Institute for Local Self-Reliance
 Source: [FCC Form 477 June 2019 v1](#), [Verizon 1st Quarter Report 2020](#)
 This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition](#).



CenturyLink

CenturyLink is the 2nd largest DSL provider in the U.S. and has also invested in FTTH, mainly in urban areas.

According to CenturyLink, roughly 54 million people in 36 states can subscribe to CenturyLink's Internet service.³⁴ The DSL service area covers 53 million people, but the FTTH service area covers 16 million people; these service areas overlap.

About 54 percent of people (29 million) in the total service area have access to broadband-level service through CenturyLink.³⁵ Approximately 1.2 million people have no other option for broadband service. This is a slight increase from our previous report which found that 1 million had no other option. Of the five biggest telcos, CenturyLink has some of the most potential customers that have no other broadband choice, meaning it has invested more in areas without competition, but not by much.

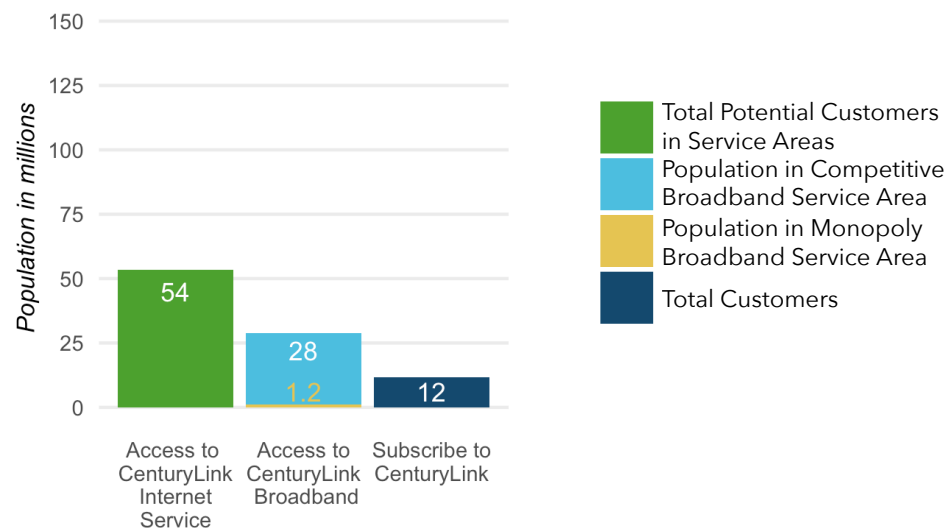
Of that population, 4.7 million households, or about 12 million people, subscribe to Internet service from CenturyLink (average U.S. household size was 2.52 people).³⁶ These households may not actually subscribe to broadband speeds because that speed tier may be unavailable at their address or it may be unaffordable.

According to CenturyLink's 2020 first quarter results, revenue from residential Internet access was \$722 million and capital expenditure for the entire company was \$974 million. Annual revenue from the Internet division was approximately \$2.9 billion, and the annual capital expenditure was about \$3.6 billion in 2019.³⁷

Through the Connect America Fund, CenturyLink receives \$505.7 million each year from 2015 to 2020 to serve 1.1 million homes and businesses.³⁸ That is \$3 billion total. In order to receive this subsidy, CenturyLink only needs to provide download speeds of 10 Mbps and upload speeds of 1 Mbps — far less than broadband service.

In early 2018, CenturyLink's CFO announced that it would focus less on rural investment to prioritize enterprise and urban markets.³⁹ During 2019, the company expanded its FTTH network in a number of urban markets to 300,000 homes; this represents less than approximately two percent of the population currently served by its DSL network.⁴⁰ One of the cities where CenturyLink will soon offer fiber Internet access is Springfield, Missouri, where the company is leasing dark fiber owned by the city to connect businesses and residents in order to compete with AT&T.⁴¹

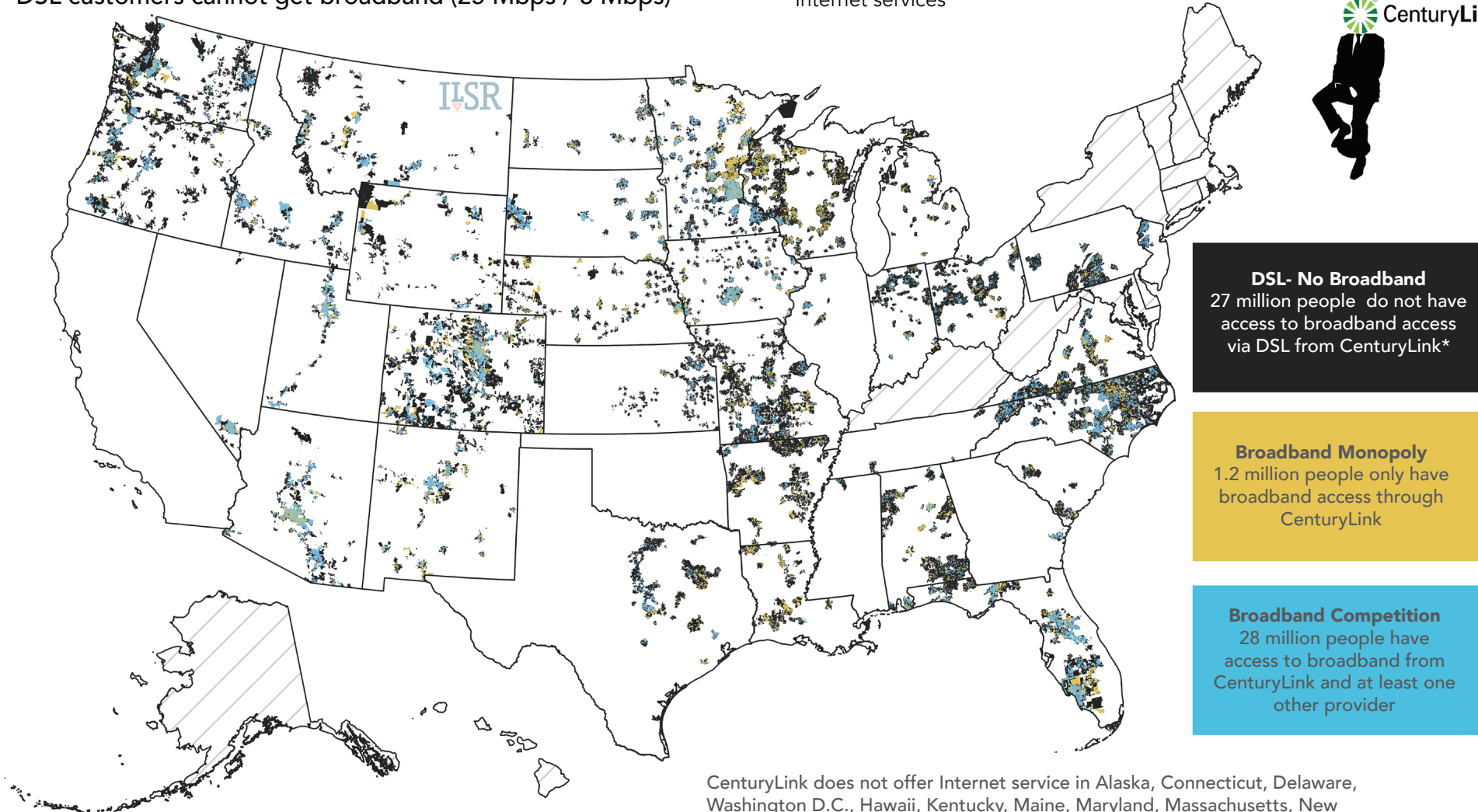
CenturyLink Internet Service Quick Facts



CenturyLink's Captured Customers

CenturyLink has a widespread DSL network, but many of these DSL customers cannot get broadband (25 Mbps / 3 Mbps)

Internet customers: 4.7 million households (~12 million people)
 2020 first quarter revenue: \$722 million from residential Internet services



DSL- No Broadband
 27 million people do not have access to broadband access via DSL from CenturyLink*

Broadband Monopoly
 1.2 million people only have broadband access through CenturyLink

Broadband Competition
 28 million people have access to broadband from CenturyLink and at least one other provider

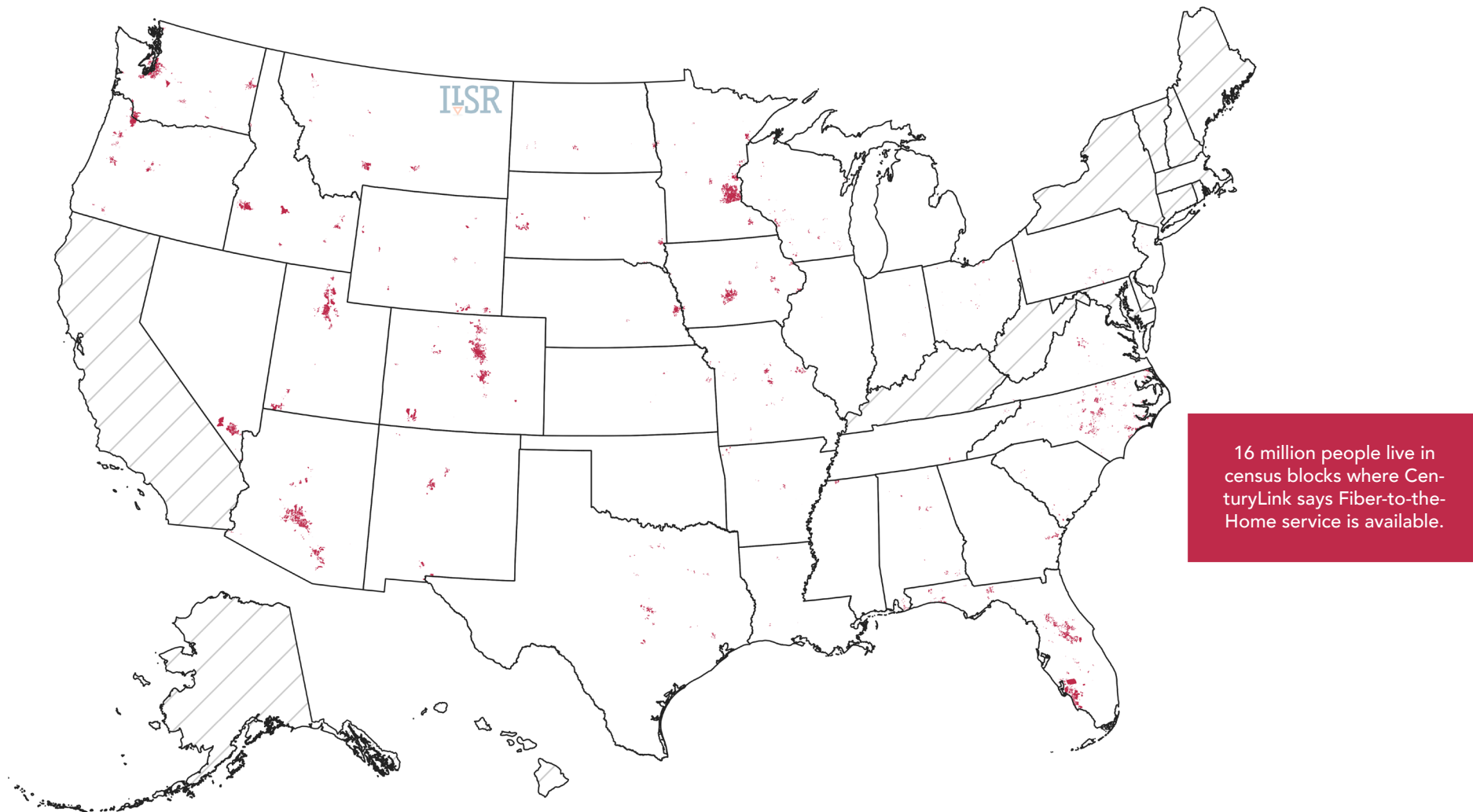
CenturyLink does not offer Internet service in Alaska, Connecticut, Delaware, Washington D.C., Hawaii, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, Vermont and West Virginia.

*53 million people in total have access to CenturyLink DSL

Design: Michelle Andrews, Institute for Local Self-Reliance
 Source: [FCC Form 477 June 2019 v1](#), [CenturyLink 1st Quarter Report 2020](#)
 This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition](#).



CenturyLink's Broadband Fiber-to-the-Home



Design: Michelle Andrews, Institute for Local Self-Reliance

Source: [FCC Form 477 June 2019 v1](#)

This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition.](#)



Frontier

Frontier is the 4th largest DSL provider in the U.S. Frontier has some FTTH in urban areas, mostly due to its Fios acquisition from Verizon.

Per Frontier, approximately 38 million people in 31 states can subscribe to Frontier’s Internet service.⁴² The DSL service area covers 38 million, but the FTTH service area covers 13 million; these service areas overlap.

About 34 percent of people (13 million) in this service area have access to broadband-level service through Frontier.⁴³ Approximately 55 thousand people have no other option for broadband service. This is a slight decrease from our previous report which found that 59 thousand people had no other option. These data suggest that Frontier has invested in faster services almost solely where it faces competition and not in more rural areas.

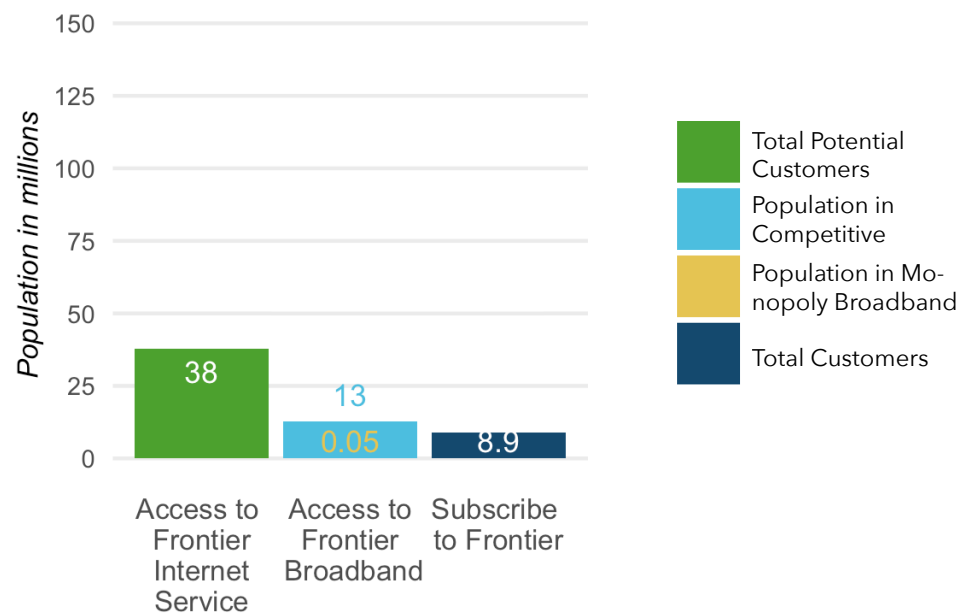
Approximately 3.5 million households and some businesses, or about 8.8 million people, subscribe to Internet service from Frontier (average U.S. household size was 2.52 people in 2019).⁴⁴ These households may not actually subscribe to broadband speeds because that speed tier may be unavailable at their address or it may be unaffordable.

According to the 2020 first quarter results, revenue from residential and business Internet access was \$932 million and capital expenditure for the entire company was \$286 million. Annual revenue from the Internet division was approximately \$3.8 billion, and the annual capital expenditure was about \$1.2 billion in 2019.⁴⁵

Through the Connect America Fund, Frontier receives \$238.4 million each year from 2015 to 2020 to serve about 660 thousand homes and businesses.⁴⁶ That is \$1.4 billion total. In order to receive this subsidy, Frontier only needs to provide download speeds of 10 Mbps and upload speeds of 1 Mbps — far less than broadband service.

In 2019, Frontier announced the sale of its networks in Washington, Oregon, Idaho, and Montana.⁴⁷ Following years of declining stock values, mounting debts, and growing speculation, the company filed for bankruptcy in early 2020.⁴⁸

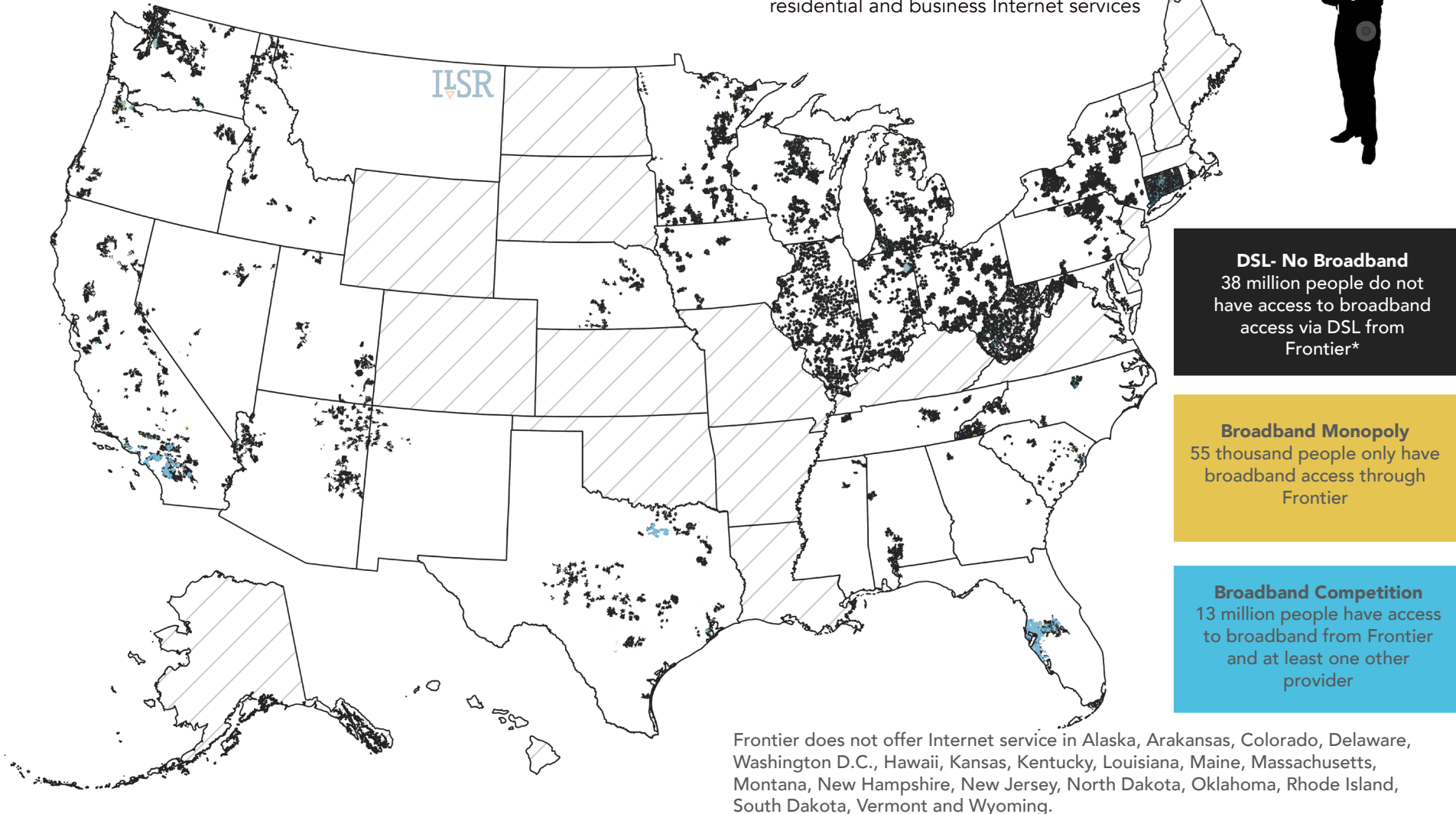
Frontier Internet Service Quick Facts



Frontier's Captured Customers

Frontier has a widespread DSL network, but many of these DSL customers cannot get broadband (25 Mbps / 3 Mbps)

Internet customers: 3.5 million households and some businesses (~8.8 million people)
 2020 first quarter revenue: \$932 million from residential and business Internet services

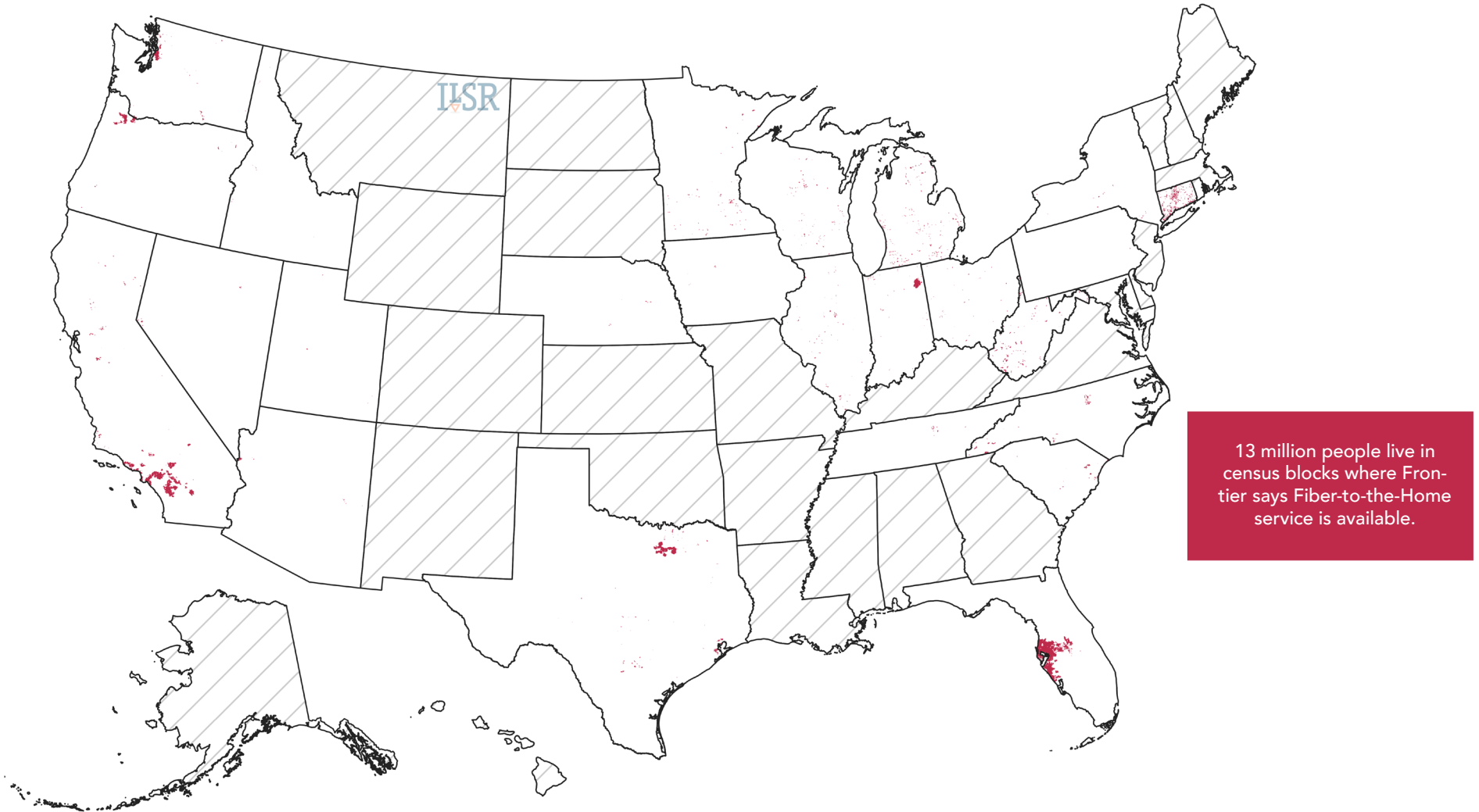


Design: Michelle Andrews, Institute for Local Self-Reliance
 Source: [FCC Form 477 June 2019 v1](#), [Frontier 1st Quarter Report 2020](#)
 This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition](#).

*38 million people in total have access to Frontier DSL



Frontier's Broadband Fiber-to-the-Home



Design: Michelle Andrews, Institute for Local Self-Reliance

Source: [FCC Form 477 June 2019 v1](#)

This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition.](#)



Windstream

Windstream is the 5th largest DSL provider in the U.S. Windstream also has some FTTH and cable in urban areas.

Windstream reports that approximately 9 million people in 18 states can subscribe to Windstream’s Internet service.⁴⁹ The DSL service area covers 8.9 million, but the FTTH service area covers 2 million; these service areas overlap.

About 70 percent of people (6.3 million) in this service area have access to broadband-level service through Windstream.⁵⁰ Approximately 1.2 million people have no other option for broadband service. Of the five biggest telcos, Windstream, along with CenturyLink, has some of the most potential customers that have no other broadband choice, meaning it has invested more in areas without competition, but not by much. These data suggest that Windstream has invested in faster services mostly where it faces competition and not in more rural areas.

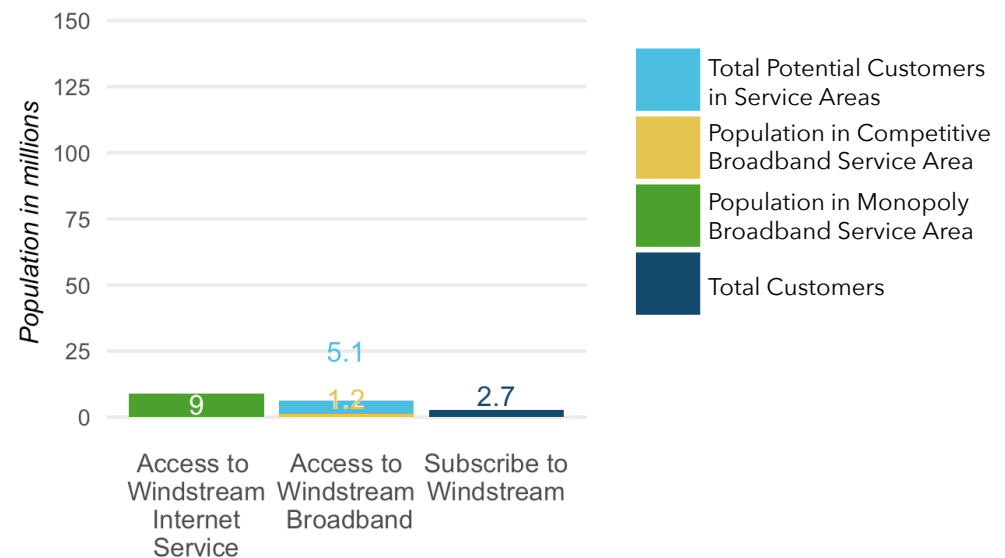
Approximately 1.1 million households and some small businesses, or about 2.7 million people, subscribe to Internet service from Windstream (average U.S. household size was 2.52 people in 2019).⁵¹ These households may not actually subscribe to broadband speeds because that speed tier may be unavailable at their address or it may be unaffordable.

According to the 2020 first quarter results, revenue from the residential and small business division was \$505 million. Capital expenditure was \$133 million for the residential and small business segment and \$232 million for the entire company. Annual revenue from the residential and small business division was approximately \$2 billion. The annual capital expenditure was about \$455 million for the residential and small business segment and \$879 million for the entire company in 2019.⁵²

Through the Connect America Fund, Windstream receives about \$175 million each year from 2015 to 2020 to serve around 405 thousand homes and businesses.⁵³ That is \$1.7 billion total. In order to receive this subsidy, Windstream only needs to provide download speeds of 10 Mbps and upload speeds of 1 Mbps — far less than broadband service.

Windstream filed for bankruptcy in early 2019. The company is currently attempting to restructure and hopes to emerge from bankruptcy later this year.⁵⁴

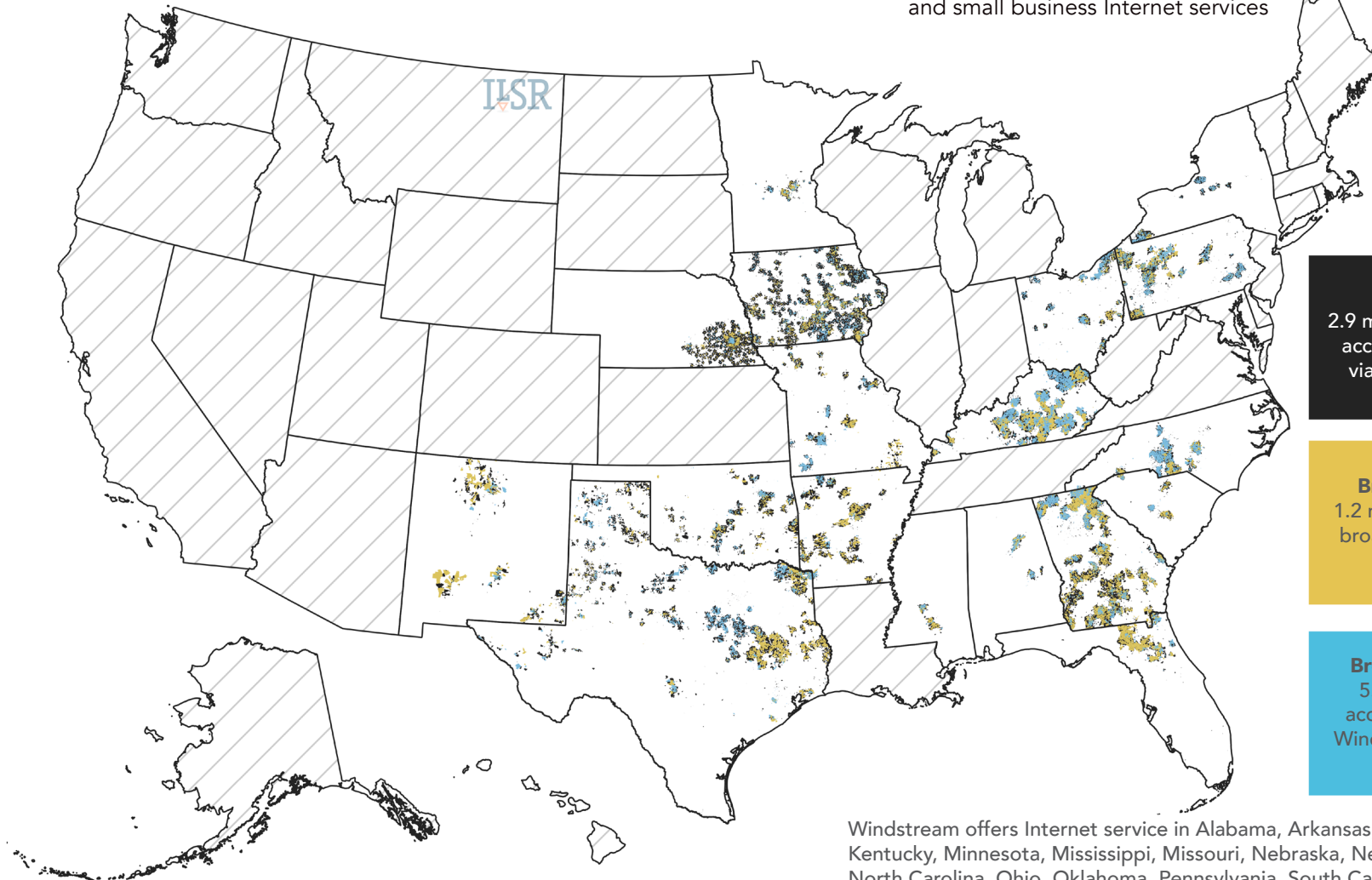
Windstream Internet Service Quick Facts



Windstream's Captured Customers

Windstream has a widespread DSL network, but many of these DSL customers cannot get broadband (25 Mbps / 3 Mbps)

Internet customers: 1.1 million households and some small businesses (~2.7 million people)
 2020 first quarter revenue: \$505 million from residential and small business Internet services



DSL- No Broadband
 2.9 million people do not have access to broadband access via DSL from Windstream*

Broadband Monopoly
 1.2 million people only have broadband access through Windstream

Broadband Competition
 5.1 million people have access to broadband from Windstream and at least one other provider

Windstream offers Internet service in Alabama, Arkansas, Florida, Georgia, Iowa, Kentucky, Minnesota, Mississippi, Missouri, Nebraska, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, and Texas.

*8.9 million people in total have access to Windstream DSL

Design: Michelle Andrews, Institute for Local Self-Reliance
 Source: [FCC Form 477 June 2019 v1](#), [Windstream 1st Quarter Report 2020](#)
 This is a best-case scenario. FCC Form 477 data [overstates broadband availability and competition](#).



Conclusion

The broadband market is broken. Comcast and Charter maintain an absolute monopoly over at least 47 million people and millions more only have slower and less reliable DSL as a “competitive” choice. Some 52 million households (about 132 million people) subscribe to these cable companies, whereas the five largest telecom companies combined have far fewer subscribers — only around 30 million households (about 75 million people). The big telecom companies have largely abandoned rural America — their DSL networks overwhelmingly do not support broadband speeds — despite many billions spent over years of federal subsidies and many state grant programs.

These are our key findings with potential for more research:

Real Competition Drives Investment

The telecom companies have invested in Fiber-to-the-Home in areas where they face competition, which are generally more urban areas. The advent of Google Fiber in 2011 further increased the competition in urban markets.⁵⁵ Efforts to increase investment from the largest firms in more rural areas have largely failed. Though states have varied regulations, the same trend results in every state — investment by the large ISPs is correlated to competition rather than the regulatory environment. This reality does not suggest that competition between a cable monopoly and a telephone monopoly is sufficient for high-quality Internet access, but it clearly helps to ensure connections at the minimum definition of broadband.

Big Cable Companies Dominate

Cable networks are capable of delivering high-speed broadband to everyone within their service area, a legacy of the local franchising requirements that often required universal service or at least service to all areas with a specified density of housing.⁵⁶ More than half of the states have since removed local authority to negotiate such provisions but they bear some responsibility for the far-reaching cable networks. In the years since we published the first edition of this report in 2018, the large cable companies have continued to gain broadband subscribers while the major telephone companies lose market share. By the end of 2019, the cable industry as a whole had 67 percent of the broadband market.⁵⁷ The FCC statistics suggest Charter and Comcast face more competition than they did in our last report, but we suspect competition has only touched some homes in many of the new census blocks that appear to have a choice in providers now.

Big Cable and Telecom Focus on Urban Markets

The big cable and telecom companies fight over urban customers, not rural customers. More than 98 percent of the urban population (about 259 million people) have access to broadband, according to the FCC’s 2020 Broadband Deployment Report, which analyzed data from December 2018.⁵⁸ About 4 million urban residents, however, remain without broadband access. In rural areas, less than 78 percent of the population (50 million people) have broadband access, leaving more than 14 million rural residents without high-speed Internet access per the FCC but as many as 42 million according to another analysis.⁵⁹

Moving Forward

These profiles in our report show the tremendous influence the large telecom and cable companies have in the broadband market. The visuals and maps explore each company's reach and offer some clues as to how national policies have an impact on local broadband markets.

Public data on broadband deployment in the U.S. is deeply flawed and may push policymakers to misunderstand the true problems in broadband access across the nation. We are torn as to whether the Form 477 data is even worth collecting given the challenge smaller providers face in completing the paperwork. We can only imagine the frustration small ISPs must have in paying these compliance costs to produce such flawed data. Fortunately, since we first published this report, the FCC has announced a plan to produce more accurate broadband deployment data.⁶⁰ While the new data collection process will not be implemented in time for the first round of the FCC's Rural Digital Opportunity Fund, which will distribute \$16 billion in subsidies over 10 years, we hope to see better broadband data much sooner than we had originally anticipated.

The big five phone companies offer FTTH service to some areas of some urban areas, but only Fios (some still owned by Verizon, some sold to Frontier) approaches ubiquitous coverage in certain communities. Future research should focus on where within each city these large providers have brought Fiber-to-the-Home service. The 2017 report, "AT&T's Digital Divide in California" from the Haas Institute for a Fair and Inclusive Society at UC Berkeley offers a model for this investigation, highlighting how AT&T has invested in Fiber-to-the-Home in mostly higher-income neighborhoods throughout California while leaving the low-income communities on slow DSL.⁶¹

Furthermore, this research on the big telcos highlights the failed strategy of the Connect America Fund. Some articles and small studies have begun to examine whether the Connect America Fund is improving Internet access to a reasonable level. See the 2018 report from Blandin Foundation: "Impact of CAF II-funded Networks: Lessons From Two Rural Exchanges Left Underserved."⁶² The vast majority of households touched by the Connect America Fund already need another large subsidy to achieve high-quality Internet access. Not even a year after dispersing the last Connect America Fund subsidies, the FCC plans to start distributing the \$20.4 billion Rural Digital Opportunity Fund to support broadband deployment in many of the same areas.⁶³ Unlike the Connect America Fund, which handed out money to the largest telcos, the Rural Digital Opportunity Fund will award subsidies through a reverse auction that prioritizes faster speeds and is open to many types of broadband providers.

Rural areas may do better to look elsewhere for improved broadband service. Our recently updated policy brief, "Cooperatives Fiberize Rural America: A Trusted Model for the Internet Era," explores the role of electric and telephone cooperatives in providing broadband service.⁶⁴ Small towns may need to look to their city councils or municipal electric utilities to explore ways of improving high-speed Internet service. We expect to see many rural cooperatives and likely some municipal networks participate in the upcoming Rural Digital Opportunity Fund, leveraging the subsidies to build gigabit fiber networks.

Even without federal funds, many cities and small towns across the U.S. have already improved their communities' Internet service options by building their own networks. This new competition can encourage the incumbent provider, whether a cable or telecom company, to offer better service and rates. A 2017 Pew Research Center report found that 70 percent of the public

believe that local governments should be able to invest in better Internet infrastructure.⁶⁵ Nineteen states, however, have erected barriers to these municipally owned networks.⁶⁶

These preemption laws have been on the books for many years and have only served to discourage investment by preventing competition. Residents in Colorado must vote in a referendum before their city or county council can build a municipal network. More than 102 Colorado communities have already voted to enable their local governments to explore all the options for better Internet service.⁶⁷ North Carolina's ban on municipal networks forced Wilson to privatize a successful network expansion to a nearby unserved rural town, due to state lawmakers' alliance with the cable industry.⁶⁸

The fact is, the large providers, such as Comcast and AT&T, have not answered the digital divide. Communities must find their own way, whether that's working in partnership with local ISPs and cooperatives, or building their own community networks.

Resources

MuniNetworks

The Institute for Local Self-Reliance's Community Broadband Initiative creates a daily digest of stories on locally rooted, community networks across the country. The Initiative also produces fact sheets, videos, and policy briefs on the community network movement. MuniNetworks.org

Next Century Cities

More than 200 communities are members of this organization that advocates for better Internet service and affordable solutions. NextCenturyCities.org

Coalition for Local Internet Choice

This collaboration of public and private organizations promotes local authority in improving connectivity. LocalNetChoice.org

Open Technology Institute

The New America Foundation's Open Technology Institute considers the intersection of technology, policy, and research. NewAmerica.org/OTI/

National Digital Inclusion Alliance

The National Digital Inclusion Alliance provides resources and support to digital inclusion practitioners while advocating for and advising on digital equity policies. www.digitalinclusion.org

Fiber Film Fest

This curated collection of videos and documentaries explores issues related to Internet access and community networks. It features *Dividing Lines*, a four-part documentary series by Maria Smith, and "Do Not Pass Go" from *Hyrax Films*, a short film by Cullen Hoback. FiberFilmFestival.com

Broadband Communities

This organization produces the Broadband Communities Magazine, and hosts conferences on key issues, such as economic development. bbpmag.com

Endnotes

1 The term monopoly is used rigidly by some to mean a sole single seller but historically, and we believe more correctly, has been understood to mean companies that exert a large amount of market power. This definition was good enough for Milton Friedman and it is good enough for us.

2 Both the Obama and Trump administrations agree on the definition for the minimum threshold for “broadband.” For an in-depth discussion on the changing definition of broadband, see BroadbandNow’s article (February 2018) <https://broadbandnow.com/report/fcc-broadband-definition/>. See also, MuniNetworks’ article (May 2018) <https://muninetworks.org/content/why-25-mbps-3-mbps-reasonable-minimum-standard-2018>.

3 Trostle, Kienbaum, Andrews, Razafindrabe, and Mitchell, “Cooperatives Fiberize Rural America: A Trusted Model for the Internet Era,” Institute for Local Self-Reliance (May 2020) <https://ilsr.org/cooperatives-essential-to-bringing-high-quality-fiber-internet-access-to-rural-america/>; and Lucey and Mitchell, “Successful Strategies for Broadband Public-Private Partnerships,” Institute for Local Self-Reliance (July 2016) <https://ilsr.org/ppp-fiber/>.

4 “For this purpose, ‘broadband service’ is ‘available’ at an address if the provider does, or could, within a typical service interval (7 to 10 business days) without an extraordinary commitment of resources, provision two-way data transmission to and from the Internet with advertised speeds...” NTIA State Mapping NOFA, 74 Fed. Reg. at 32557 (July 7, 2009) https://www.ntia.doc.gov/files/ntia/publications/fr_broadbandmappingnofa_090708.pdf. See also, FCC 2015 Broadband Progress Report, Footnote 137 (January 2015) https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-10A1.pdf.

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6 The FCC estimates that 94.4 percent of the population has access to fixed terrestrial Internet service of 25 Mbps / 3 Mbps in the 2020 Broadband Deployment Report, <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2020-broadband-deployment-report>.

7 Companies like NetBlazr in Boston and Monkeybrains in San Francisco, for instance.

8 Minnesota Rural Broadband Coalition, Understanding Satellite: The Technology and Pricing, http://mnbroadbandcoalition.com/?page_id=464; and Institute for Local Self-Reliance, “Satellite Is Not Broadband” factsheet, <https://ilsr.org/wp-content/uploads/2018/09/fact-sheet-satellite-not-broadband.pdf>.

9 The FCC did calculate that 95.6 percent of the population would have fixed broadband access if the FCC were to count satellite data in the 2018 Broadband Deployment Report, <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report>. Similarly, the 2020 Broadband Deployment Report notes that “approximately 100 percent” of the population now has access to broadband-level speeds from satellite providers, <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2020-broadband-deployment-report>. The BroadbandNow Team explains why this is a bad idea, BroadbandNow.com, “FCC Concludes Satellite Internet Is Good Enough for Rural Broadband,” <https://broadbandnow.com/report/satellite-internet-good-enough-rural-broadband/>.

10 117 million according to FCC Staff Block Estimates for 2018.

11 There are some exceptions — for instance apartment buildings that do not allow Comcast to offer services are included in this number because of the problems previously discussed in the data set.

12 Comcast 1st Quarter Results 2020, <https://www.cmcsa.com/news-releases/news-release-details/comcast-reports-1st-quarter-2020-results>; and Statista, Average Household Size, <https://www.statista.com/statistics/183648/average-size-of-households-in-the-us/>.

13 Comcast 1st Quarter Results 2020, <https://www.cmcsa.com/news-releases/news-release-details/comcast-reports-1st-quarter-2020-results>; and Comcast 4th Quarter Results 2019, <https://www.cmcsa.com/news-releases/news-release-details/comcast-reports-4th-quarter-and-full-year-2019-results>.

14 Woodward, “State to pay Comcast \$4m to build out rural broadband,” Boston Globe (August 2016) <https://www.bostonglobe.com/business/2016/08/22/state-pay-comcast-for-more-rural-broadband/Zb8bqq5qGlpKfQ0RErgDHM/story.html>; and Edwards, “Grants help fund ‘last mile’ of Vermont broadband,” Rutland Herald (March 2014) <https://www.rutlandherald.com/articles/grants-help-fund-last-mile-of-vermont-broadband/>.

15 109 million according to FCC Staff Block Estimates for 2018.

16 There are some exceptions — for instance apartment buildings that do not allow Charter to offer services are included in this number because of the problems previously discussed in the data set.

17 Charter 1st Quarter Results 2020, <https://ir.charter.com/news-releases/news-release-details/charter-announces-first-quarter-2020-results>; and Statista, Average Household Size, <https://www.statista.com/statistics/183648/average-size-of-households-in-the-us/>.

18 Charter 1st Quarter Results 2020, <https://ir.charter.com/news-releases/news-release-details/charter-announces-first-quarter-2020-results>; and Charter 4th Quarter Results 2019, <https://ir.charter.com/news-releases/news-release-details/charter-announces-fourth-quarter-2019-results>.

- 19 Brodtkin, “NY orders Charter out of state, says it must sell Time Warner Cable system,” Ars Technica (July 2018) <https://arstechnica.com/tech-policy/2018/07/new-york-revokes-approval-of-chartertime-warner-cable-merger/?amp=1>
- 20 Brodtkin, “Charter avoids getting kicked out of New York, agrees to new merger conditions,” Ars Technica (April 2019) <https://arstechnica.com/tech-policy/2019/04/charter-avoids-getting-kicked-out-of-new-york-agrees-to-new-merger-conditions/>.
- 21 134 million according to FCC Staff Block Group Estimates from 2018.
- 22 There are some exceptions — for instance apartment buildings that do not allow AT&T to offer services are included in this number because of the problems previously discussed in the data set.
- 23 AT&T 1st Quarter Results 2020, https://investors.att.com/~media/Files/A/ATT-IR/financial-reports/quarterly-earnings/2020/Q120/Q1_2020_INVESTOR_BRIEFING_0428_1015am.pdf and Statista, Average Household Size, <https://www.statista.com/statistics/183648/average-size-of-households-in-the-us/>.
- 24 AT&T is also currently building FirstNet, a network which will provide dedicated connectivity for police officers, firefighters, and emergency medical services. AT&T 1st Quarter Results 2020, https://investors.att.com/~media/Files/A/ATT-IR/financial-reports/quarterly-earnings/2020/Q120/Q1_2020_INVESTOR_BRIEFING_0428_1015am.pdf; and AT&T 4th Quarter Results 2019, https://investors.att.com/~media/Files/A/ATT-IR/financial-reports/quarterly-earnings/2019/4q-2019/Q419_INVESTOR_BRIEFING_022820.pdf.
- 25 FCC Connect America Fund Phase II Funding Carrier State County, <https://www.fcc.gov/document/connect-america-fund-phase-ii-funding-carrier-state-and-county>.
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- 28 There are some exceptions — for instance apartment buildings that do not allow Verizon to offer services are included in this number because of the problems previously discussed in the data set.
- 29 Verizon 1st Quarter Results 2020, <https://www.verizon.com/about/file/42229/download?token=jJ8S2XLs>; and Statista, , Average Household Size, <https://www.statista.com/statistics/183648/average-size-of-households-in-the-us/>.

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- 34 54 million according to FCC Staff Block Group Estimates for 2018.
- 35 There are some exceptions — for instance apartment buildings that do not allow CenturyLink to offer services are included in this number because of the problems previously discussed in the data set.
- 36 CenturyLink 1st Quarter Results 2020, <http://ir.centurylink.com/quarterly-results>; and Statista, Average Household Size, <https://www.statista.com/statistics/183648/average-size-of-households-in-the-us/>.
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- 38 FCC Connect America Fund Phase II Funding Carrier State County, <https://www.fcc.gov/document/connect-america-fund-phase-ii-funding-carrier-state-and-county>.
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42 39 million according to FCC Staff Block Group Estimates for 2018.

43 There are some exceptions — for instance apartment buildings that do not allow Frontier to offer services are included in this number because of the problems previously discussed in the data set.

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45 Frontier 1st Quarter Results 2020, https://s1.q4cdn.com/144417568/files/doc_financials/2020/q1/FTR-1Q20-Quarterly-Investor-Update-FINAL.pdf.

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49 9 million according to FCC Staff Block Group Estimates for 2018.

50 There are some exceptions — for instance apartment buildings that do not allow Frontier to offer services are included in this number because of the problems previously discussed in the data set.

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- 56 These cable networks are much better at providing high-speed downloads than uploads, but speeds in both directions tend to be far greater than those available from DSL.
- 57 Brodtkin, “Comcast, Charter expand broadband domination as cable hits 67% market share,” Ars Technica (March 2020) <https://arstechnica.com/information-technology/2020/03/comcast-charter-expand-broadband-domination-as-cable-hits-67-market-share/>.
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- 59 Busby, Tanberk and BroadbandNow Team, “FCC Reports Broadband Unavailable to 21.3 Million Americans, BroadbandNow Study Indicates 42 Million Do Not Have Access,” BroadbandNow (February 2020) <https://broadbandnow.com/research/fcc-underestimates-unserved-by-50-percent>.
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- 63 For more, visit the FCC’s page on the Rural Digital Opportunity Fund, <https://www.fcc.gov/auction/904>.
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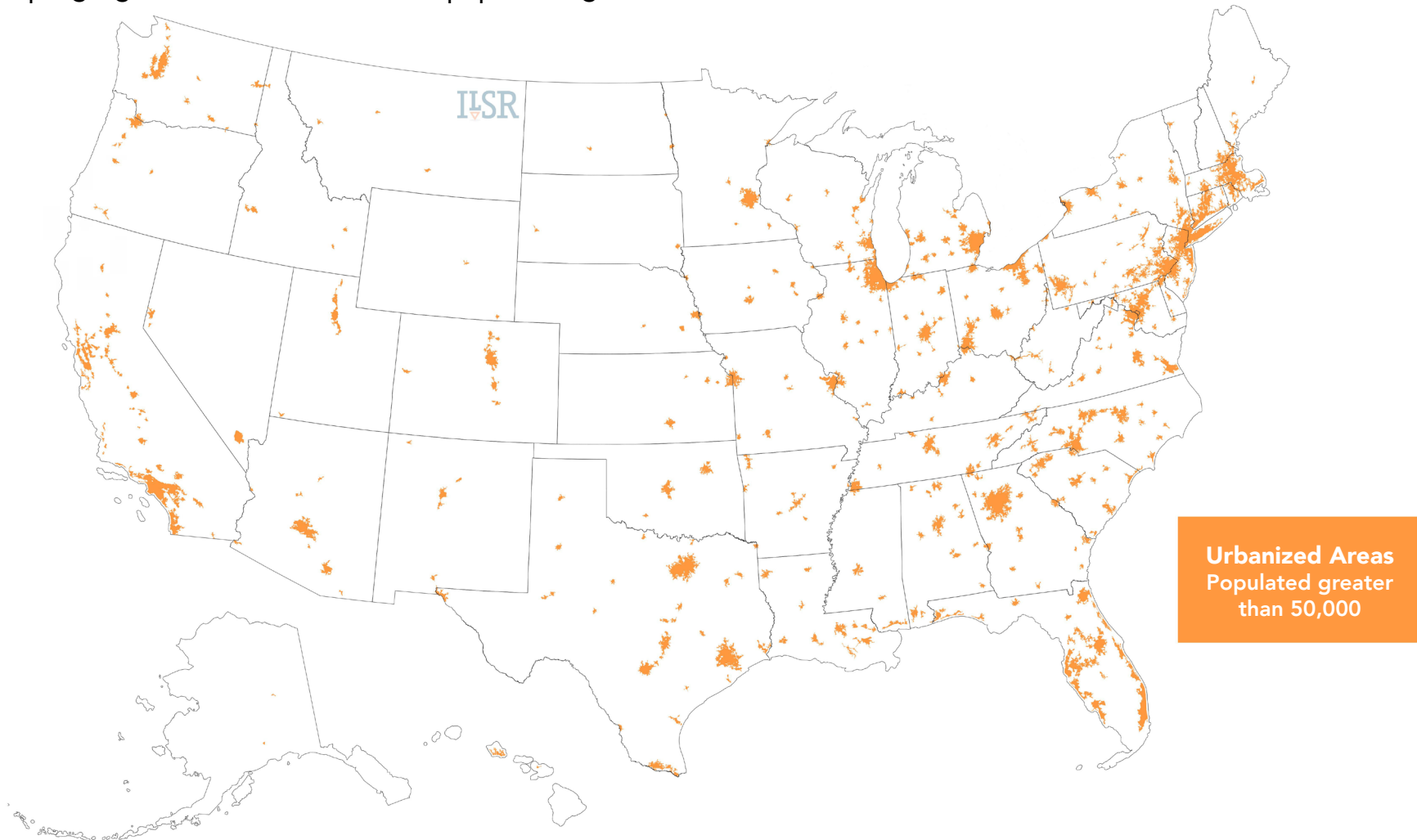
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Appendix A: 2020 Urban Areas in the U.S.

This map highlights urbanized areas with a population greater than 50,000.



Design: Ny Ony Razafindrabe, Institute for Local Self-Reliance

Source: [U.S. Census. 2010 Urban Areas](#)

Definition of urban: [Berg. "U.S. Urban Population is Up ... But What Does 'Urban' Really Mean?" CityLab. March 2012](#)



Appendix B: Summary Table for Large ISPs

ISP	Access to Internet Service (millions)	Access to Broadband 25 Mbps / 3 Mbps Service (millions)	Access to FTTH (millions)	Access to DSL (millions)	Subscribers (millions)	Latest Quarter Revenue (billions)
Comcast	117	Total: 117 Monopoly: 22 Competition: 95	0.021	N/A	Population: 68 Households: 27	\$5.0
Charter	109	Total: 109 Monopoly: 24 Competition: 85	0.81	N/A	Population: 64 Households: 25	\$4.4
AT&T	134	Total: 97 Monopoly: 1.1 Competition: 96	39	129	Population: 35 Households: 14	\$2.1
Verizon	57	Total: 37 Monopoly: 0.19 Competition: 36	37	50	Population: 16 Households: 6.5	\$2.8
CenturyLink	54	Total: 29 Monopoly: 1.2 Competition: 28	16	53	Population: 12 Households: 4.7	\$0.72
Frontier	38	Total: 13 Monopoly: 0.055 Competition: 13	13	38	Population: 8.8 Households: 3.5	\$0.93
Windstream	9.0	Total: 6.3 Monopoly: 1.2 Competition: 5.1	2.0	8.9	Population: 2.7 Households: 1.1	\$0.51

**All numbers are rounded to 2 significant figures.*



Appendix C: Urban-Rural Summary of Large ISPs' Monopoly and Competitive Service Areas

ISP	Population in Monopoly Service Area (millions)	Population in Competitive Service Area (millions)
Comcast	Total: 22 Urban: 19 Rural: 3.5	Total: 95 Urban: 88 Rural: 6.6
Charter	Total: 24 Urban: 17 Rural: 7.1	Total: 85 Urban: 77 Rural: 8.1
AT&T	Total: 1.1 Urban: 0.49 Rural: 0.56	Total: 96 Urban: 91 Rural: 5.0
Verizon	Total: 0.19 Urban: 0.16 Rural: 0.03	Total: 36 Urban: 35 Rural: 1.1
CenturyLink	Total: 1.2 Urban: 0.37 Rural: 0.83	Total: 28 Urban: 25 Rural: 3.2
Frontier	Total: 0.055 Urban: 0.032 Rural: 0.023	Total: 13 Urban: 12 Rural: 0.42
Windstream	Total: 1.2 Urban: 0.17 Rural: 1.0	Total: 5.1 Urban: 3.2 Rural: 1.9

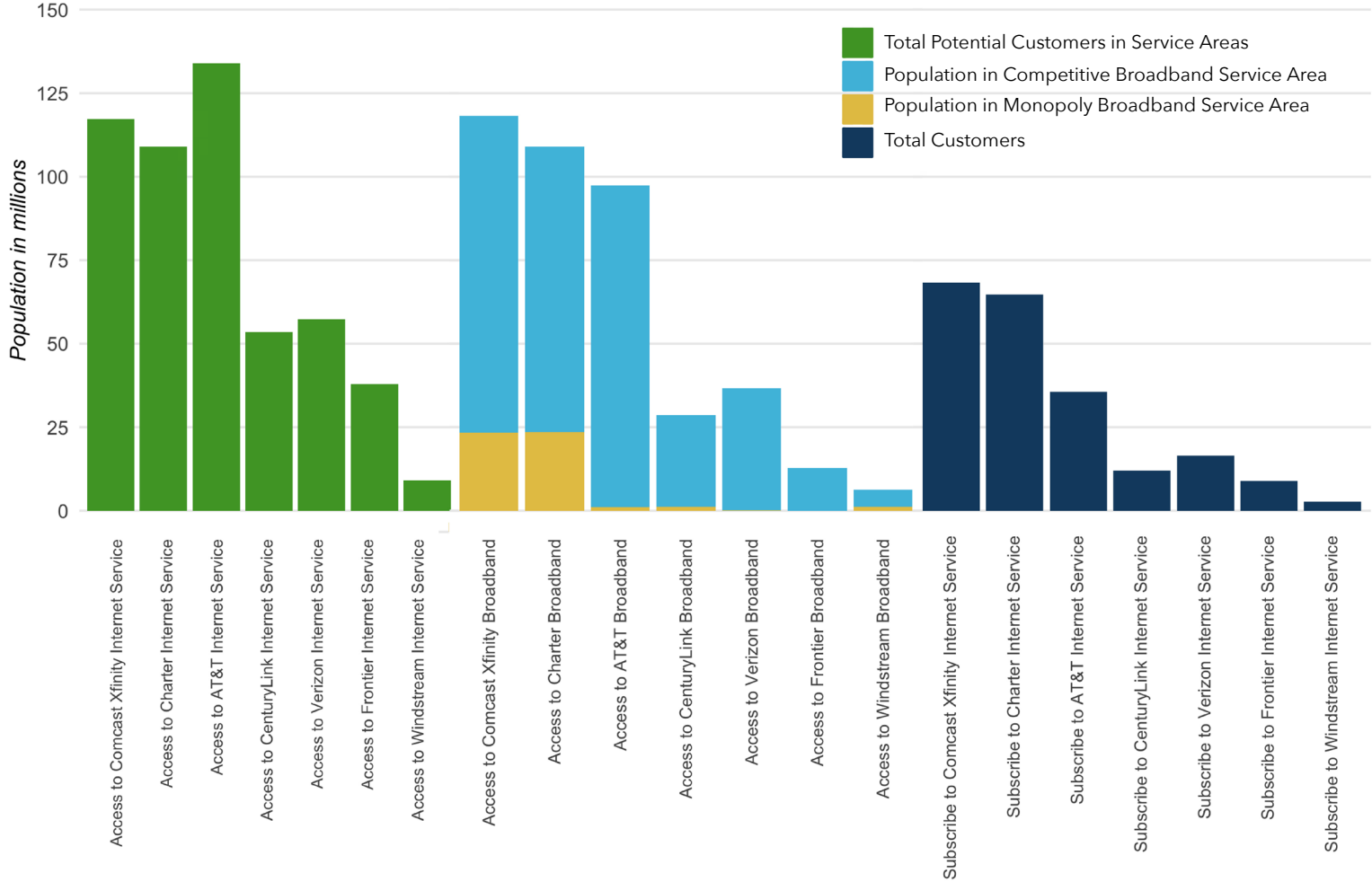
**All numbers are rounded to 2 significant figures.*



Appendix D: Summary of Large ISPs' Annual Revenue and Capital Expenditures

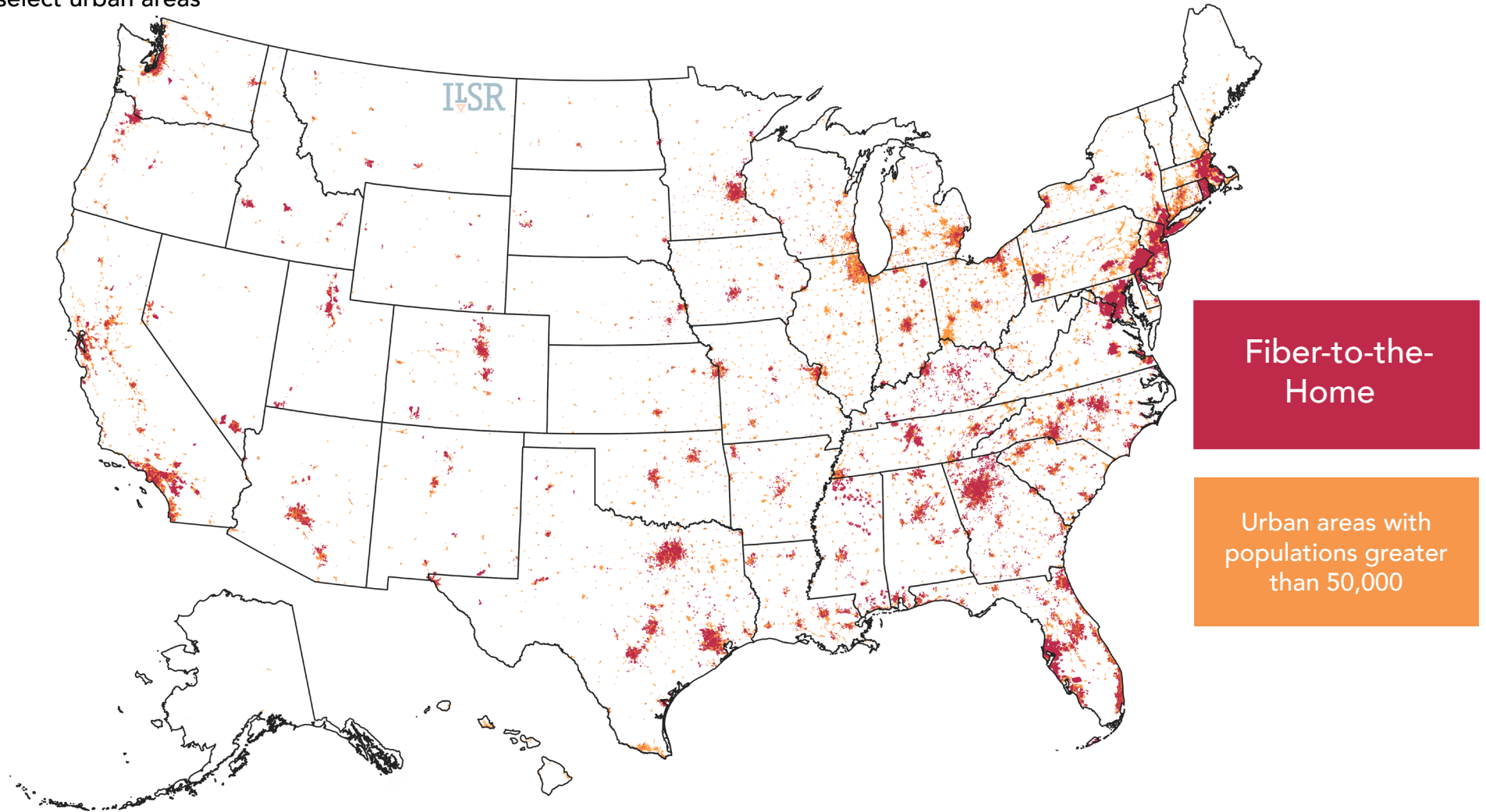
ISP	Most Recent Quarter Revenue from Internet Division (billions)	Most Recent Quarter Capital Expenditure (billions)	Annual Revenue from Internet Division (billions)	Annual Capital Expenditure (billions)
Comcast	\$5	\$1.9	\$18.8	\$10
Charter	\$4.4	\$1.5	\$16.7	\$7.2
AT&T	\$2.1	\$5	\$8.4	\$19.6
CenturyLink	\$0.72	\$0.97	\$2.9	\$3.6
Verizon	\$2.8	\$5.3	\$11.2	\$17.9
Frontier	\$0.9	\$0.3	\$3.9	\$1.2
Windstream	\$0.5	\$0.2	\$2	\$0.8

Appendix E: Summary of Large ISPs Quick Facts



Appendix F: Fiber-to-the-Home from Big Telecom

AT&T, CenturyLink, Verizon, Frontier, and Windstream have invested in Fiber-to-the-Home in select urban areas



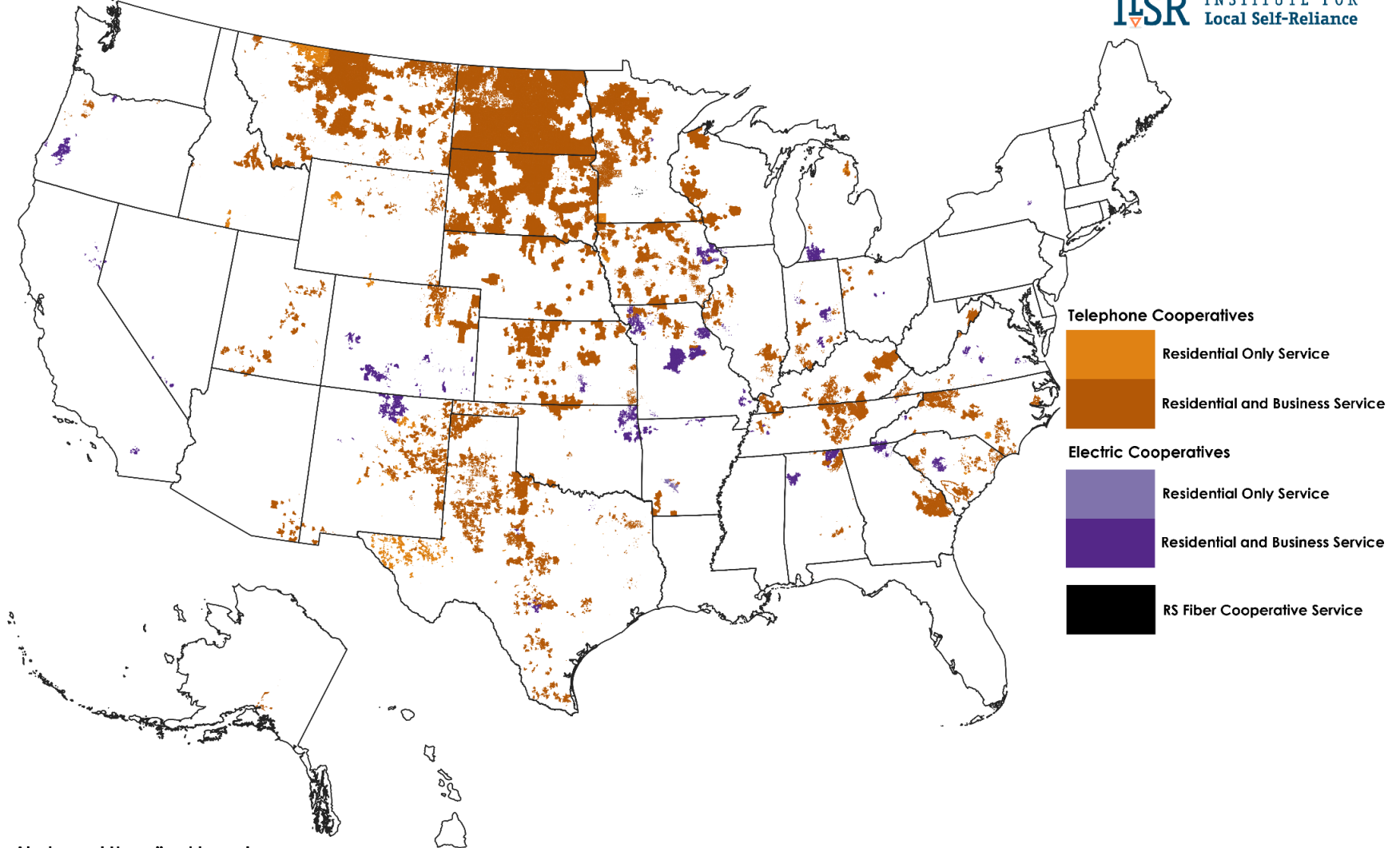
Design: Michelle Andrews, Institute for Local Self-Reliance
Source: [FCC Form 477 June 2019 v1](#), U.S. Census 2019 Urban Areas



Appendix G: Fiber Networks from Cooperatives

See our report, [Cooperatives Fiberize Rural America](#)

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Alaska and Hawaii not to scale.

Design: Michelle Andrews, Institute for Local Self-Reliance

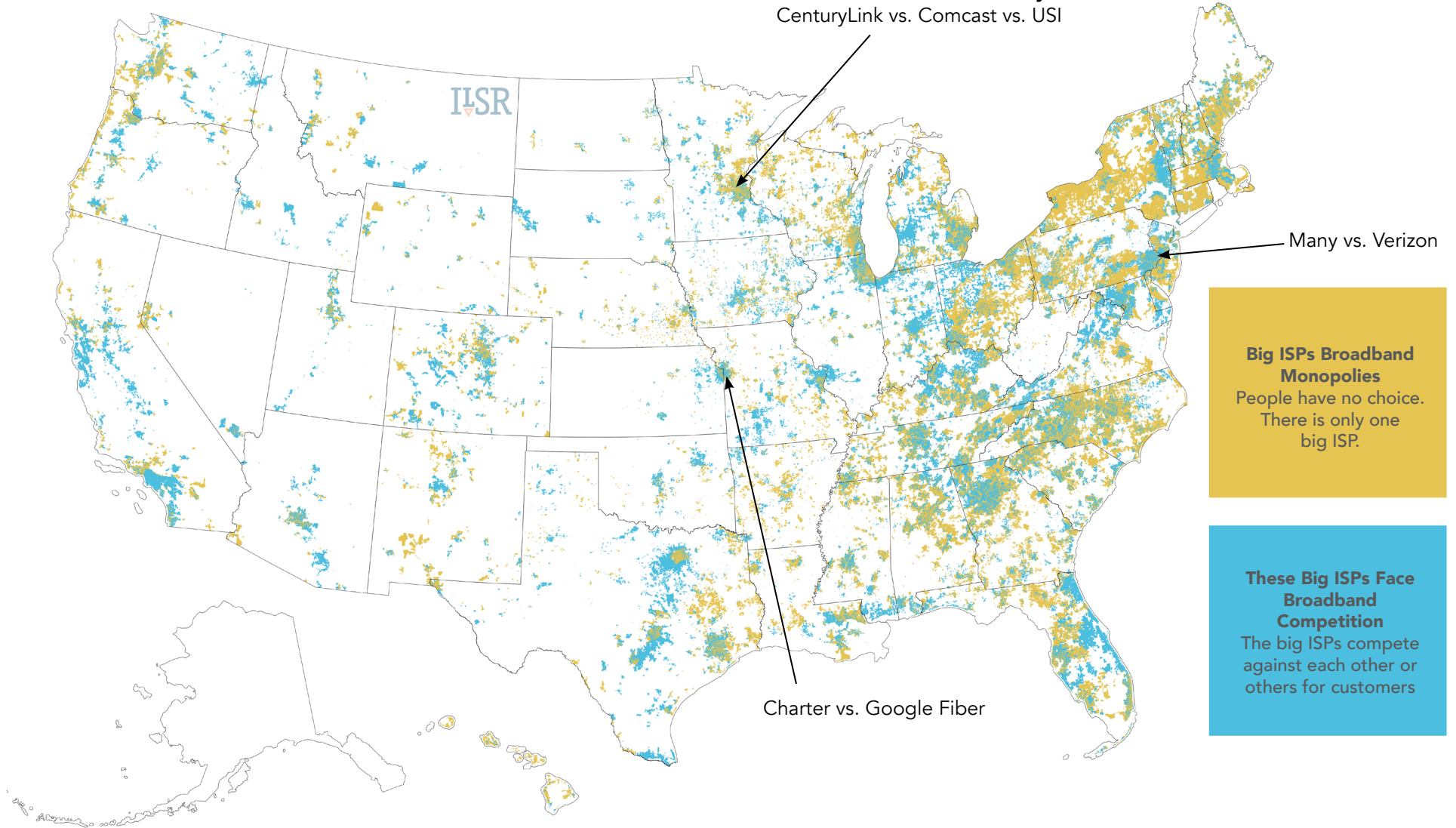
Source: [FCC Form 477 June 2019 v1](#), U.S. Census 2019 Urban Areas

Community
NETWORKS

Appendix H: Captured Customers

70 million people have only one broadband option, and that provider is Comcast, Charter, AT&T, CenturyLink, Verizon, or Frontier.

CenturyLink vs. Comcast vs. USI



Big ISPs Broadband Monopolies
People have no choice. There is only one big ISP.

These Big ISPs Face Broadband Competition
The big ISPs compete against each other or others for customers

Design: Ny Ony Razafindrabe, Institute for Local Self-Reliance

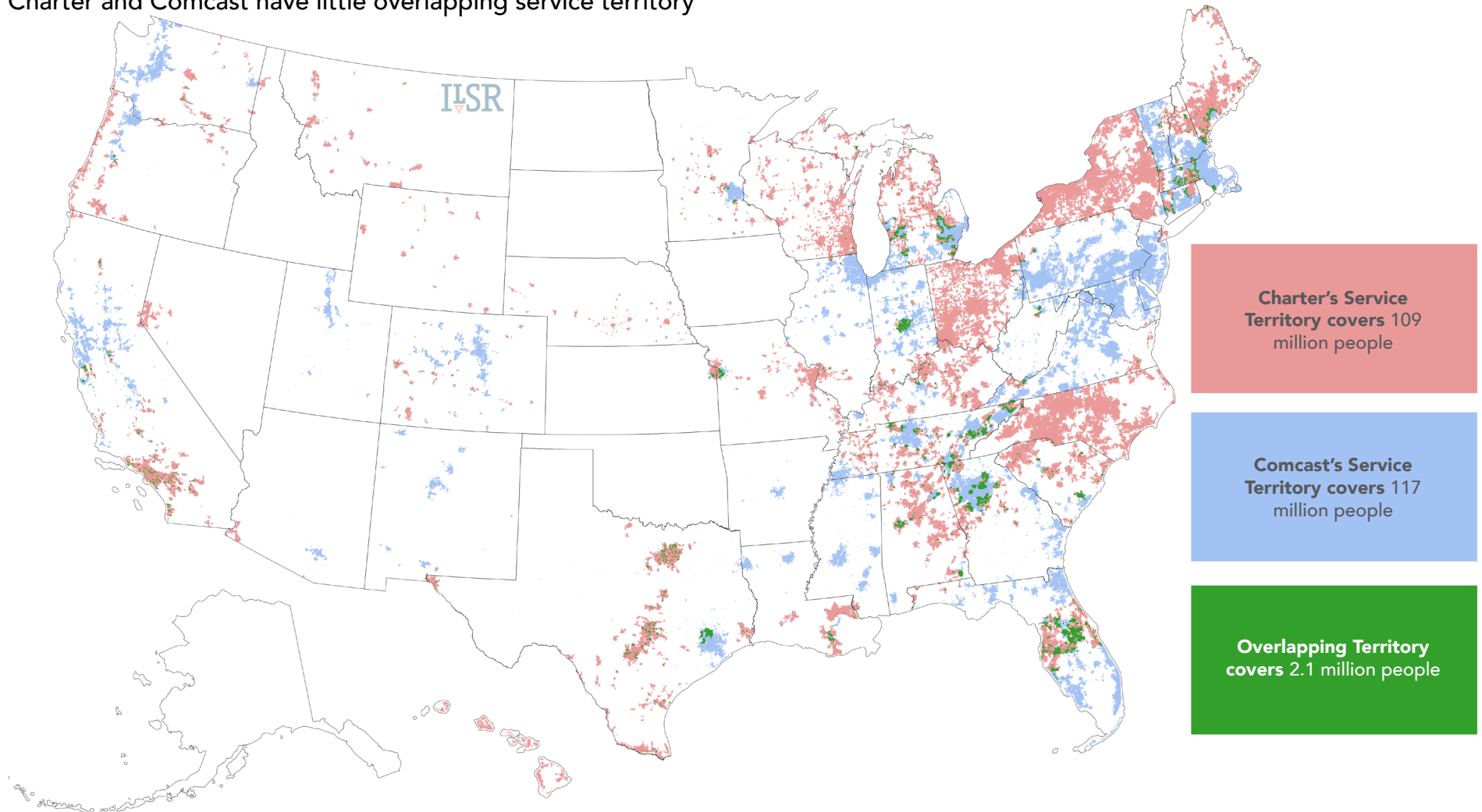
Source: [FCC Form 477 June 2019 v1](#)

This is a best case scenario. FCC Form 477 data [overstates broadband availability and competition.](#)



Appendix I: The Power of Cable, A Cable Duopoly

Charter and Comcast have little overlapping service territory



Design: Ny Ony Razafindrabe, Institute for Local Self-Reliance
Source: [FCC Form 477 June 2019 v1](#)

