

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Inquiry Concerning Deployment of Advanced)	GN Docket No. 17-199
Telecommunications Capability to All)	
Americans in a Reasonable and Timely)	September 21, 2017
Fashion)	

**COMMENTS OF THE INSTITUTE FOR LOCAL SELF-RELIANCE AND
NEXT CENTURY CITIES**

I. Introduction

The Institute for Local Self-Reliance (ILSR) mission is to provide innovative strategies, working models and timely information to support environmentally sound and equitable community development. To this end, ILSR works with citizens, activists, policymakers and entrepreneurs to design systems, policies and enterprises that meet local or regional 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.

Next Century Cities (NCC) is a 501(c)(3) membership organization that supports 180 communities and their elected leaders, including mayors and other municipal officials, as they seek to ensure that all residents have access to fast, affordable, and reliable broadband Internet service. Thus, NCC brings to this proceeding unique knowledge of the variety of approaches to building out broadband networks in the United States, and why it is important that communities are able to seek the broadband solutions that best fit their unique needs.

II. Summary

ILSR and Next Century Cities strongly believe that mobile Internet access should not qualify a census block as served with advanced telecommunications capability. Mobile Internet access is, and should continue to be viewed as a complement to home Internet access. Likewise, the FCC should not include satellite Internet access coverage as census blocks considered served.

The FCC asked for comments to include methods on how to accelerate deployment. In our work with hundreds of communities of varying size and

circumstances around the country, we have consistently found that the power of large incumbent telephone and cable companies discourages new investment. Those entities have engaged in prolonged efforts to pass laws to restrict both local governments and rural electric cooperatives from offering competitive services or even basic open infrastructure in partnerships.¹ Those firms use their poles and positions on the poles of others to delay make-ready processes and disrupt new investment.² Therefore, we suggest the FCC encourage state legislatures to repeal state barriers that prevent or discourage local telecommunications authority, either broadly or narrowly. Further, the FCC should investigate the myriad ways the largest firms have discouraged investment by smaller firms. One sensible policy to prevent incumbents from disrupting the business plans of smaller rivals is via one-touch make-ready pole attachment processes.

Lastly, we believe that the benchmark that defines advanced telecommunications capacity needs to be updated to better reflect how and why the Internet is used today. Upload speeds are more important now than ever.

III. Mobile Internet Access Should Not Be Considered Part of The Deployment of Advanced Telecommunications Capability to All Americans That Congress Memorialized in the Telecommunications Act of 1996

Of the many proposals within the NOI, we find the possibility that the FCC may consider mobile Internet access as part of universal deployment of advanced telecommunications capability the most troubling. To the extent that the FCC explores the deployment of mobile broadband access, it must be done separately from its historic measurement of advanced fixed access deployment.

The FCC itself recognizes that most Americans do not consider mobile broadband access a substitute for fixed access. In this NOI, the FCC states in paragraph 6, “As of the beginning of 2016, approximately 80 percent of American mobile subscribers used smartphones, up from approximately 50 percent in 2012.” Then in paragraph 9, the FCC states, “According to the Pew Research Center, the percentage of Americans subscribing to fixed broadband has reached an all-time high of approximately 73 percent.” Though 13 percent of Americans may solely rely on smartphone access, our experience suggests most of that population would prefer to have fixed access at home as well. Therefore, it is premature to consider mobile access to be a sufficient replacement to fixed access and should not be included in evaluating the deployment of advanced services.

¹ These tactics have been documented in the 2013 report, “The Empire Lobbies Back” from ILSR and Common Cause. <https://ilsr.org/killing-competition-nc/>

² For instance, media reported that AT&T delayed competitor Google Fiber’s access to utility poles in Louisville and Nashville. See Ars Technica coverage: <https://arstechnica.com/tech-policy/2016/02/att-sues-louisville-to-stop-google-fiber-from-using-its-utility-poles/> <https://arstechnica.com/information-technology/2016/08/att-explains-why-it-sometimes-delays-google-fiber-access-to-poles/> and <https://arstechnica.com/tech-policy/2016/09/att-and-comcast-helped-elected-official-write-plan-to-stall-google-fiber/>

The dramatic increase of mobile Internet access has helped communities and businesses in innumerable ways. But mobile Internet access is not a reasonable replacement for a fixed connection. The coverage of mobile Internet access does not change whether Americans are deriving the benefits of advanced telecommunications capability due to its inability to be used as a carrier of last resort and the prevalence of monthly data caps that prevent such a connection from allowing children to do homework consistently throughout the month, for instance.

a. Mobile Internet Access Is A Complement, Not A Primary Source of Internet Access

While it's true that a large percentage of Americans access the Internet through their smart phones and other mobile devices, it is incorrect to assume that those same citizens have no need for home Internet service. Indeed, the vast majority of people that have fixed connections at home also maintain one or more mobile Internet access connections. Individuals and families who depend solely on mobile Internet access do so typically for one of two reasons. Either they cannot afford Internet access at their home in addition to a mobile account or it is not available at their home.³

Typically, individuals use mobile Internet access as a supplement in order to go online while they are away from home and in locations where they cannot use Wi-Fi at no additional cost. The vast majority of traffic from smartphone users travels on Wi-Fi wireless, not mobile Internet service.⁴ And that Wi-Fi depends on fixed Internet service. The market has spoken conclusively, the few people that substitute mobile wireless service for fixed service do so frequently for reasons beyond their control.

b. Mobile Internet Access Does Not Offer the Capacity, Consistency, or Reliability Subscribers Need to Participate in Today's Economy

Mobile Internet access, though improving in quality and reliability, still lacks the high-quality characteristics of Fiber-to-the-Home (FTTH) and advanced cable networks. Such networks are able to deliver at least a gigabit downstream to individual households and at least tens of megabits upstream. Future mobile wireless will be able to do this as well, but it is not clear when in the field as opposed to the lab. The FCC should not adjust its approach to measuring advanced access until mobile Internet access is truly comparable to fixed access, including costs.

³ "10% of Americans own a smartphone but do not have any other form of high-speed internet access at home beyond their phone's data plan." Aaron Smith. "U.S. Smartphone Use in 2015." Pew Research Center. <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>

⁴Mike Dano. "How much cellular and Wi-Fi data are smartphone users consuming, and with which apps? The Verizon, AT&T T-Mobile, and Sprint breakdown." Fierce Wireless and P3. <http://www.fiercewireless.com/wireless/how-much-cellular-and-wi-fi-data-are-smartphone-users-consuming-and-which-apps-verizon-at>

One of the benefits of fixed access is that modern technologies can deliver that connectivity consistently. It is not clear that mobile Internet access is as consistent given the much larger population that shares access to the access point. Mobile connectivity is often unreliable due to a list of factors including the weather, distance from cell towers, congestion, and device. Speeds vary significantly by city and state, even across same provider networks within a census block.⁵

Business plans for the vast majority of American mobile wireless subscribers either have monthly data caps or have contract provisions that dramatically decrease the available capacity after basic levels of usage have been attained. These data caps are dramatically lower than those of fixed networks, making mobile access a poor alternative to fixed access.

The Institute for Local Self-Reliance and Next Century Cities have heard from many communities and individuals that mobile Internet access is insufficient for common applications, from regular homework to telecommuting and job searching to enhanced civic engagement. It also impacts entertainment options, and though some might downplay entertainment as being important, the values of homes lacking broadband Internet access have been harmed dramatically because home buyers want to be able to stream their entertainment and play video games.⁶ These things move markets and matter strongly to communities who want to attract new homeowners and businesses.

c. Mapping Data That Includes Mobile Internet Access as Part of Universal Deployment Will Discourage Deployment of Wired Infrastructure

Rural residents and businesses require robust mobile *and* fixed access, just as cities do. Given the challenge of investment in rural areas, including mobile broadband access in an assessment of its connectivity would likely short-change those areas and rural residents across the country. They are likely to have high-quality mobile access long before they have high-quality fixed access. An assessment that they are well-served with mobile could de-prioritize the appropriate focus on needed investment to ensure rural businesses and residents have the all the telecommunications capacity they need to reap the benefits of the internet and participate in 21st century society.

d. Census Blocks With Satellite Internet Access Coverage Should Not Be Considered Served

Recently, the agency chose to include in its data sets, census blocks served by satellite Internet access advertising 25 Mbps downstream and 3 Mbps upstream as areas

⁵ <http://www.speedtest.net/reports/united-states/>

⁶ Lack of high-speed Internet service makes homes less attractive to potential buyers - to the point that people choose not to purchase their dream home. CEO of Vermont Realtors Isaac Chavez described several lost deals in a 2016 interview with SevenDaysVT.com
<<https://www.sevendaysvt.com/vermont/how-does-broadband-access-affect-real-estate-property-values/Content?oid=3418087>>

with access to advanced telecommunications capability.⁷ This was an error in judgment. As a result of this change in policy, many rural areas now appear served, but with an option that is expensive, unreliable, and limited by constricting data caps.⁸ In more than 10 years of working with local leaders on broadband issues, we have never found a person that uses satellite service where they have an adequate fixed service option. The market has rejected satellite service as being comparable to modern fixed service.

Satellite service may be capable of offering 25/3 Mbps bandwidth but lags in other important metrics, including latency and restrictive bandwidth caps that make it ill-suited to be considered similar to fixed service from DSL, cable, fiber, high-quality fixed wireless, and similar technologies.

IV. The FCC Should Encourage States to Eliminate Legal Barriers That Discourage Local Communities and Cooperatives From Investing In Their Own Telecommunications Infrastructure Decisions

To date, more than 500 communities found that investing in Internet infrastructure was the only way to obtain the type of Internet access their residents and businesses needed.⁹ Many more cities and towns have invested to serve only municipal facilities such as schools, libraries, and city halls. Often the only services incumbent providers offered were DSL. Though large companies often lack the correct incentives to invest in advanced telecommunications in rural and high-cost areas, communities have the appropriate incentives to invest in themselves. Preventing these communities from investing in themselves by blocking local Internet choice is a cruel policy because many have repeatedly sought private-sector investment to no avail.

The FCC can take a significant step toward the goal of universal deployment by encouraging states to repeal legal barriers that restrict local telecommunications authority and stop passing new legislative barriers. Laws that interfere with telephone and electric cooperative investment to offer broadband to members also need to be eliminated. Though electric cooperatives should be able to challenge state barriers in court via Section 253 of the 1996 Telecommunications Act, most do not have the capacity to engage in protracted legal fights. As such, the FCC should investigate such barriers proactively.

In states where barriers are not in place, local governments have invested in a range of Internet infrastructure that serve residents, businesses, and/or local government

⁷ See current 2016 FCC fixed broadband deployment map <https://www.fcc.gov/maps/fixed-broadband-deployment-data/>

⁸ Leverett, Massachusetts, chose to invest in public infrastructure when, after calculations revealed that property owners would save money and obtain better services by investing in a publicly owned FTTH network and ditching satellite for Internet access, <https://muninetworks.org/content/leverett-net-meets-demand-better-connectivity-ma>. Leverett is one of many. In 2013, Vantage Point released a report (on file with the FCC) that describes the many shortcomings of satellite Internet access and concludes that it cannot replace wired connections, "...satellites do not have the capacity to replace a significant amount of the fixed wireline broadband in use today nor can they provide high-quality, low-latency communications currently available using landline communication systems." <https://ecfsapi.fcc.gov/file/7520956711.pdf>

⁹ <https://muninetworks.org/communitymap>

facilities. These investments save public dollars by reducing telecommunications costs for local government and private dollars by encouraging reasonable rates and better services for businesses and residents.¹⁰ It is often only when faced by possible competition that the existing providers invest in improvements to their own service, as any basic economic theory would predict. Nothing is more motivating than the threat of losing one's customers and few things are less motivating for investment than lacking a threat to one's subscriberbase.

Sometimes these public investments are dark fiber infrastructure, on which private ISPs lease capacity to serve the general public.¹¹ Other times municipalities choose to only serve community anchor institutions or provide lit services only to businesses.¹² In some places, the local community decides that their best option is to establish a Fiber-to-the-Home (FTTH) utility that serves all premises.¹³ Communities are also working with private sector partners to create their own unique agreements that meet the needs of both parties and best serve residents.¹⁴

At least nineteen states, however, still have laws in place that discourage or punish local communities from acting in their own best interest.¹⁵ Often the language of statutes that interferes with their ability to improve local connectivity does not appear to prevent investment, but actively discourages efforts to take action. Some barriers may restrict competition where any level of service exists, even very poor service. Other barriers are so onerous as to prevent a local community from taking steps to ensure that everyone has access to high-quality Internet access.

In rural communities, telephone and electric cooperatives have begun to fill in the gaps left by national ISPs that are uninterested in serving low-density population regions. In some cases, connectivity from rural cooperatives surpasses Internet access in nearby urban centers.¹⁶ With personnel, equipment, and expertise already in place, cooperatives hold strong hopes for expanding rural deployment of advanced telecommunications capacity in areas where large corporate ISPs won't invest.

¹⁰ <https://muninetworks.org/content/institutional-networks>

¹¹ Eugene, Oregon, is one such community that offers dark fiber to private ISPs. Anne Fifiield, Eugene's Economic Development Director, and Nick Nevins, Eugene Water and Electric Board Engineering Technician, explained how the dark fiber supports small, customer-focused ISPs in Community Broadband Bits Podcast 263: <https://muninetworks.org/content/dark-fiber-brightens-downtown-business-climate-eugene-community-broadband-bits-podcast-263>.

¹² For instance, Pasadena, California, connects community anchor institutions and has expanded to provide lit services to several businesses. Interview with Pasadena's Telecom & Regulatory Administrator Lori Sandoval available from Community Broadband Bits Podcast Episode 265 (August 2017): <https://muninetworks.org/content/pasadena-benefits-municipal-fiber-community-broadband-bits-podcast-265>

¹³ Chattanooga, Tennessee, built a citywide Fiber-to-the-Home network in the mid-2000s. It has added more than \$800 million to the local economy according to a 2015 University of Tennessee at Chattanooga study <http://www.timesfreepress.com/news/business/aroundregion/story/2015/sep/15/study-finds-epb-fiber-optics-generates-over-865-million-benefits-chattanooga/325235/>. The smart grid has also saved the electric utility more than \$1 million in overtime costs. <https://cyber.harvard.edu/publications/2017/MF/Chattanooga> A list of local governments providing citywide FTTH service is also available at <https://muninetworks.org/content/municipal-ftth-networks>

¹⁴ Westminster, Maryland, and Ting Internet, <http://bit.ly/2wrS7vr>.

¹⁵ <http://www.baller.com/wp-content/uploads/BallerStokesLideStateBarriers11-1-16.pdf>

¹⁶ http://www.bbcmag.com/2016mags/May_June/BBC_May16_ElectricCoops.pdf

Unfortunately, some states impose what appear to be arbitrary restrictions on how cooperatives can use funding. North Carolina is one of several states with laws in place that complicate and discourage electric cooperatives that wish to deploy infrastructure for advanced telecommunications services.¹⁷ Electric cooperatives must first form a subsidiary to offer such services but are not allowed to obtain financing from the USDA. This law and similar barriers should be repealed so cooperatives can bring high-quality Internet access to rural America the way they electrified farms in the 1930s.

By encouraging state legislatures to eliminate these harmful laws that serve only to prevent competition and preserve incumbent monopolies, the FCC will spark investment. Resulting public and private infrastructure investment will help expand deployment to more regions where incumbents can't find justification in serving due to low population density.

V. “Advanced Telecommunications Capability” Should Be Redefined to Include Higher Upload Capacity

While the FCC took a positive and significant step forward in 2015 when it chose to redefine broadband as 25 Mbps/3 Mbps, the agency needs to update the definition once again by increasing upload speeds. The benchmark for the definition of advanced telecommunications capability should include upload capacity equal to or surpassing half the download capacity.

Home Internet access is steadily becoming a tool for family administration, commerce, and education. People who are working from home are disadvantaged with a mere 3 Mbps upload to access work applications that are more traditionally run over a gigabit local network. Trying to share large data files is quite difficult at that benchmark.

The current level of upload capacity greatly limits the ability of normal people to engage in online backup. Whether a family frequently makes videos, takes many digital photos, or is rightly concerned with the rise of ransomware, keeping multiple local devices backed up in the cloud at 3 Mbps is challenging, especially if the household expects to use additional devices concurrently. Just ten minutes of 4K video shot by any iPhone recently manufactured will consume 3.75 GB of data.¹⁸ Uploading just that to the cloud, without the connection being used for anything else will take approximately 3 hours.

Though those who work from home may consume much more data in the downstream direction over the course of a month (likely due to video streaming), that does not mean subscribers put a greater weight on downstream access. They might be more concerned with getting a 30 gigabyte project to clients than the 300 gigabytes of video they download per month.

¹⁷ <https://muninetworks.org/content/nc-rural-electric-cooperatives-teach-model-collaboration>

¹⁸ <https://9to5mac.com/2015/09/10/iphone-6s-4k-video-size/>

Businesses need to be able to send data efficiently. Video conferencing, once a rare event, is now a daily activity that requires a strong upload. As employees and colleagues travel the world and work remotely, upload speeds need to stay robust to allow communication. Businesses often share data rich files, such as CAD documents, with other firms they work with on collaborative projects. Without the capability to send documents electronically, engineering and design firms for example, must limit their collaborations to local partners or risk jeopardizing the schedule of the project while they wait for plans to be physically shipped between cities. Such a situation can damage a firm's reputation with potential collaborators who don't want to work with others who might slow down a project.

One particular kind of business - the modern farm - is rapidly needing greater upstream capacity to take full advantage of rapidly evolving technologies, frequently called precision agriculture. To use water and fertilizer more efficiently, farmers are collecting big data from sensors in their fields and they then need to upload that to have it analyzed and turned into a report.¹⁹ For these applications, they actually need more robust upstream capacity than down. Other farms are turning toward remote-controlled robotics that are operated by humans.²⁰ But these robots will require much more than 3 Mbps to offer enough feedback to human operators to work efficiently.

The FCC should establish a higher threshold for upload capacity as part of its determination whether Americans are gaining sufficient access to advanced telecommunications services.

VII. Conclusion

The local elected leaders and communities we represent are working tirelessly to ensure fast, affordable, reliable Internet access so that their residents can take full advantage of the educational, economic, and civic engagement opportunities that come from next-generation broadband. Many proposals in the FCC's inquiry would set this work back, and make it more difficult for communities to achieve the kind of investment in high-quality Internet access that all Americans deserve.

For the reasons stated in the comments above, the FCC should ensure that mobile broadband networks are not considered a substitute for fixed networks and that satellite Internet access is not confused with a high-quality Internet service even if it can advertise 25/3 Mbps. The FCC should increase its threshold for what it considers advanced to include higher upload capacity than it currently does.

In order to encourage the more rapid deployment of advanced services, the FCC should strongly encourage states to remove barriers to local investment from local

¹⁹ <http://statescoop.com/owing-sensors-connecting-crops-dawn-smart-farmer>

²⁰

<http://www.capitalpress.com/Oregon/20170824/autonomous-robots-and-drones-will-operate-future-farms#.WZ8SfhzvYOw.email>

governments and cooperatives. The FCC should investigate whether the largest cable and telephone companies are using their market power to restrict investment from smaller rivals.

Respectfully submitted,

Institute for Local Self-Reliance
Next Century Cities