Insight

# Redefining Broadband Speeds to Reflect User Needs

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**Executive Summary**

- The Federal Communications Commission (FCC) will likely soon release a Notice of Inquiry regarding its annual broadband deployment report, which looks at whether advanced telecommunications capabilities are being deployed in a reasonable and timely fashion.
- In the report, the FCC may change its definition of broadband to include speed requirements of 100/20 Mbps, well beyond what the typical family of four would need.
- The speed criteria of broadband networks should change over time to align with the bandwidth requirements of modern applications, but the FCC should take care not to increase the speed requirements to such an extent as to distort the deployment picture; instead, the agency should carefully undergo an examination of the applications that a baseline broadband connection should support to ensure Americans can access modern applications and services.
- Modern usage requirements suggest a speed closer to 30/5 Mbps should be the baseline, and even at speeds of 50/5 Mbps, 93.8 percent of Americans have access to fixed broadband.

**Introduction**

Federal Communications Commission (FCC) Chairwoman Jessica Rosenworcel may soon release a Notice of Inquiry related to the agency's Broadband Deployment Report, which outlines the state of broadband deployment in the United States. If the FCC finds that advanced telecommunications capability (essentially broadband) isn't being deployed to all Americans in a reasonable and timely fashion, Section 706 of the Communications Act directs the agency to take immediate action to accelerate its deployment.

Recent reports indicate the agency will propose to set the baseline speeds in the FCC's Broadband Deployment Report at 100/20 Mbps—that is, 100 megabits per second download and 20 megabits per second upload. This insight finds that these speeds are well in excess of what the average American family requires. Under the lofty 100/20 Mbps standard, the FCC's report may suggest that too many Americans lack adequate access to broadband services, and that such services aren't being deployed in a reasonable and timely fashion. As a result, even those with robust connections that the FCC previously counted as having adequate broadband services will now be considered unserved. Using this finding, the FCC may attempt to justify major policy changes throughout the agency to promote broadband deployment, even if those Americans considered unserved under the new broadband definition have a reliable connection.

As telecommunications technologies advance, of course, the definition of broadband should change over time—and as consumers use new applications that require higher bandwidth, slower speeds will no longer suffice. Therefore, if the FCC's definition of broadband does not change, consumers whose broadband is outdated may fall further behind those with more advanced networks.

Nevertheless, the FCC should take care not to raise the definition of broadband beyond what is needed for reliable access to online services. With millions of Americans still lacking even a basic broadband connection, those without coverage will fall further behind if funds go to overbuilding in areas with already strong connectivity.

Therefore, instead of setting a standard untethered to user needs, the FCC should undergo a careful examination of what services a baseline broadband connection should support, and define the speeds based on what is required to support those services. In practice, this will allow the FCC to bring the definition of broadband in line with modern usage, without overcorrecting and worsening the digital divide for unserved Americans.

**Impetus for Redefining Broadband**

Americans rely on high-speed broadband connectivity more than ever, and federal policy should reflect the needs of consumers. Congress tasked the FCC with ensuring that broadband is deployed in a timely manner. In turn, the agency can establish speed requirements when determining whether consumers have adequate access to broadband. Yet Congress limited the definition of broadband only to capabilities that enable users to "originate and receive high-quality voice, data, graphics, and video communications." If the minimum speeds reported by the FCC fall behind the actual needs of users and their ability to use modern applications, then the agency could inadvertently classify consumers who lack adequate connectivity as covered, meaning FCC programs and initiatives to spur deployment may neglect these communities. Revisiting the definition of broadband ensures federal policy keeps in line with the technological needs of consumers.

If the FCC finds that broadband isn't being deployed to all Americans in a reasonable and timely fashion, Section 706 gives the agency authority to "take immediate action to accelerate deployment," though this authority is limited to removing barriers to infrastructure investment and to promoting competition in the telecommunications market. If the FCC wants to justify major policy changes, redefining broadband to require higher speeds would allow the agency to argue that broadband (under the new definition) isn't being deployed.

For example, many proponents of redefining broadband want speed baselines to reflect those of fiber-to-the-home (FTTH), a technology that currently is optimal for many deployments due to its high capacity and speeds. If the agency changes the definition of broadband to necessitate the use of FTTH, it can then further justify policy changes to support this technology in other programs, such as Universal Service Fund's high-cost program. While FTTH may be optimal for many deployments, in others, the costs and time required to build out a fiber network may provide less value than an immediate deployment of other services, such as fixed wireless, which can provide a variety of download and upload speeds, even if not to the same degree as fiber. to the same degree as fiber.

Further, if the FCC changes the definition of broadband, its decision may also set the standard for other federal and state programs outside of the agency's jurisdiction. The Broadband Equity, Access, and Deployment Program, for example, uses the FCC's current baseline of 25/3 Mbps to define areas under this threshold as unserved, and thus areas to which funding must go first. As the FCC's definition changes, other agencies and regulatory bodies will often incorporate these changes and design programs to complement the agency's definition. If the FCC drastically increases the baseline speed, these other regulators will do so as well over time, and areas with existing coverage will be considered unserved. This will move additional funds to already served areas, potentially at the expense of areas without any connectivity at all.

**Redefining Broadband: What Do Consumers Actually Need?**

As the FCC revisits the definition of broadband, it will undoubtedly receive comments from a wide range of perspectives regarding what this baseline standard should be. Yet it appears the FCC will pick the 100/20 Mbps speed, despite evidence suggesting these speeds are in excess of what consumers need to originate and receive high-quality content. While baseline bandwidth requirements of applications may sometimes overestimate the needs of consumers, this process often puts these needs into perspective. A hypothetical analysis follows below, although a full examination of needs should be developed through the FCC notice and comment process.

| Traffic Direction | Zoom Call | Zoom Call2 | HD Stream | HD Stream2 | Online Game | Online Game2 | Total |
|---|---|---|---|---|---|---|---|
| Download (Mbps) | 3 | 3 | 5 | 5 | 6 | 6 | 28 |
| Upload (Mbps) | 1.2 | 1.2 | 0 | 0 | 1 | 1 | 4.4 |

Table 1: Breakdown of download and upload speed requirements for a hypothetical family of four with two parents and two children

Its examination focuses on residential consumers, the analysis must first establish a standard household baseline. In 2015, the FCC reported that the average household consists of more than 2.5 people, while the average family household has 4.3 people. For the sake of this exercise, let's err on the higher side and envision an average household of 4 people (two parents and two children).

Next, a review should identify what applications broadband should support for that household. With remote work more common than in 2015, broadband should support multiple work, learning, and entertainment applications. In a fairly extreme example, both parents may need to participate in separate virtual meetings, while children in the home might choose to be online, as well. This hypothetical family may require a broadband capable of supporting two simultaneous video calls, two HD streams, and perhaps even two online gaming applications (as the kids may play a video game while streaming). In terms of download speeds, even this extreme scenario falls far short of the 100 Mbps figure. Each Zoom call requires 3 Mbps, HD video requires around 5 Mbps per stream, and casual online gaming usually needs anywhere from 3-6 Mbps down. Although this scenario wouldn't necessarily encapsulate services such as 4K video for every member of this household, this definition serves as a baseline for qualifying as broadband, not a premium connection. Few would argue that HD streams do not qualify as "high-quality video" as envisioned by the Communications Act, and overbuilding these networks by requiring broadband to support multiple 4K streams could result in a lack of coverage for those without the capability of streaming HD video. This example's download speeds translate to about 28 Mbps down, but we can round up to 30 Mbps for some additional capacity.

Most traffic is still downstream, but participation in video calls has increased the amount of data uploaded over the internet. A Zoom call generally requires higher bandwidth for uploads than it does for downloads, meaning the scenario above could justify a larger increase in upload speeds.

For upload, in our hypothetical four-person household, Zoom calls will occupy the most bandwidth of the network. For Full HD (1080p resolution) calls, users will need just under 4 Mbps. If a user reduces the quality to 720p, which is still considered high definition, they will only need 1.2 Mbps, and "high-quality" video only needs 600 Kbps. For determining a baseline connection, the consumer should likely use one of these two lower resolutions, as they allow the user to fully participate in online calls for a relatively small drop in quality. Online gaming will generally need about the same 1 Mbps as the Zoom call. Put into perspective, speeds of 5 Mbps

will support both two zoom calls and two children playing online (or the two children on Zoom calls of their own).

So, if we want broadband to support two simultaneous video calls, two HD video streams, and two online games, users need speeds of 30 Mbps download and 5 Mbps upload. The FCC may decide to cushion these numbers, but the speeds needed pale in comparison to the suggested 100/20 number. And while the 30/5 figure will not meet the needs of every consumer, they will undoubtedly allow users to "originate and receive high-quality voice, data, graphics, and video communication."

This is just one example for the FCC to consider as it evaluates broadband speeds; a more complete record evaluating the needs of Americans can be compiled through notice and comment. Many communities may not comport with the two parent/two child average envisioned in this example. Or perhaps rural communities may need different applications than urban ones. The FCC should carefully examine the needs of all communities across the country when determining what applications a broadband connection should support.

**How Many Americans Are Unconnected?**

Under the 30/5 Mbps standard, the deployment of broadband appears to be occurring in a reasonable and timely manner. The FCC's most recent report does not explicitly consider 30/5 Mbps. As of 2019, however, 93.8 percent of Americans have access to broadband at speeds of 50/5 Mbps, with only 1.8 percent lower than 25/3 Mbps. This means that under a speed definition reflective of the actual needs of consumers, almost 310 million Americans have access to broadband, with only about 20.5 million lacking access. Further, if the trends of increased connectivity continue, the actual number of unconnected Americans will be even lower over time.

Still, too many Americans lack access to broadband. Federal spending programs will undoubtedly narrow this gap, and many of the new networks will far exceed the baseline needs of consumers. Further, the work the FCC has done to streamline deployment will likewise increase access to broadband, and recent reports indicated broadband providers invested over $86 billion in 2021. To the extent Americans lack coverage, the FCC should take steps to further spur deployment. As previously mentioned, increasing the definition of broadband, and thus potentially overbuilding networks, stands in direct opposition to this objective.

Finally, a single speed requirement number doesn't necessarily paint a decent picture of broadband deployment in the United States. Even after the speed requirements for broadband change, the FCC should still report deployment figures below that number. After all, some connection is better than no connection. As the FCC continues to ponder this decision, a full picture evaluating the true needs of unserved Americans will inform better policies at the federal, state, and local levels.