ICLE tl;dr

# Internet Speed:
## What Do Consumers Actually Demand?

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### tl;dr

**Background**: President Joe Biden has called for "future-proof" broadband infrastructure as part of his Build Back Better plan, and some members of the U.S. Senate want the Federal Communications Commission (FCC) to update its definition of broadband to comprise both download and upload speeds of at least 100 Mbps. States like California have likewise advanced bills to prioritize funding for infrastructure that supports 100 Mbps or greater download speeds. It is widely believed that the FCC will update the definition of broadband from the 2015 standard of 25 Mbps download/3 Mbps upload speeds.

**But...** Studies of U.S. broadband usage suggest that typical consumers do not need upload speeds to be as fast as download speeds. Moreover, they typically require download speeds of less than 100 Mbps. Linking public funding to a required symmetrical 100 Mbps speed tier, or using that tier as a benchmark to define adequate broadband deployment, would have negative consequences for broadband buildout.

### KEY TAKEAWAYS

#### BROADBAND USE IS HIGHLY ASYMMETRICAL

Despite the push to define broadband as symmetrical 100/100 Mbps, typical consumers use far more bandwidth downloading than uploading. This is primarily because there are far more consumers of online content than there are producers of it. YouTube, for example, reports an average of 720,000 hours of video are uploaded to the site each day. By contrast, 1 billion hours of YouTube videos are watched daily.

In fact, over the last decade, data show the ratio of downstream traffic to upstream traffic has grown from 3:1 to 14:1. This pattern continued even during the COVID-19 pandemic, when mass video-conferencing in employment and scholastic settings drove demand for greater upload speeds. In December 2020, the ratio of downstream traffic to upstream traffic stood at 16:1.

While greater upload speeds are needed to livestream content at very high resolution (e.g., using services like YouTube 4K, which requires upload speeds of between 15 and 61 Mbps, depending on resolution), most streaming applications require upload speeds of less than 10 Mbps. In comparison, a home with multiple users all seeking to download content simultaneously may need more downstream bandwidth.

#### MOST AMERICANS ALREADY HAVE THE BROADBAND SPEED THEY NEED

A 2019 report from the *Wall Street Journal* found that typical U.S. households don't use most of their streaming bandwidth and receive

only marginal gains from upgrading speeds. The testers found that, even while streaming video on multiple devices, capacity was rarely reached for those with 100 Mbps, and only the tester with the 15 Mbps package used all of her bandwidth. They also found that those who paid for faster speeds streamed video at about the same speeds as everyone else. Among the myths the report disproved were that faster speeds allow videos to start more quickly; that high definition (HD) streaming requires superfast Internet; and that streaming video eats up lots of bandwidth.

This is consistent with both academic research and the recommendations of providers. Research has demonstrated that, from the user's perspective, video performance tends to be roughly equivalent across a wide range of speed tiers (from 18 Mbps to 100 Mbps). Zoom video, for example, requires only 3.8 Mbps/3.0 Mbps for a 1080p HD group-video call. Netflix requires only 25 Mbps download speed for 4K Ultra HD. And YouTube only requires 20 Mbps download speed for 4K video resolution.

There is little evidence that the current 25/3 definition of *minimum* broadband needs to be increased to 100/100 in order to reflect the needs of typical American households.

## REDEFINING BROADBAND WILL THWART DEPLOYMENT TO THE UNSERVED

Changing the definition of broadband to require 100/100 Mbps would deem many of the existing connections that serve U.S. households well to be inadequate. This would likely trigger a finding in the FCC's next Section 706 Report that the broadband is not deployed in a "reasonable and timely fashion." This means that the FCC would be required to "take immediate action to accelerate deployment" of broadband, which would likely mean the return to Obama-era FCC rules on net neutrality and municipal broadband.

Redefining broadband also would likely cause the FCC, states, and other entities to misallocate subsidies to support broadband buildout away from areas that are truly unserved (i.e., those that lack access under the current definition) toward those that already have adequate connections, but that do not meet the new definition. Given new obligations to upgrade broadband connections in a much broader swath of territories, providers would likely prioritize easier-to-reach urban and suburban locations. Thus, it may take longer to build connections to remote and rural areas that are the hardest and most expensive to reach.

The goal of universal broadband service will be delayed if more attention is paid to increasing speeds where access already exists, rather than building connections where there are none. There is broad bipartisan consensus about the need to close the "digital divide." Redefining broadband to require unrealistic speed thresholds—especially asymmetric speeds that few consumers demand—would undermine this important goal.

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For more on this issue, see ICLE's white paper, *A Dynamic Analysis of Broadband Competition: What Concentration Numbers Fail to Capture* and the *Wall Street Journal*'s study, *The Truth About Faster Internet: It's Not Worth It*.

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