



# The Whole Picture: Where America's Broadband Networks Really Stand

## EXECUTIVE SUMMARY

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Taking the whole picture into account, this report finds that the United States has made rapid progress in broadband deployment, performance, and price, as well as adoption when measured as computer-owning households who subscribe to broadband. Considering the high cost of operating and upgrading broadband networks in a largely suburban nation, the prices Americans pay for broadband services are reasonable and the performance of our networks is better than in all but a handful of nations that have densely populated urban areas and have used government subsidies to leap-frog several generations of technology ahead of where the market would go on its own in response to changing consumer demands.

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The status of broadband networking in the United States versus other countries has been a hotly debated topic. Broadband has significant effects on economic growth, education, and quality of life and is therefore a matter of immediate as well as long-range concern. ITIF has reported previously on America's broadband policy.<sup>1</sup> Other think tanks and advocacy groups such as the New America Foundation, Technology Policy Institute, Free Press, and the Berkman Center have commented on this issue, and a number of popular books have dealt with the subject, two of them in the past few months.<sup>2</sup>

Despite the frequent claims that the United States lags in international broadband comparisons, the studies cited to support this claim are out-of-date, poorly-focused, and/or analytically deficient. Many international broadband reports cherry-pick the wealth of data on the subject in order to reach a foreordained conclusion. Many ignore the higher costs of building broadband networks in low population density nations such as the United States. Many conflate advertised and actual speeds, globally ranking the speeds that Internet service providers claim to offer though little accurate data exist outside the U.S. confirming whether customers receive these speeds in most nations. Many ignore differences between nations in computer ownership rates, neglecting the fact that people will not subscribe to broadband, no matter how cheap and good it is, unless they own a computer. Finally, while most studies take snapshots of the dimensions their authors deem relevant, a more comprehensive approach would treat each as a trend line over time. This is important because at any given time, the cost and performance of any broadband network is in part a function of the generation of technology that was current when the network was last upgraded. So there's no inherent reason to suppose that any nation has a permanent position at the top or the bottom of the broadband technology curve.

Finally, much international broadband analysis is focused on the elusive number one position, and many countries can claim that position in one or more metrics in any given year. All such rankings should be viewed with caution, in part because of the way they selectively omit data. One measurement will focus on subscriptions, another on speeds, yet another on prices of bundles of broadband and broadband-enabled services, and still another on wireless services. Moreover, rankings are not always apples-to-apples

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comparisons. Any valid apples-to-apples comparison of the United States to other nations must include a wide array of variables and reflect the demographic, geographic and policy context of the United States relative to other nations.

This report seeks to present a comprehensive picture of the health of wired and wireless broadband networks along four dimensions based on reliable and verifiable criteria:

1. Deployment (the geographic reach of broadband networks)
2. Adoption (the number of users who subscribe)
3. Performance (speed, latency, and reliability)
4. Price (per unit of usage and speed tier)

Moreover, it attempts to account for exogenous factors (e.g., differences in population density in urban areas, loop lengths, computer ownership, and public subsidies (through tax breaks and direct subsidies) that have major influences on deployment, adoption, performance and/or price. In addition, it measures adoption not only on a per-capita basis, as the OECD does, but also on a per-household basis, since households are the principal subscribers to residential broadband. Finally, it focuses on national systems of broadband, rather than selectively picking high performing, low cost networks exclusively serving dense populations in metropolitan areas.

In addition, by examining the trajectory of broadband progress, we assess where the United States is heading relative to other nations to highlight both the advantages and the disadvantages of the road we've taken. This holistic view will enable policy makers to better interpret all too common claims about America's relative under-performance and to understand the role that broadband policy plays in a field where success comes from steady focus on making the kinds of improvements and investments that the economy actually demands, when they're actually needed and not from forcing the construction of infrastructure to serve particular visions of the future that may never come to pass.

Our chief findings are:

1. America enjoys robust intermodal competition between cable and DSL fiber-based facilities, with the third highest rate of wired intermodal competition in the OECD (behind Belgium and Netherlands).
2. America leads the world in the adoption of 4G/LTE mobile broadband, a technology that's a credible competitor at the lower end of the broadband speed spectrum and a gateway technology for bringing broadband non-adopters online.
3. Entry-level pricing for American broadband is the second lowest in the OECD, behind Israel.
4. The average network rate of all broadband connections in the United States was 29.6 Mbps in the third quarter of 2012; in the same period, we ranked seventh in the world and sixth in the OECD in the percentage of users with performance faster than 10 Mbps.
5. Of the nations that lead the United States in any of these four metrics (deployment, adoption, speed and price), no nation leads in more than two.

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6. In the last few years American firms bought more fiber optic cable than all of Europe combined. 2011 was the first year in which America's fiber purchases exceeded those of 2000, and 2012 orders have remained strong.
7. 82 percent of American homes are passed by a cable technology capable of supporting broadband speeds of 100 Mbps or higher and a new technology known as Vectored DSL may soon bring a second 100 Mbps service into the market.
8. Broadband adoption in the United States is not as high as some leading nations, but our 68.2 percent adoption rate for all households exceeds the EU-15's 66.9 percent. When looking at adoption rate for households with computers, the U.S. rate is close to the top (four percentage points from the leader) and three percentage points above the EU-15's 85.9 percent for this population.
9. American broadband service providers are no more profitable than those in the rest of the world.
10. American broadband prices are progressive: American users of low-speed, entry-level broadband services pay less than their peers in other countries, but those who use the fastest services pay more.

While some critics selectively point to some very limited high performance broadband offerings in a few scattered foreign cities in an effort to prove that the United States trails Europe in broadband, the facts strongly suggest otherwise. Comparing the United States to the EU15 nations as a whole shows that U.S. deployment, adoption and speed are better. This is why European Commission Vice-President Neelie Kroes has called for new European policies modeled on ours to catch up with the United States, where: "high speed networks now pass more than 80 percent of homes; a figure that quadrupled in three years."<sup>3</sup> In Kroes' view, private investment is the primary driver of broadband progress: "Though the public sector can help, the real heavy lifting must be done by private investment."<sup>4</sup> To facilitate private investment, Vice-President Kroes is developing a "Ten Step Plan" for a single, cross-border European market for broadband that mimics our interstate facilities-based broadband market.<sup>5</sup>

Likewise, some critics point to gigabit rollouts in some cities and nations (e.g., Korea) as evidence of U.S. broadband failure. But this critique misses two key factors. First, virtually all of these projects involve public subsidies or are private test bed facilities, not wide scale deployments. Second, while gigabit test bed projects (like America's Gig. U<sup>6</sup>) are important, the idea that most U.S. broadband users currently need networks this fast is simply wrong. Virtually all existing broadband applications run quite well on the average broadband network in most U.S. cities. This does not mean that higher speeds may not or will not be needed as new applications emerge, but the notion that nations should massively overbuild most of its networks far ahead of real consumer demand is not wise economics or broadband policy.

For our own part, the United States needs to invest significantly more in policies and programs that encourage more of our residents to come online and reap the benefits of the broadband Internet. Pay television (by cable and satellite) is more widely used in the U. S. than broadband, despite the fact that the prices of pay TV services and TV sets are higher than those of broadband and computers, suggesting that many households could afford computers and broadband if they truly valued it. Moreover, bringing more people online

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spreads the costs of network operation and investment while increasing the social benefits of broadband.

We should also continue our policy of relying on intermodal competition in areas where population density will support it, as it continues to provide considerable benefits in terms of investment and service improvement, but we must also recognize that broadband service in many less densely populated rural areas is not yet capable of sustaining itself without carefully applied and targeted government subsidies. Finally we cannot rest on our laurels with respect to spectrum allocation: more needs to be done, especially in transferring underutilized spectrum from the public sector to wireless broadband.

All in all, the state of American broadband is good and getting better, but there is still room for improvement in selected areas.

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## ENDNOTES

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2. David Cay Johnston, *The Fine Print: How Big Companies Use "Plain English" and Other Tricks to Rob You Blind* (Penguin Group USA, Kindle Edition, 2012); Susan P. Crawford, *Captive Audience: The Telecom Industry and Monopoly Power in the New Gilded Age*, (New Haven, CT: Yale University Press, 2013), Kindle Edition.
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4. Neelie Kroes, "Enhancing the Broadband Investment Environment," Press Release, *EUROPA Press Releases*, December 7, 2012, [http://europa.eu/rapid/press-release\\_MEMO-12-554\\_en.htm](http://europa.eu/rapid/press-release_MEMO-12-554_en.htm).
5. Claire Davenport and Leila Abboud, "EU Telecoms Chief Plots '10-step Plan' for Single Market," *Reuters*, January 30, 2013, <http://www.reuters.com/article/2013/01/30/eu-telecoms-idUSL5N0AZJ3Z20130130>.
6. See <http://www.gig-u.org/>.

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## ABOUT THE AUTHORS

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## ABOUT ITIF

The Information Technology and Innovation Foundation (ITIF) is a Washington, D.C.-based think tank at the cutting edge of designing innovation strategies and technology policies to create economic opportunities and improve quality of life in the United States and around the world. Founded in 2006, ITIF is a 501(c)(3) nonprofit, non-partisan organization that documents the beneficial role technology plays in our lives and provides pragmatic ideas for improving technology-driven productivity, boosting competitiveness, and meeting today's global challenges through innovation.

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