

Testimony of  
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Subcommittee on Technology and Innovation

Hearing on  
*Avoiding the Spectrum Crunch: Growing the Wireless Economy through Innovation*  
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Chairman Quayle and Ranking Member Edwards, and members of the Subcommittee, thank you for including me on today's panel. I am here on behalf of CTIA – The Wireless Association®, which represents the wireless carriers, equipment vendors, and software developers that are driving America's leadership in wireless broadband.

I am pleased to tell you that the United States leads the world in the deployment of fourth-generation wireless technologies. While the U.S. is home to less than five percent of the world's population, we claim more than 20 percent of global high-speed wireless broadband subscribers. As a result of this leadership, the U.S. is setting the pace for wireless innovation, creating jobs and building a competitive advantage for our economy.

Investment in advanced wireless networks increases employment and has encouraged the creation of entire new sectors of our economy. Economists Robert Shapiro and Kevin Hassett recently estimated that "every ten percent increase in the adoption of 3G and 4G wireless technologies could add more than 231,000 new jobs to the U.S economy."<sup>1</sup> These jobs aren't just at large companies; increasingly, they are found in smaller, start-up firms that are leveraging the wireless platform to build new businesses. As economist Michael Mandel recently observed in a study for Tech Net, the "app economy" is now a substantial job creator.<sup>2</sup>

What makes this all the more amazing and impactful is that as recently as five years ago, the notion of "apps" was pretty limited, and unless you were involved in the wireless industry you'd probably never heard of them. Today, we're increasingly depending on them and use apps to shop, pay bills, read the news, and stay in touch. In a way, this is simply a logical extension of the process that has led your wireless device to replace a slew of products – things like PDAs,

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<sup>1</sup> Robert Shapiro and Kevin Hassett, "The Employment Effects of Advances in Internet and Wireless Technology: Evaluating the Transitions from 2G to 3G and from 3G to 4G," Jan. 2012, at 2, available at [http://ndn.org/sites/default/files/blog\\_files/The%20Employment%20Effects%20of%20Advances%20In%20Internet%20and%20Wireless%20Technology\\_1.pdf](http://ndn.org/sites/default/files/blog_files/The%20Employment%20Effects%20of%20Advances%20In%20Internet%20and%20Wireless%20Technology_1.pdf).

<sup>2</sup> Michael Mandel, South Mountain Economics, "Where the Jobs Are: The App Economy," Feb. 2012, available at <http://www.technet.org/wp-content/uploads/2012/02/TechNet-App-Economy-Jobs-Study.pdf>.

cameras, MP3 players, GPS devices, or even watches - that you used to carry or wear and that are now included in your smartphone.

The demand for mobile data services is exploding. Wireless data traffic grew 123 percent from 2010 to 2011, and the pace is accelerating, as the last six months of 2011 were 132 percent greater than the last six months of 2010. There also was a 43 percent increase in the number of active smartphones in 2011 as compared to 2010.

To stay ahead of this demand, CTIA's members invest more than \$20 billion annually (including more than \$25 billion last year<sup>3</sup>) to extend and upgrade the capabilities of wireless networks. But even at these impressive levels, network investment alone will not allow us to stay ahead of the exploding demand that is being driven by consumers' and businesses' appetite for mobile broadband services. Additional spectrum will be necessary too.

The need for additional spectrum has been well-documented both by the government and respected private sector parties. Even conservative estimates project U.S. mobile data traffic to grow by a factor of more than ten between the end of last year and 2015. This demand is being driven by consumers' migration from feature phones to smartphones and tablets that, while employing advances in spectral and computing efficiency, allow users to demand more and thus strain wireless networks in an unprecedented manner. The evolution of machine-to-machine communications will only exacerbate this challenge. If vehicular traffic in your congressional district was predicted to grow by a factor of ten over the next five years, you'd want to know that transportation authorities had a plan to deal with it. The same should be true with regard to spectrum.

For this reason, and to maintain the advantages that flow from our world-leading position, CTIA believes it is imperative that policymakers embrace policies that will make additional spectrum available on a predictable, near-term basis. We also hope you will embrace policies that

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<sup>3</sup> See <http://www.ctia.org/media/press/body.cfm/prid/2171>.

encourage investment and research and development, and refrain from imposing regulation that can deter the deployment of new infrastructure and technology.

With regard to the first of these priorities, predictable, near-term access to spectrum, CTIA urges Congress to ensure that the Federal Communications Commission and the National Telecommunications and Information Administration faithfully and expeditiously implement the spectrum legislation enacted by Congress this past February in Title IV of the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112-96). While we are hopeful that the incentive auction process will result in bringing a substantial amount of spectrum to market for commercial wireless services, that spectrum will only represent a down payment toward the 500 MHz that the Federal Communications Commission called for in its 2010 National Broadband Plan (“NBP”) and that the President embraced in his June 2010 Presidential Memorandum on “Unleashing the Wireless Broadband Revolution.”<sup>4</sup>

In order to progress toward the NBP’s target, as well as to keep pace with what is happening in a number of Western European and Asian countries, where hundreds of megahertz are being freed for commercial use, additional spectrum will need to be made available. Toward this end, CTIA recommends that government operations in the 1755-1780 MHz band be relocated so that band can be paired with available spectrum located at 2155-2180 MHz. This would make available a substantial swath of high-quality spectrum that is already used for commercial purposes in much of the world. Making this spectrum available for commercial use will not only benefit the industry; it also will aid the U.S. Treasury, which is likely to reap significant revenue (estimated at up to \$15 billion) from the auction of these bands.<sup>5</sup>

CTIA recognizes that reallocation is challenging, but spectrum clearing represents a substantially better path than a default to spectrum sharing. While spectrum sharing may have

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<sup>4</sup> See <http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution>.

<sup>5</sup> Coleman Bazelon, The Brattle Group, “The Economic Basis of Spectrum Value: Pairing AWS-3 with the 1755 MHz Band is More Valuable than Pairing it with Frequencies from the 1690 MHz Band,” April 2011. Available at <http://www.brattle.com/documents/UploadLibrary/Upload938.pdf>.

a place as a complement to fully cleared commercial, wide-area networks, dynamically or opportunistically shared spectrum is not suitable as a substitute for large blocks of licensed spectrum. This is because this type of sharing imposes restrictions that are inconsistent with traditional wide-area, high-capacity wireless network operations and which would impair carriers' ability to deliver the type of high-quality, low-latency services upon which users – especially those in business and government – rely. Additionally, while there has long been speculation that advances in technologies like cognitive radio will enable frequency-hopping and decrease the demand for dedicated spectrum, the reality is that these advances have yet to produce a commercially viable solution.

While additional spectrum must be made available for commercial use, additional tools are being used aggressively to meet demand. CTIA's members continue to invest in new facilities, deploying more than 30,000 new sites last year. This process will be aided by siting language included in the recently enacted spectrum legislation. CTIA's members also are moving toward the deployment of smaller cells and the use of wi-fi offload is now a standard industry practice. Our carriers and manufacturers are committed to driving spectrum efficiency to the maximum extent possible. Notwithstanding this commitment to the deployment of additional infrastructure and new efficiency techniques, the release of additional spectrum into the marketplace remains the single most important thing that can be done to ensure the continued vibrancy of the wireless ecosystem.

While spectrum policy is paramount, there certainly are other factors that can affect the industry's continued success. In particular, CTIA urges Congress to be mindful that regulatory and tax policies have a substantial impact on the ability and incentive for our members to invest in new facilities and the development of new technologies.

The history of the commercial wireless market demonstrates that granting an entity the right to the exclusive, flexible use of a block of spectrum, within specified frequency and spatial boundaries, and ensuring that entity's use of the spectrum will not be subject to harmful interference, is a tremendously powerful way for the government to encourage innovation and

investment. Without exclusive licenses – and their attendant protections – it is doubtful that the massive investment and tremendous innovation that has occurred in the mobile wireless services market would have come to pass.<sup>6</sup>

Licensees invest based on the certainty that they will benefit from the advances they implement. This certainty, in turn, is tied to a licensee's bundle of spectrum usage rights, including protection from interference. Companies will not invest billions of dollars in wireless infrastructure if they have little certainty that they can operate at a planned level of quality and make the modifications necessary to meet the demands of a dynamic, evolving marketplace, free from unnecessary regulatory impositions.

On this point, it is noteworthy that on January 18, 2011, the President issued an Executive Order that recognized the burdens associated with regulatory requirements and the negative impact such regulations may have on innovation.<sup>7</sup> Accordingly, the President directed Executive Agencies to take into account the cost of regulations and to adopt regulations that promote innovation.<sup>8</sup> Even more recently, Cass Sunstein, who oversees the Office of Information and Regulatory Affairs, directed the heads of Executive Departments and agencies to “to take account of the cumulative effects of new and existing rules and to identify opportunities to harmonize and streamline multiple rules.”<sup>9</sup> In a related blog post, he noted that the “sheer accumulation of regulations can cause real harm, especially for small businesses and startups.”<sup>10</sup>

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<sup>6</sup> Thomas Hazlett and Evan Leo, “The Case for Liberal Spectrum Licenses: A Technical and Economic Perspective,” 26 *Berkeley Technology Law Journal* (2011), 1037-1101, available at [http://btlj.org/data/articles/26\\_2/1037\\_1102\\_Hazlett\\_112111%20Web.pdf](http://btlj.org/data/articles/26_2/1037_1102_Hazlett_112111%20Web.pdf).

<sup>7</sup> Exec. Order No. 13563, “Improving Regulation and Regulatory Review,” 76 FR 3821 (Jan. 18, 2011), <http://www.whitehouse.gov/the-press-office/2011/01/18/improving-regulation-and-regulatory-review-executive-order>.

<sup>8</sup> *Id.*

<sup>9</sup> See <http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/cumulative-effects-guidance.pdf>.

<sup>10</sup> See <http://www.whitehouse.gov/blog/2012/03/20/smarter-regulation-reducing-cumulative-burdens>.

CTIA agrees with those points and believes that government policy should preserve and advance spectrum licensees' incentives for investment and innovation by continuing to make spectrum available pursuant to the exclusive- and flexible-use licensing framework and by avoiding the imposition of unnecessary regulations.

Similarly, CTIA urges Congress to recognize that massive capital investment on the order undertaken by the wireless industry is extremely sensitive to changes in the tax code. Measures like the accelerated expensing of capital investment and acceleration of AMT credits enacted under President Bush and continued under President Obama have encouraged the transition from 3G to 4G. Allowing this treatment to expire at the end of 2012 may discourage incremental investment in wireless and other communications infrastructure. Without continued advances in the scope and quality of network infrastructure to support new devices and applications, the virtuous cycle of innovation will grind to a halt.

Additionally, Congress should adopt a permanent or at least multi-year extension of the research and development ("R&D") tax credit. Like many of the other tax provisions mentioned above, extending the R&D tax credit will spur innovation through continued research, which will in turn lead to increased economic growth. The manufacturers and developers that supply the wireless equipment on which our carriers depend invest significant percentages of their revenue in research and development. This process is costly and long-term; it should not be subject to the periodic failing by Congress to extend the R&D credit. In the 1980s, when the wireless revolution began, the U.S. ranked first among OECD countries offering R&D tax incentives. Today, the size of the U.S. credit is smaller than that offered in most other OECD countries and the U.S. is the only country that subjects its credit to the sort of "on again, off again" treatment that has resulted in the credit being expired at the current time.

Last week, I had occasion to travel to Texas and visit with several of CTIA's large manufacturers, each of which maintains a substantial R&D presence in the Dallas area. Collectively, the companies I visited last week spend more than \$10 billion annually on R&D. A substantial amount of that total is spent here in the United States, supporting thousands of good, high-

wage jobs. But if Congress continues to neglect the fact that the U.S. faces fierce global competition for R&D investment dollars, it does so at America's peril. The companies I visited in Dallas are multi-national companies that could just as easily choose to locate those R&D activities in a country that offers more favorable and predictable treatment of R&D investments. That is the exact opposite of what the wireless industry, and the American economy, needs.

In sum, while I believe that the wireless future is bright, there is a great deal to be done to ensure that we maximize the opportunity and continue U.S. leadership in this vital industry. CTIA looks forward to working with you and your colleagues on these matters.

Thank you for the opportunity to appear at today's hearing.