900 17th Street, N.W.
Suite 1100
Washington, DC 20006
Phone: 202.783.0070
Fax: 202.783.0534
Web: www.ccianet.org
Computer & Communications Industry Association

ABSTRACT

WIRELESS BROADBAND AND SPECTRUM REFORM

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- *The radio spectrum is the range of different frequencies that transmitters can use to send audio, video, or data to receiving devices, and it enables all forms of wireless communication. Currently, the U.S. government makes available certain frequency ranges for private sector use and then allocates them to specific companies via auctions.*
- *With only about 5% of the spectrum typically in use in the U.S., the vast majority of viable spectrum in this country goes unused or is significantly underutilized.*
- *The 700 MHz auction, which was held in the beginning of 2008, did not produce even a single significant new entrant in the wireless marketplace and tragically failed to attract a new national broadband provider.*
- *"White Spaces," or the unused space in between television stations, have the potential to spur a wireless broadband revolution. New digitized "spectrum sensing" technology is being developed to utilize those spaces without interfering with other users. This new technology offers an opportunity to provide ubiquitous wireless broadband access to all Americans.*

Background: The current legal framework for spectrum management evolved in the early 20th century as a compromise over the questions of who should determine the distribution of spectrum among competing interests and what standard should be used in deciding this question. Initially, the responsibility for spectrum management was placed in the hands of the executive branch. Since 1927 this responsibility has been divided between the executive branch for managing federal use (in 1978 the president delegated this authority to the National Telecommunications and Information Administration), and an independent commission for managing non-federal and commercial use (first the National Radio Commission and then the Federal Communications Commission). The "public interest" standard has been used by the FCC when managing non-federal government spectrum, although this standard has led to much debate and interpretation over the years. Under this divided system, both the FCC and NTIA must coordinate and cooperate in order to determine how to accommodate different entities competing for spectrum. The current spectrum management system has processes in place for allocating spectrum for new uses and users of wireless services, but these processes can be contentious and often result in protracted lobbying and lengthy negotiations between the FCC, NTIA, and interested parties, both commercial and governmental.

Comparative Hearings and Lotteries

Prior to 1994, the FCC assigned spectrum mostly through comparative hearings in which licenses were assigned among competing bidders based on which competitor best served "the public interest"—although this standard was unclearly defined. Lotteries were adopted to allocate the first cellular telephone licenses. However, these lotteries often led to spectrum speculation and resale.

The result of this process was extensive rule-making and dispute resolution, which still often resulted in inefficient outcomes.

Auctions

The FCC has been conducting competitive auctions for spectrum since 1994 rather than assigning licenses for the "best public use." In this practice, the FCC is not alone. Countries throughout the world are now using competitive auctions to assign spectrum. Generally perceived as a step in the right direction, the auction approach is a market-based method for assuring that useful frequencies are being allotted to those that value them the most and—at least as the FCC believes—will use them most effectively. Also, these auctions provide governments with additional revenue. However, these spectrum auctions have not been without their detractors. Auctions have done nothing to advance competition in the telecommunications arena and the process itself is subject to manipulation through collusion and coercion by large telecommunications companies. The 700 Mhz Auction—once looked on as the best hope for new competitive networks and services—saw Verizon and AT&T completely dominate the auction (contributing $16 billion of the total $19.6 billion in auction receipts) and solidify their dominant position in the wireless market.

CCIA's Position: CCIA believes the time has come for comprehensive spectrum policy reform that strives to maximize competition, innovation, and the productivity of the spectrum itself.

Future auctions must be reformed to encourage competitive entrants and new technologies. Although well-designed auctions are a useful way to allocate spectrum, CCIA believes that the rapid pace of technological innovation has created a new paradigm that necessitates updated models of spectrum management and allocation. Auction success must not be measured solely by auction receipts, as many in Congress tend to do. Instead, policymakers must take into account all the costs and benefits and strive to ensure that the most utility is squeezed out of this valuable resource. Furthermore, companies should be encouraged to experiment with new models of spectrum sharing. For example, new technology could allow a primary license holder certain rights while still reaping benefits from the spectrum when they are not using it by opening it up for use by secondary licensees. In this vein, Congress and the FCC should consider "open access" rules for the spectrum that allow third parties (resellers) to acquire wireless services from license holders on reasonable, non-discriminatory terms.

"Spectrum sensing" technologies could help utilize dormant spectrum, such as the unused space in between digitized television channels ("white spaces"), to help inject competition into the broadband marketplace. The February 2009 transition to digital broadcast television (DTV) will yield this new opportunity for more efficient spectrum use, unlicensed use of white spaces could spur innovation in the device markets as well by driving capital towards new technologies that more efficiently use spectrum. With America currently ranked 15th in the world in broadband penetration according to the Organization for Economic Cooperation and Development (OECD), the need for this reform has never been more pressing. And the competitive checks that increased competition would impose on the marketplace for broadband provision has the potential to ease current problems—such as network blocking — without extensive regulations.

Currently, innovation in wireless technology has far outpaced the advancement of wireless policy. Policymakers must drastically revise the current framework governing spectrum allocation and management in order to pave the way for competition and wireless innovation. Decisions made now will reverberate long into the future and could very well determine whether the U.S. remains a leader in both the innovation and adoption of wireless technologies.

Current Status:

700 MHz Auction

In this auction, the FCC made some of the best spectrum (UHF TV channels 52 – 69) available to wireless communications companies. Many hoped this would enhance wireless competition and spur the creation of a nationwide wireless broadband network. Unfortunately, it did neither. In a hearing in April 2008, FCC Commissioner Michael Copps stated that the auction came dangerously close to foreclosing competition in the wireless space and Commissioner Jonathan Adelstein lamented that we had missed a golden opportunity to establish a third pipe into American households. Verizon and AT&T emerged as the two big winners, and no major new entrants won licenses. Because both companies are already two of the top providers of wireline broadband service, they are highly unlikely to fully utilize this new spectrum in a way that will challenge the status quo and transform the marketplace for wireless broadband.

However, some good did come out of the auction. Some frequencies have "open access" requirements, which prevent the carrier that operates on those frequencies from striking exclusive deals with equipment manufacturers. This will inject more competition into the wireless device marketplace.

White Spaces

After the failure of the 700 MHz auction, the last major hope (at least for the foreseeable future) for ubiquitous wireless broadband access for all Americans is the effective use of whites spaces: the frequencies between television stations that usually contain noise from the adjacent transmitting entities and were thus traditionally unusable. Right now no broadband devices are allowed to use these parts of the spectrum but once TV broadcasters transition to digital compression technology in February '09, the FCC is considering whether to let companies sell FCC-certified devices that would be used without exclusive broadcast licenses for these bits of spectrum. Such devices would be low-powered and transmit over a small geographic area. These bits of space are similar to Wi-Fi in that they are unlicensed, but the spectrum range is significantly better suited for broadband transmission. The unique qualities of the white spaces—unused, high quality spectrum with excellent propagation characteristics—are far superior to the current wireless broadband offerings (Wi-Fi and WiMax) and offer a unique opportunity to provide expansive wireless broadband coverage and challenge the current broadband duopoly consisting of telecommunications companies and cable operators.

Members of the White Spaces Coalition, which includes Google, Microsoft, Intel, HP and Samsung, are developing "spectrum sensing" technology that can share white space with other unlicensed devices without interfering with adjacent television broadcasts. They are being opposed by the National Association of Broadcasters (NAB), which contends that the devices could interfere with some television signals. The association that represents cell phone companies (CTIA) also has resisted unlicensed white space use. Recently, CTIA has begun to advocate licensing the white spaces. However, this approach would tend to favor the larger telecommunications companies as they would be likely to outbid others for the licensing rights and the outcome would be similar to that of the 700 MHz auction.

Over the past few years, the FCC has been working with industry to come up with rules to govern devices that seek to operate in the white spaces, and the Commission has been accepting prototype devices for testing. If the technology matures and policymakers get it right, "white spaces" could be the key to bringing the elusive "third pipe" to broadband consumers nationwide.

Wireless Internet Nationwide for Families (WIN) Act

In April, Reps. Eshoo and Cannon introduced the WIN Act in an effort to encourage a nationwide wireless broadband carrier. The bill would require the government to hold two auctions that would make two bands of 20 MHz unpaired contiguous spectrum available for 15 years nationwide licenses, one licensee would be required to offer a free tier of wireless broadband. Furthermore, the bill calls for a biennial review of the wireless broadband market and the state of the spectrum under the FCC's and NTIA's control. The report would have to evaluate how to use the spectrum more efficiently and the statutory changes that would be necessary to do so.