

Spectrum: Allocations, Auctions, Public Revenues

What is spectrum?

Spectrum is a conceptual tool used to organize and map the electromagnetic properties of the earth. The subset of frequencies useful for wireless communications is known as the “radio spectrum”—and commonly referred to simply as “spectrum” or “the airwaves.” With the explosion of cell phones and other wireless devices, spectrum is the most valuable resource in the emerging information economy, worth hundreds of billions of dollars.

Who owns the airwaves?

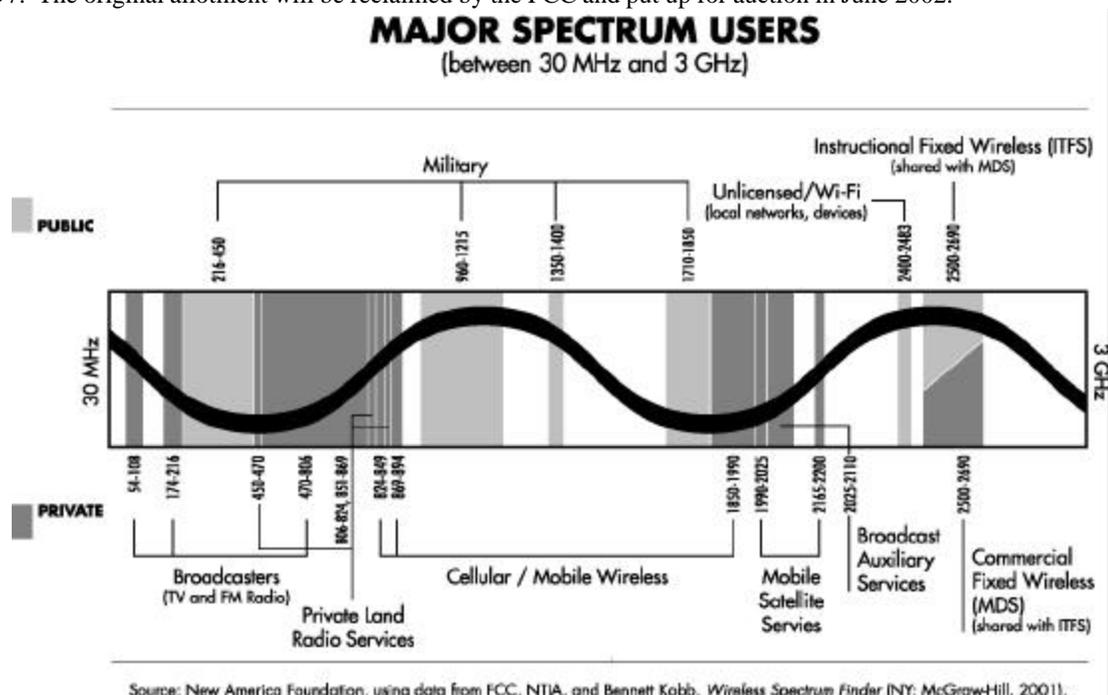
The airwaves, like other natural systems—including the oceans, navigable waterways, and the atmosphere—are a common asset owned collectively by all Americans. The Communications Act of 1934 prohibits private ownership of spectrum, permitting only temporary licenses consistent with the “public interest, convenience and necessity.” For example, the channels licensed free to broadcasters are conditioned on certain public interest obligations.

How is spectrum allocated?

The Communications Act established the Federal Communications Commission (FCC) as an independent agency to manage all non-federal uses of spectrum (commercial, state, and local government uses). The FCC first allocates spectrum for specific services and then assigns licenses to particular users (both commercial and public) within that allocation. Familiar commercial spectrum services provided by private companies include broadcasting (ground-based television, satellite TV and radio), mobile communications (voice, paging and data), and private mobile radio services (used by taxis, utilities and many other industries). Historically, most of the available spectrum was licensed for free through comparative hearings and, for a brief time, by lotteries. Since 1994, auctions have been used to assign new allocations to cell phone companies. However, auctions have not been applied to the renewal of incumbent licensees, who continue to use the airwaves without paying rent back to the public.

Who pays for spectrum?

In general, only new wireless services—principally cellular phone companies—pay for spectrum, while incumbent licensees enjoy free use. The Balanced Budget Act of 1997 (BBA97) requires the FCC to use auctions for most types of new spectrum licenses. Despite the pressing shortage of spectrum for mobile broadband services, one group of incumbents—the television broadcasters—received a second free channel of broadcast spectrum (6 MHz) to facilitate the industry’s transition to digital television. In September 2001, the FCC for the first time allowed broadcasters to negotiate private payments in return for clearing TV channels 60 to 69 sooner than required by BBA97. The original allotment will be reclaimed by the FCC and put up for auction in June 2002.



Why are policymakers concerned about spectrum?

Because all of the prime frequencies for spectrum have been assigned, there is a growing shortage of spectrum, particularly for wireless Internet services. The international body that manages spectrum—the International Telecommunication Union—has designated a number of frequencies globally for Third Generation (3G) technologies that provide enhanced mobile access to Internet-based services. Policymakers are committed to making sufficient spectrum available for 3G services in the near future.

A major obstacle is the FCC’s long-standing industrial policy based on rigidly “zoning” spectrum for exclusive use by specific industries. This has left Americans as prisoners of an outdated zoning and giveaway policy that both fails to use a more flexible market mechanism to allocate spectrum *and* neglects to charge rent to all commercial licensees. Some critics believe that the worst possible outcome has emerged: a spectrum shortage, no incentives for efficient use of spectrum, the government picking “winners” and “losers” among industries and the forfeiture of tens of billions in public revenue.

How much revenue is expected from future auctions?

Each year the Congressional Budget Office (CBO) estimates (“scores”) the anticipated public revenue from planned spectrum auctions. As of January 2002, CBO’s baseline projection of offsetting receipts from future FCC auctions with statutory deadlines was revised upward to nearly \$26 billion (Table 1). CBO projects that most of this revenue will be deposited in the General Treasury by 2004 and 2005. Additional bands have been proposed for reallocation and auction to wireless companies (Table 2) which, based on market prices bid at recent European and U.S. auctions, is likely to generate \$25-to-\$100 billion that has not yet been scored by CBO nor earmarked by Congress.

CBO has estimated the revenues for the upcoming Upper 700 MHz auction (TV channels 60 to 69) at almost \$3 billion. Based on prices bid at recent auctions, analysts believe that the auction of the 30 MHz reallocated to 3G wireless services could generate \$20 billion or more (Table 1). However, a recent FCC Order (September 17, 2001) will allow broadcasters on TV channels 60 to 69 to claim as much as two-thirds of the total proceeds (in return for agreeing to clear the band sooner than the law requires).

Table 1: Scored Auctions and Statutory Deadlines

Range (MHz)	Size (MHz)	Primary Current Allocation	Auction Date	Statutory Deadline
747 – 762 777 – 792	30	Broadcast (Channels 60-69)	06/19/02	Deadline: 09/30/02
698 – 746	48	Broadcast (Channels 52-59)	06/19/02	Deadline: 09/30/02 Proposed in Bush (NTIA) 3G plan
1710 – 1755	45	Military	Not scheduled	Deadline: 09/30/02
2110 – 2150	40	Formerly Broadcast Auxiliary/ Private Industry Services	Not scheduled	Deadline: 09/30/02 Proposed in Bush (NTIA) 3G plan

Table 2: Proposed Auctions Not Yet Scored

Range (MHz)	Size (MHz)	Primary Current Allocation	Auction Date	Comments
1770 – 1850	80	Military	Not scheduled	Proposed by Reps. Pickering/Upton (on hold)
1755 – 1770	15	Military	Not scheduled	Proposed in Bush (NTIA) 3G plan
2150 – 2162	12	Multipoint Distribution Services	Not scheduled	Proposed in Bush (NTIA) 3G plan
2162 – 2170	8	Mobile Satellite Services	Not scheduled	Proposed in Bush (NTIA) 3G plan
1910 – 1930 2390 – 2400	20 10	Unlicensed PCS	Not scheduled	Being considered for reallocation by FCC (NPRM 01-224)