

1993

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Recommended Citation

18 Seton Hall Legislative Journal 13 (1993)

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ARTICLES

THE NEW SPECTRUM AUCTION LAW*

*Nicholas W. Allard***

I. Introduction

In the summer of 1993, when Congress narrowly approved President Clinton's deficit reduction package by passing the Omnibus Budget Reconciliation Act of 1993 (OBRA),¹ it also authorized the Federal Communications Commission (FCC) for the first time to issue microwave spectrum licenses through competitive bidding

* © All rights reserved. This article is for Genevieve Mulderig Allard, Seton Hall School of Law '89, with hopes it is up to her high standards.

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¹ Omnibus Budget Reconciliation Act, Pub. L. No. 103-66, 107 Stat. 312 (1993) (to be codified in scattered sections of the U.S.C.) [hereinafter OBRA]. See also HOUSE COMM. ON THE BUDGET, CONF. REPORT TO H.R. 2264, H.R. CONF. REP. NO. 213, 103d Cong., 1st Sess. (1993) [hereinafter H.R. CONF. REP. NO. 213]; HOUSE COMM. ON THE BUDGET, REPORT TO H.R. 2264, H.R. REP. NO. 111, 103d Cong., 1st Sess. 245-70 (1993) [hereinafter BUDGET REPORT]. S. 1134, the Senate bill, was ordered reported from the Senate Budget Committee on June 22, 1993, however, no written report was filed. The House of Representatives companion bill, H.R. 2264, passed the House on May 27, 1993. 139 CONG. REC. H2970-3302 (daily ed. May 27, 1993). S. 1134 was considered and passed the Senate on June 23 and 24, 1993. 139 CONG. REC. S7662-7736, S7815-8070, S8077 (daily ed. June 24, 1993). Subsequently, on June 25 (debate began on June 24 and finished in the morning on June 25) H.R. 2264 was considered and passed the Senate in lieu of S. 1134 as amended. 139 CONG. REC. S7815-8070, S8077 (daily ed. June 24, 1993). The House agreed to the Conference Report on Aug. 5, 1993. 139 CONG. REC. H6122-82, H6224-72 (daily ed. Aug. 5, 1993). The Senate agreed to the Conference Report on Aug. 6, 1993. 139 CONG. REC. S10,625-78, S10,680-750, S10,757-63. The President signed OBRA into law on August 10, 1993.

procedures for a wide variety of communications uses:² uses ranging from cellular telephones and subscription television, to radio controlled cars and garage door openers, to potentially huge emerging businesses such as, Personal Communications Services. Congress projects that this so-called auction authority, which completely revamps the existing system of lotteries and competitive hearings for assigning federal communications licenses, will generate over \$10.2 billion in federal revenues over five years.³ Current commercial enterprises alone, which depend on microwave spectrum to transmit signals, have annual revenues which easily exceed \$100 billion.⁴

² OBRA, *supra* note 1, § 6002, 107 Stat. at 388-92 (to be codified at 47 U.S.C. 309(j)(1)-(12)). Underlying legislation in the 103d Congress included the Emerging Telecommunications Technologies Act of 1993, H.R. 707, 103d Cong., 1st Sess. (1993) and its accompanying report, H.R. REP. No. 19, 103d Cong., 1st Sess. (1993) [hereinafter HOUSE COMM. REPORT]. H.R. 707 passed the House under suspension of the rules. 139 CONG. REC. H936-42, H950 (daily ed. Mar. 2, 1993). The Emerging Telecommunications Technologies Act of 1993, S. 335, 103d Cong., 1st Sess. (1993) was introduced on February 4, 1993. 139 CONG. REC. S1384 (daily ed. Feb. 4, 1993). It was ordered reported with amendments by the Senate Commerce, Science and Transportation Committee on May 25, 1993, however, no report was filed. 139 CONG. REC. D575 (daily ed. May 25, 1993). See also *Emerging Telecommunications Technologies Act of 1993: Hearings on S.335 Before the Subcomm. on Communications of the Senate Comm. on Commerce, Science, and Transportation*, 103d Cong., 1st Sess. (1993).

³ Originally, the Congressional Budget Office (CBO) estimated that under the Senate bill, S. 335, spectrum auctions of available spectrum would raise revenues by \$7.2 billion through 1998. Letter from Robert D. Reischauer, CBO Director, to Senator Ernest F. Hollings (D-SC) (June 21, 1993) (on file with the *Seton Hall Legislative Journal*). See also BUDGET REPORT, *supra* note 1, at 252. As a result of subsequent amendments expanding the scope of the authorizing language, the revenue projection increased from \$7.2 billion to \$10.2 billion. On Sept. 14, 1993, while testifying before the House Budget Committee during its mid-session budget review, Reischauer explained that the Administration figure was \$12.6 billion, the CBO estimate was \$7.2 billion and the "congressional accounting, I believe, was 10.2." FEDERAL NEWS SERV., HOUSE BUDGET COMM. REGARDING THE MID-SESSION REVIEW; TESTIMONY OF ROBERT REISCHAUER, DIRECTOR OF CONGRESSIONAL BUDGET OFFICE 14 (Sept. 14, 1993). See also CONGRESSIONAL BUDGET OFFICE, A CBO STUDY: AUCTIONING RADIO SPECTRUM LICENSES ix-xi (Mar. 1992) [hereinafter CBO STUDY] (summarizing estimates and assumptions).

⁴ H.R. REP. No. 634, 101st Cong., 2d Sess. (1990). "Operating revenues from domestic telecommunications services are expected to reach \$170 billion in 1992, and shipments of telephone and radio communications equipment would be worth more than \$70 billion during the same year." CBO STUDY, *supra* note 3, at 1 (citing Department of Commerce, Int'l Trade Admin., *Industrial Outlook*, Jan. 1992, at 28-1, 29-1, 30-1). "Although there is no readily available estimate of the contribution of radio frequency assignments to the value of the public goods and services, one rough calculation indicates an annual level ranging from \$34 billion to \$178 billion." CBO STUDY,

Early in 1993, the new democratic administration signalled strong support for broad auction authority through Commerce Secretary, Ronald H. Brown.⁵ Later, during consideration of the Omnibus Budget Reconciliation bill, spectrum auction authority, a historically controversial proposal, which had several unsuccessful forerunners in previous Congresses,⁶ enjoyed bipartisan support in

supra note 3, at 6 (citing Molly Macauley, "Some Spectrum Value Calculations" (remarks before the Annenberg Washington Program Conference "Spectrum Allocation: Rethinking the Invisible Resource," Apr. 30, 1991)).

⁵ Letter from Ronald H. Brown, Secretary of Commerce, to Senator Daniel K. Inouye (D-HI), Chairman of the Subcommittee on Communications (Mar. 15, 1993) [hereinafter Brown letter] (on file with the *Seton Hall Legislative Journal*). See also *Clinton Administration Endorses Large Spectrum Auctions*, COMM. DAILY, Mar. 18, 1993, at 2 (summarizing letter to Rep. Edward Markey (D-MA) from Acting NTIA Director Thomas Sugrue).

⁶ For example, in the relatively recent past, during the 100th Congress, President Ronald Reagan proposed an auction of spectrum licenses which failed to be enacted by Congress. See OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1989, at 5-167, 5-168 (1988). In the 101st Congress, on July 21, 1989, Energy and Commerce Committee Chairman John Dingell (D-MI) introduced H.R. 2965, Emerging Telecommunications Technology Act. Hearings were held on November 2, 1989, February 8, 1990, and April 30, 1990. *Emerging Telecommunications Technologies: Hearings on H.R. 2965 Before the Subcomm. on Telecommunications and Finance of the House of Representatives Comm. on Energy and Commerce*, 101st Cong., 2d Sess. (1990). The bill was reported from the full committee, H.R. REP. NO. 634, 101st Cong., 2d Sess. (1990), and passed the House on July 30, 1990. 136 CONG. REC. H5822-27, H5879 (daily ed. July 30, 1990). The measure died on the Senate calendar. On January 15, 1991, in the House, Chairman Dingell reintroduced the bill as H.R. 531, the Emerging Telecommunications Technologies Act of 1991. 137 CONG. REC. H512 (daily ed. Jan. 15, 1991). Further hearings were held. *Emerging Telecommunications Technologies: Hearings on H.R. 531 Before the Subcomm. on Telecommunications and Finance of the House of Representatives Comm. on Energy and Commerce*, 102d Cong., 1st Sess. (1991) [hereinafter *Hearings on H.R. 531*]; *Emerging Telecommunications Technologies: Hearings on H.R. 1407 Before the Subcomm. on Telecommunications and Finance of the House of Representatives Comm. on Energy and Commerce* (pt. 2), 102d Cong., 1st Sess. (1991) [hereinafter *Hearings on H.R. 531*, pt. 2]. By June 18 the reported bill had 48 cosponsors. H.R. REP. NO. 113, 102d Cong., 1st Sess. (1991). H.R. 531 passed the House on July 9, 1991. 137 CONG. REC. H5272-79 (daily ed. July 9, 1991). In the meantime, Senate Communications Subcommittee Chairman Daniel Inouye (D-HI) introduced S. 218, the Emerging Telecommunications Technologies Act of 1991. Hearings were held on April 11, 1991. *Telecommunications Technologies Act of 1991: Hearings on S. 218 Before the Subcomm. on Communications of the Senate Comm. on Commerce, Science, and Transp.*, 102d Cong., 1st Sess. (1991). S. 218 was reported from committee on June 28, 1991. SENATE COMM. ON COMMERCE, SCIENCE, AND TRANSP., REPORT ON S. 218, S. REP. NO. 93, 102d Cong. 1st Sess. (1991) [hereinafter SENATE COMM. REPORT]. A compromise agreement drafted by Senator Inouye (D-HI) and Senator Ted Stevens (R-AK) to be offered as a substitute amendment to the bill failed to make it to the Senate floor during 1992, which concluded consideration of the measure in the 102d Congress.

the 103d Congress.⁷ FCC Acting Chairman, James H. Quello, heralded auctions as an efficient tool for the administration of a valuable national resource.⁸ Ultimately, President Clinton even used the auction proposal as a rallying point for passage of his entire budget plan.⁹

Soon the FCC will begin a mammoth government auction of the public airwaves just as America is poised to plunge into a stunning new era of wireless communications.¹⁰ The sweeping new auction law directs the FCC to flesh out the myriad details required

⁷ See *House Panel Measure Would Allow Action of Radio Airwaves*, WALL ST. J., May 7, 1993, at B4; Mike Mills, *Auctions of Frequencies Sets Up a 21st Century Marketplace*, 51 CONG. Q., 1137-39 (1993); Mark Lewyn, *Airwaves for Sale: Contact Bill Clinton*, BUS. WK., May 10, 1993, at 37; *Spectrum Auction Bill Approved By House Panel*, COMM. DAILY, May 12, 1993, at 1. The 1992 Budget Proposal was closely related to auction proposals of the Bush Administration, and tracks the recommendations of the Department of Commerce. NATIONAL TELECOMMUNICATIONS AND INFO. ADMIN., U.S. DEPT. OF COMM., U.S. SPECTRUM MANAGEMENT POLICY: AGENDA FOR THE FUTURE (Feb. 1991) [hereinafter U.S. SPECTRUM MANAGEMENT POLICY]. In the Senate, several influential Republican Senators had previously endorsed spectrum auctions including Minority Leader Robert Dole (R-KS), Senator Ted Stevens (R-AK) and Senator Conrad Burns (R-MT), a member of the Senate Communications Subcommittee. See 137 CONG. REC. S13,390 (daily ed. Sept. 20, 1991) (statement of Sen. Dole) (proposing that auction revenues be used to offset increased spending on unemployment compensation); *Inouye Now Open to Stevens Auction Proposal*, BROADCASTING, Oct. 21, 1991, at 29 (where Sen. Stevens proposed using auction revenues for deficit reduction); 137 CONG. REC. S6982-83 (daily ed. June 3, 1991) (statement of Sen. Burns) (generally proposing that auction revenues be used to pay for building telecommunications infrastructure). Additionally, Budget Committee Banking minority member, Senator Pete Domenici (R-NM), proposed that spectrum auctions be tied to deficit reduction. 137 CONG. REC. S14,011 (daily ed. Sept. 19, 1991) (statement of Sen. Domenici).

⁸ Letter from James Quello, FCC Acting Chairman, to Senate Commerce Committee Chairman Ernest Hollings (D-SC) (June 23, 1993) (on file with the *Seton Hall Legislative Journal*).

⁹ On Thursday, July 22, 1993, President Clinton, Vice President Gore and Commerce Secretary Brown hosted a wireless technology fair on the White House lawn to demonstrate the future wireless applications that could be auctioned off under Title VI of OBRA, Communications Licensing and Spectrum Allocation Improvement. President Clinton strongly backed spectrum auctions, citing Congressional Budget estimates of \$7.2 billion that could be raised for deficit reduction as well as at least 300,000 jobs that would be created. The President described the auction authority as an information age "gold mine" comparable to the Alaskan oil finds and the California gold rush of 1849. For a transcript of the President's remarks, see 29 WEEKLY COMP. PRES. DOC. 1418-20 (July 22, 1993). See also *Change Is Coming: An Update on the President's Economic Plan*, THE MORNING BRIEFING (Democratic Nat'l Comm. July 22, 1993); *Clinton Sees Spectrum Auctions Leading to Jobs, Deficit Reduction*, COMM. DAILY, July 23, 1993, at 1.

¹⁰ *The Great PCS Airwaves Auction*, WASH. POST, Oct. 16, 1993, at A20 (opinion editorial).

to start auctioning licenses by mid-1994. On September 23, 1993, the FCC initiated its rulemaking designed to address the many regulatory issues left unanswered by Congress.¹¹ Comprehensive new rules for conducting auctions must be promulgated by March 8, 1994.¹² Spectrum auction procedures will first be put to the test when the FCC begins to auction off spectrum licenses two months later, on May 7, 1994, for Personal Communications Services (PCS)¹³—a new generation of communications devices that promises to allow users to receive and send voice, data, paging and possibly video anywhere in the country using portable hand-held devices and a single phone number.¹⁴

The Act has several ambitious goals including: encouraging swift and efficient development of emerging communications technologies, such as PCS; encouraging economic opportunities for small businesses and other designated groups; and raising revenue for deficit reduction.¹⁵ The Act first requires the FCC to identify any large block of the spectrum being used inefficiently for reallo-

¹¹ 58 Fed. Reg. 53,489-91 (1993) (notice of proposed rule making). For a full text of this notice of proposed rule making, see Implementation of Section 309(j) of the Communications Act Competitive Bidding, PP Docket No. 93-253 (FCC, adopted Sept. 23, 1993, released Oct. 12, 1993) (notice of proposed rule making) [hereinafter Auction NPRM].

¹² OBRA, *supra* note 1, § 6002(d)(1), 107 Stat. at 396.

¹³ OBRA, *supra* note 1, § 6002(d)(2)(B), 107 Stat. at 397.

¹⁴ The FCC defines broadband PCS as “[r]adio communications that encompass mobile and ancillary fixed communication services that provide services to individuals and businesses and can be integrated with a variety of competing networks.” Amendment of the Commission’s Rules to Establish New Personal Communications Services, No. 90-314, (FCC, adopted Sept. 23, 1993, released Oct. 22, 1993) (second report and order) [hereinafter PCS Order]. According to the FCC:

PCS is widely predicted to usher in an era of mobile telecommunications technology that will permit access to an array of voice, data, and video communications services regardless of where a subscriber may be located. PCS will offer the American public a variety of new mobile services, technologies, and equipment that will operate at home, at work or on the street. Equipment proposed for PCS includes small, lightweight wireless telephone handsets; computers that can communicate over the airwaves wherever they are located; and portable facsimile machines and other graphic devices.

FCC News Release, *New Personal Communications Services Established*, No. 90-314 (Sept. 23, 1993). See also Edmund L. Andrews, *F.C.C. Clearing Airwaves for an Era Without Wires*, N.Y. TIMES, Sept. 20, 1993, at A1.

¹⁵ See OBRA, *supra* note 1, § 6002(a), 107 Stat. at 388 (to be codified at 47 U.S.C. § 309(j)(3)(A)-(D)).

cation to emerging technologies.¹⁶ The Act then dictates that the FCC devise and use an auction method for assigning new licenses, rather than the current lottery or comparative hearing methods being used in most cases.¹⁷ Congress intends that the efficiency and fairness of auctions will help to launch an entirely new telecommunications sector, including a PCS industry marketing advanced wireless technology. Some estimates predict that eventually this could generate annual revenues of \$40 billion and reach 60 million subscribers.¹⁸

This article describes the new statutory auction provisions and analyzes the prospects for the legislative objectives to be achieved.¹⁹ First, the article reviews the background and legislative history of the new competitive bidding provisions and then summarizes the key provisions of the statute. The issues left to the FCC by Congress are considered in the context of other related developments, such as the FCC's new rules for the development of PCS and the likely efforts by scam artists and speculators to use the upcoming auctions as an opportunity to raise large amounts of money from

¹⁶ See *id.* § 6001, 107 Stat. at 380-83 (to be codified at 47 U.S.C. § 923). See also *id.* § 6002(a), 107 Stat. at 391 (to be codified at 47 U.S.C. § 309(j)(10)).

¹⁷ *Id.* § 6002(a), 107 Stat. 388 (to be codified at 47 U.S.C. § 309(j)(1)). See also *id.* § 6002(e), 107 Stat. at 397.

¹⁸ Arthur D. Little, a consulting firm in Cambridge, Massachusetts, has estimated that PCS will serve 60 million customers in the United States by the year 2005. CBO STUDY, *supra* note 3, at 30 (citing Arthur D. Little, Inc., Statement before the FCC en banc Hearing on Personal Communications Services, Dec. 5, 1991). A study by Telocator concludes that the PCS market could be from 60-90 million subscribers by the year 2002. PCS Order, *supra* note 14, at para. 16 & app. A (Telocator comments are on file with the FCC as appendix A in the PCS Order). See also Andrews, *supra* note 14; Cindy Skrzycki, *FCC Prepares to Carve up New Portable Phone Frontier*, WASH. POST, Sept. 16, 1993, at D12. By comparison, the \$8.5 billion cellular industry has 13 million subscribers using cellular telephones and 11,000 new customers each day. Cellular Telecommunications Industry Association (CTIA), *Cellular Industry Counts 13 Million Subscribers Rising Revenue, Falling Monthly Bills Reported on Eve of 10th Anniversary*, Oct. 12, 1993, at 1 (available from CTIA, Washington, D.C. 1993).

¹⁹ This article focuses on the issues relating to the new authority to conduct spectrum auctions. It is beyond the scope of this article to explore significant statutory provisions that relate to other important aspects of spectrum regulation also included in Title VI of OBRA such as, the regulatory status of PCS providers and other mobile radio services and the new authority to impose FCC users' fees. See OBRA, *supra* note 1, § 6002(b), 107 Stat. at 392-96 (amending 47 U.S.C. §§ 153(n), 332); *id.* § 6003(a), 107 Stat. at 397-400 (to be codified at 47 U.S.C. § 159); Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, 58 Fed. Reg. 53,169 (1993).

unwary investors with little prospect of winning a bid, much less ever taking the new technologies to market.

The article concludes that the success of the upcoming auctions will be determined by the nature of what is offered for sale as well as the particular method and rules chosen to auction licenses in the pending rulemaking. That is, the federal agencies with jurisdiction over policies and regulations governing the use of spectrum largely determine the market value of what will be sold at auctions. Decisions such as the FCC's recent PCS order,²⁰ will have a major impact on whether the upcoming auctions succeed or fail in fulfilling the statutory objectives. The article also predicts, based on the experiences of investor fraud and tele-marketing scams relating to the past cellular and wireless cable lotteries, that an onslaught of similar efforts to manipulate the auction process and to target unsophisticated, unwary small investors will result. The FCC, however, is limited in its ability to cope with such abuses. A concerted, advanced effort in federal and state enforcement and consumer protection authorities, along with legitimate industry groups, is essential to adequately protect the public. Finally, the article concludes that the switch to auctions will be accompanied by a considerable and predictable period of adjustment, confusion and litigation. Spectrum auctions are not likely to be any magical panacea for the ills of lotteries and comparative hearings. The FCC will be challenged to develop an auction methodology which minimizes these consequences and achieves over the long term the transactional efficiencies expected by proponents of spectrum auctions.²¹

²⁰ PCS Order, *supra*, note 14. The PCS Order determines the amount of spectrum, the conditions and restrictions on the use of the spectrum, and the eligibility requirements for PCS licenses. *Id.* See also Narrowband Personal Communications Services, 58 Fed. Reg. 42,681 (1993).

²¹ The Author is indebted to the seminal work of Professor Thomas W. Hazlett, Director of the Program on Telecommunications Policy, Institute of Government Affairs, University of California, Davis, for his generosity in sharing working papers and comments, and particularly for his original insights into the linkage between allocation and assignment decisions as well as spectrum scarcity issues. The work of Professor Barry Nalebuff of the Yale University School of Organization and Management on the applications of game theory to business decisions, and his help in understanding the mechanics of auction options, has also been invaluable. See generally AVINASH K. DIXIT & BARRY J. NALEBUFF, *THINKING STRATEGICALLY* (W.W. Norton & Co. 1991).

II. Background

The radio spectrum is composed of naturally occurring electromagnetic radiating energy. This natural resource, unlike oil, gas, and minerals, is non-depletable but finite.²² The spectrum is an array of electric and magnetic rays arranged in order of their frequency measured in wavelength or cycles.²³ "Frequency" is the word used to describe the number of waves or cycles whose peaks pass through a fixed point in a fixed time.²⁴ One cycle per second is called a hertz (Hz).²⁵ The usable radio spectrum currently extends from 3000 Hz (3 kilohertz, KHz) to 300 billion Hz (300 gigahertz, GHz). These frequencies are situated above the audible sound frequencies and below the visible light frequencies.²⁶ This spectrum is the signal delivery medium that makes possible all wireless communications including uses such as mobile radio, short-wave radio, commercial radio, television broadcasting, wireless cable subscription television, direct broadcast satellite television, microwave telephone relays, cellular telephones, navigational radio and satellite transmission.

Two federal agencies have authority over the microwave spectrum in the United States.²⁷ The National Telecommunications

²² Technology consistently expands the supply of usable spectrum by increasing our ability to use existing spectrum (e.g. compression technology) and by developing ways to use new, previously unused spectrum. Hazlett and others argue that the federal government has historically created false scarcity through its spectrum licensing policies. See, e.g., Thomas W. Hazlett, *The Rationality of U.S. Regulation of the Broadcast Spectrum*, 33 J. L. & ECON. 133, 136-39 (1990); THOMAS W. HAZLETT, *THE POLITICAL ECONOMY OF RADIO SPECTRUM AUCTIONS* (forthcoming Jan. 1994) [hereinafter *THE POLITICAL ECONOMY*] (on file with the author); George Gilder, *What Spectrum Shortage?*, FORBES, May 27, 1991, at 324-32; U.S. SPECTRUM MANAGEMENT POLICY, *supra* note 7, at 119-26; CBO STUDY, *supra* note 3, at 5-7.

²³ OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, *THE 1992 WORLD ADMINISTRATIVE RADIO CONFERENCE* 30 (Nov. 1991) [hereinafter *OTA*]; HARVEY J. LEVIN, *THE INVISIBLE RESOURCE* 15-39 (1971).

²⁴ *OTA*, *supra* note 23, at 29. See also LEVIN, *supra* note 23, at 15; WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY 492 (9th ed. 1986) [hereinafter *WEBSTER'S DICTIONARY*]; HOUSE COMM. REPORT, *supra* note 2, at 2.

²⁵ *WEBSTER'S DICTIONARY*, *supra* note 24, at 567. The term "hertz" is named after the early radio innovator, Heinrich R. Hertz. *Id.* One million Hz is a megahertz (MHz).

²⁶ HOUSE COMM. REPORT, *supra* note 2, at 2. See CBO STUDY, *supra* note 3, at 2-4. The microwave spectrum is a subset of the universe of electromagnetic spectrum which extends below to very low frequency infrasonic waves and above to the extremely high cosmic-ray waves. *Id.*

²⁷ The Communications Act of 1934 divides jurisdiction over spectrum between

and Information Administration (NTIA) within the United States Department of Commerce is responsible, among other things, for allocating, assigning, and maintaining efficient use of the spectrum assigned to government users.²⁸ In recent years NTIA has also been the lead agency for developing and coordinating federal spectrum policy.²⁹

The FCC is responsible for the spectrum used by private sector and all non-federal government users. The FCC's spectrum management responsibilities are similar to NTIA; licensing the use of discrete frequencies for private commercial and other non-federal (e.g. educational) uses, and regulating the use of such spectrum. The FCC allocates, assigns, and regulates spectrum pursuant to the Communications Act of 1934, which mandates that the FCC uphold "the public interest, convenience and necessity."³⁰

A constraint on the use of spectrum is the ability to send or receive signals without interference from the signals of other users.³¹ Almost all of the currently usable spectrum is allocated

the FCC and the President. Under § 305 of the Act the President retains the authority over frequencies used by the federal government. 47 U.S.C. § 305 (1991). The President has delegated this authority to the Secretary of Commerce, who has delegated it in turn to the Administrator of the NTIA. See Exec. Order No. 12,046, 3 C.F.R. § 158 (1978), *reprinted as amended in* 47 U.S.C. § 305 (1991). There are no statutory federal and nonfederal frequency bands, therefore, specific allocations for either of these broad uses are made pursuant to agreements between the NTIA and the FCC. See U.S. SPECTRUM MANAGEMENT POLICY, *supra* note 7, at 17.

²⁸ Communications Act of 1934, 47 U.S.C. § 305 (1991). See also BUDGET REPORT, *supra* note 1, at 249. According to the Senate Committee Report accompanying S. 218:

NTIA has jurisdiction over approximately 40 percent of the frequencies below 5 GHz. About 13 percent of the frequencies below 5 GHz are allocated exclusively to the Federal Government. This figure includes a number of frequencies on the low end of the spectrum that are not commercially useful. In the most valuable bands, the Federal Government has exclusive access to a higher percentage of frequencies. For instance, above 28 percent of the frequencies between 3 MHz and GHz are exclusively allocated to the Federal Government. Above 33 percent of the frequencies in the high frequency band alone (between 3 MHz and 30 MHz) are allocated exclusively to the Federal Government.

SENATE COMM. REPORT, *supra* note 6, at 6.

²⁹ See, e.g., National Telecommunications and Information Administration, Telecom 2000 (Oct. 1988) (available from the U.S. Government Printing Office); U.S. SPECTRUM MANAGEMENT POLICY, *supra* note 7, at 17-84.

³⁰ 47 U.S.C. §§ 302(a), 303, 307(a), 308, 309, 316 (1991).

³¹ One way to minimize interference is to allocate different frequencies to different uses. Another is to impose geographic limitations on how far a signal can be sent,

and much of it is heavily used.³² The scarcity of spectrum tends to limit competition from new entrants and to increase the costs of using spectrum to business and consumers. Similarly, the lack of unassigned, usable spectrum that is permitted to be used for pioneering technologies tends to stifle and delay the introduction and full development of such technologies.³³ In order to promote innovative uses such as PCS, the FCC must reallocate spectrum for PCS use from existing uses and consolidate and relocate the incumbent users of the frequencies newly allocated for PCS use. For example, over the summer of 1993, the FCC issued an order which set forth the timetable and procedures for moving out and relocating over the next three years the incumbent users of the spectrum that PCS will soon occupy.³⁴

enforced for example by antenna height and power restrictions. Limiting the time of day a frequency may be used also, in effect, allows a particular frequency to be reused. So-called "compression" technology enables more information to flow over the same spectrum without interference by converting analog signals to digital signals for transmission.

³² The FCC contends that virtually all of the spectrum below 20 GHz is being utilized currently. The frequencies above 20 GHz are utilized for fewer applications because of the limits of the current state of technology. BUDGET REPORT, *supra* note 1, at 250. According to the Budget Report:

Currently, commercial and public safety users are finding a substantial shortage of frequencies available for assignment. Existing congestion creates short-term problems for users, especially in some urban areas where spectrum is in high demand by private sector and non-federal users, such as public safety agencies. Give the current congested state of the spectrum, the ability to accommodate new spectrum-dependent technologies is severely limited.

Id. at 248. See also HOUSE COMM. REPORT, *supra* note 2, at 3-4.

³³ Some argue that spectrum scarcity is a regulatory illusion caused by output restrictions mandated politically. These restrictions arguably discourage economic efficiency and investment in ways to make greater use of spectrum. See *supra* note 22.

³⁴ See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, 8 F.C.C.R. 6589 (1993) (third report and order and memorandum opinion and order). For licensed services, the FCC has provided for two negotiation periods. The first period is a fixed two-year period commencing with the FCC's acceptance of applications for new technology services designed to prevent disruption of existing 2 GHz microwave operations. During this period, voluntary negotiations on relocation may, but are not required to, take place between new technology providers and affected microwave licensees. *Id.* at para. 15. The second period is a one-year mandatory negotiation period, triggered at any time after the two-year voluntary period by an emerging technology licensee's written request to an existing microwave licensee to negotiate relocation terms. The parties are required to negotiate in good faith. The one-year mandatory negotiation period is designed to ensure that microwave incumbents are not faced with sudden demands for involuntary relocation after the initial two-year voluntary negotiation period. *Id.* at para. 16.

Once parcels of spectrum are allocated for private use, they are assigned to licensees. There are three principle methods for making such assignments: comparative hearings, lotteries, and auctions. Until the 1993 enactment of section 309(j) auction authority, the U.S. government did not set a price for assignment of licenses other than charging a nominal application fee even though applicants would compete furiously to obtain the right to use frequencies. Instead, the FCC has historically conducted "comparative hearings" to select between competing applicants according to the "public interest" standard embodied in its statutory charter.³⁵ Assigning rights according to an applicant's ability to further "the public interest, convenience or necessity" originated in the Radio Act of 1927³⁶ and was incorporated seven years later into the Communications Act of 1934.³⁷ The great irony of this approach is the very active and lucrative secondary market that

In implementing these procedures, the FCC noted that incumbent licensees subject to involuntary relocation will have their entire relocation costs paid by the emerging technology provider, and will benefit to the degree that older equipment is replaced with state-of-the-art technology. *Id.* The incumbent users will be relocated to 5 bands that the FCC has reallocated and channelized above 3 GHz. These details are described in a companion order to the third report and order released on the same day. *See* Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, 8 F.C.C.R. 6495 (1993) (second report and order). In its first report and order, the FCC reallocated to emerging telecommunications technologies the 1850-1990, 2130-2150, and 2180-2200 MHz bands previously allocated to the Private Operational-Fixed Microwave service (Part 94), and the 2110-2130 and 2160-2180 MHz bands previously allocated to the common carrier Domestic Public Fixed Radio Services (Part 21) and Public Mobile Service (Part 22). *See* Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, 7 F.C.C.R. 6886 (1992) [hereinafter First Report and Order]. The specific services that will use this spectrum will be authorized in current and future proceedings addressing specific services that use emerging technologies. The first of these proceedings addresses personal communications services (PCS). PCS Order, *supra* note 14. *See also* Amendment of the Commission's Rules to Establish New Personal Communications Services, 7 F.C.C.R. 5676 (1992) (notice of proposed rule making and tentative decision); First Report and Order, *supra* note 34.

³⁵ 47 U.S.C. §§ 302(a), 303, 307(a), 308, 309, 316 (1991). The Communications Act of 1934 states that the FCC must regulate "so as to make available . . . a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, [and] for the purpose of promoting safety of life and property." 47 U.S.C. § 151 (1991).

³⁶ The phrase appears in §§ 4, 9, 11 and 21 of the Radio Act of 1927. Hazlett traces the history of the judicial and legislative evolution of the public interest standard in colorful detail. *See* Hazlett, *supra* note 22, at 152-58.

³⁷ *See* Anne P. Jones & Harry W. Quillan, *Broadcasting Regulation: A Very Brief History*, 37 FED. COMM. L.J. 107 (1985).

arose after the original license was given away by the government and then transferred for large sums to another party with the original licensee reaping the windfall, rather than the public. For decades the annual loss of billions to the treasury was tolerated under the pretense that comparative hearings established a formal procedure to divide the public interest.³⁸ This myth eventually was flattened by the weight of the incoherent rationales for comparative hearing decisions and the heavy-handed political influence peddling that often determined the outcome of a comparative hearing.³⁹ This alone was insufficient to evoke a change.

Comparative hearings, which are costly and time consuming, became a very large drain on agency resources.⁴⁰ For years the FCC sought to assign frequency rights by lottery or auction primarily due to budgetary concerns.⁴¹ Finally, authority to use random selection (lotteries) was contained in the Senate version of the Omnibus Budget Reconciliation Act of 1981.⁴² Consequently, the current method of allocating spectrum is a system of lotteries wherein a number of applications are accepted by the FCC, which then selects the licensee randomly.⁴³

³⁸ Hazlett, *supra* note 22, at 135 (reprinting chart of billions of dollars lost from zero-priced spectrum allocation). See also Auction NPRM, *supra* note 11, at 13 n.21.

³⁹ See examples and anecdotes in THE POLITICAL ECONOMY, *supra* note 22. See also R. H. Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 1, 35-36 (1959) (noting dryly that the FCC has come into public eminence because of the pressure applied to influence comparative hearings by politicians and businessmen "who often use methods of dubious propriety"); *Hearings on Investigations of Regulatory Comm'n's and Agencies Before the Subcomm. of the House Comm. on Interstate and Foreign Commerce*, 85th Cong., 2d Sess. (1958).

⁴⁰ See EVAN KWEREL & ALEX D. FELKER, USING AUCTIONS TO SELECT FCC LICENSES 3 n.6 (FCC, Office of Plans & Policy, Working Paper Series No. 16, 1985). The authors discuss the ineffectiveness and cost of comparative hearings and note that the former FCC Commissioner, Glen O. Robinson, portrayed the comparative hearings as "the FCC's equivalent of the Medieval trial by ordeal." *Id.* at 3 n.6 (citing Dissenting Statement of Commissioner Glen O. Robinson *In Re*: Cowles Florida Broadcasting, Inc., 60 F.C.C.2d 372 (1976)). See also Notice of Inquiry and Proposed Rule Making, 45 Fed. Reg. 29,335 (May 2, 1980); Notice of Proposed Rule Making, 46 Fed. Reg. 58,110 (Nov. 30, 1981).

⁴¹ See KWEREL & FELKER, *supra* note 40, at 4-7.

⁴² See BUDGET REPORT, *supra* note 1, at 248. This provision was specifically intended to remedy a backlog of license applications for low-power television. There was no lottery provision in the House bill and no House hearings on the subject. *Id.*

⁴³ The power to engage in lotteries is contained in 47 U.S.C. § 309(i). This provision was added by the Omnibus Budget Reconciliation Act of 1981, Pub. L. No. 97-35, sec. 1242, § 309, 95 Stat. 736-37 (1981) and was amended in Communications Amendments of 1982, Pub. L. No. 97-259, sec. 115, § 309(i), 96 Stat. 1087, 1094-95 (1982).

The FCC first used lotteries to assign licenses for cellular telephone operators and since that time has been using lotteries extensively to award a variety of licenses, including licenses for wireless cable subscription television.⁴⁴ Over the last decade, the cellular and wireless cable lotteries have exhibited many of the same, if not worse, problems that arose in comparative hearings. Initially, lotteries promised to be faster and less costly to society than comparative hearings. Soon, however, the financial windfalls enjoyed by lottery winners for little up front expense attracted huge numbers of applicants for even relatively low value license assignments.⁴⁵ At

⁴⁴ "Wireless Cable" is defined by the FCC as "a multichannel video distribution medium that resembles cable television, but that uses microwave channels rather than coaxial cable or wire to transmit programming to the subscriber." Amendment of Parts 1, 2, and 21 of the Commission's Rules Governing Use of the Frequencies in 2.1 and 2.5 GHz Bands, 7 F.C.C.R. 3266, 3267 (1992) [hereinafter Amendment of Parts 1, 2, and 21] (notice of proposed rule making) (citations omitted). The term "wireless cable" does not imply that the service constitutes cable television for any statutory or regulatory purpose. See Cable Television System Definition, 5 F.C.C.R. 7638, 7639-41 (1990) (report and order), *vacated on other grounds sub nom.* Beach Communications, Inc. v. FCC, 965 F.2d 1103 (D.C. Cir. 1992); 47 C.F.R. §§ 21.900-915 (1992). Wireless cable systems use the Super High Frequency (SHF) portion of the radio frequency to transmit multiple channels of video programming from terrestrial transmitters to small antennas mounted on subscribers' rooftops. Wireless cable is able to provide multichannel programming using a combination of the following services: multipoint distribution service (MDS), multichannel multipoint distribution service channels in the 2596 MHz to 2644 MHz frequency bands (MMDS), instructional fixed television services (IFTS), and the former operational fixed service (OFS). Through its combination of services, wireless cable can now provide up to 33 channels. The FCC first allocated spectrum for wireless cable over a decade ago. See Amendments of Parts 2, 21, 74 and 94 of the Commission's Rules and Regulations in regard to Frequency Allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service, and the Private Operational Fixed Microwave Service, 94 F.C.C.2d 1203, 1228 (1983); Various Methods of Transmitting Program Material to Hotels and Similar Locations, 99 F.C.C.2d 715 (1983) (memorandum opinion and order). The FCC's rules and policies governing wireless cable have been significantly modified in recent years. See Amendment of Parts 1, 2, and 21 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands, 7 F.C.C.R. 3266 n.8 (1992). ITFS channels are not assigned by lottery and are exempt from the new auction requirements. BUDGET REPORT, *supra* note 1, at 253-54; Auction NPRM, *supra* note 11, at para. 23 n.5.

⁴⁵ For example, lottery winners of the rural cellular license for Columbia County, Wisconsin, sold it for \$623 million 165 days after a construction permit was issued. Auction NPRM, *supra* note 11, at para. 34 n.22. See also Peter Passell, *Radio Waves can be Solid Gold*, N.Y. TIMES, Dec. 4, 1991, at 24 (reporting 60,000 applications received in two days for a license to provide data transfer services); Cindy Skrzycki, *Congress Mulls New Ways for FCC to Divide Broadcast Spectrum*, WASH. POST, June 26, 1991, at F1 (reporting that 59,000 applicants entered a lottery within days of the FCC announcing it would assign a portion of radio airwaves). According to the FCC mobile services staff, as of October 15, 1993, there are still approximately 10,000 pending cellular license

one point the FCC was forced to call in a structural engineer to determine whether the FCC's floor could bear the weight of the accumulated paper due to the volume of applications for cellular licenses.⁴⁶

So called "application mills" employing "infomercials" and boiler room telephone sales operations would aggressively advertise the availability of licenses and overstate the chances as well as the value of winning the lottery.⁴⁷ Gullible small investors, after responding to slick telemarketed pitches would be charged between \$2000 and \$12,000 dollars for the mill to file an application that only cost the mill \$150 or less to file. Often the mills merely duplicated multiple copies of applications for the same license for large numbers of their "clients." The chances of winning a license were virtually nonexistent not only because the application mills efforts tended to reduce each subsequent applicant's chance for success, but also because the applications were often facially defective.⁴⁸

applications, including about 500 for a small unserved area outside of the Los Angeles market. There are now about 12,000 pending wireless cable applications even though the FCC ordered a freeze on all wireless applications almost two years ago. Amendment of Parts 1, 2 and 21 of the Commission's Rules Governing the Use of the Frequencies in the 2.1 and 2.5 GHz Bands, 8 F.C.C.R. 1444 (1993) (noting 20,000 wireless cable application backlog at that time).

⁴⁶ Telephone Interview with staff at the FCC, Mobile Services Division, Common Carrier Bureau (Dec. 2, 1993). FCC staff sought assurance that the floor at the FCC headquarters in Washington, D.C., could support the weight of the numerous applications filed for cellular licenses. *Id.* At one point the shelving collapsed at the FCC offices in Gettysburg, Pennsylvania. *Id.*

⁴⁷ Winning a lottery was not, in itself, enough to start a viable wireless cable business. The winner of say four channels in the E or F group of MMDS channels merely won the right to try to assemble enough additional channels, at least 10-12 more, to offer a viable multichannel subscription service. The winner also faced the need to show due diligence in making progress toward becoming operational. In a sense, the successful lottery applicant won the right to spend more money. See Mary Lu Carnevale, *Fraud Complaints Grow in Young Wireless Cable Field*, WALL ST. J., June 24, 1992, at B2; Joe Flint, *Wireless Cable Lotteries Attacked by FTC*, BROADCASTING, Apr. 20, 1992, at 42; *Investor Alert — Edmisten Warns of New High-Tech Cable TV Scam*, PR NEWSWIRE, Apr. 14, 1992; Tim Furlong, *New Phone Sales Scam*, L.A. TIMES, Apr. 14, 1992, at D1; Rick Brown, *Feds Close in on Deceptive Application Mills*, BROADCASTING, Jan. 20, 1992, at 32.

⁴⁸ The backlog has been devastating to the wireless cable industry. See Amendment of Parts 1, 2, and 21, *supra* note 44; *Executive Update*, INVESTOR'S BUS. DAILY, July 28, 1993, at 3 (discussing applications mills). Several state attorney generals, the Federal Trade Commission and other regulators have been highly critical of these practices and opened several investigations. At one point in 1991, the North American

Consequently, the hoped for benefits of lower administrative costs and timeliness were lost without any indication that the process was any fairer or any better in upholding the public interest. In fact, there currently is a freeze on review and assignment of wireless cable spectrum licenses until the FCC can determine how to deal with the backlog.⁴⁹

Securities Administrators Association issued a bulletin describing the wireless lottery schemes as the number one investor fraud in the country. *Id.*

⁴⁹ Beginning April 9, 1992, the FCC imposed a "freeze" on the acceptance of applications for new stations on MDS channels, as well as on ITFS channels available for full-time limited commercial use. See Amendments of Parts 1, 2, and 21, *supra* note 44; Amendment of Parts 1, 2, and 21 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands, 8 F.C.C.R. 1444 (1993) [hereinafter Report and Order] (report and order). However, applications for modification of existing MDS facilities may still be filed. Under existing rules, MDS applications are filed on a "first come, first serve" basis. If only one acceptable application is filed, the FCC can grant that application after the conclusion of the 30-day public notice period. If more than one application is filed for the same market *on the same day*, then the FCC must select one application. For E, F and H channels, this selection is by lottery. In some instances, applicants may be entitled to a lottery preference based on minority ownership and/or media ownership diversity. For MDS-1 and MDS-2, the selection from among mutually exclusive applicants is by comparative hearing.

Once granted, licensees are entitled to a protected service area, the boundary of which is a 15-mile radius from the transmit site. The freeze will be in effect indefinitely, and likely will not be resolved for several months. Originally, the FCC believed that the freeze would be lifted by the end of the third quarter of 1993. See *id.* However, on July 28, 1993, the FCC issued a public notice concerning the MDS freeze, which indicated that while there had been much progress towards eliminating the application backlog, the freeze would not be lifted any time in the near future. See Press Release, MDS/MMDS Applications Filing Freeze, No. 34165 (FCC July 28, 1993). The FCC noted that the backlog of applications "soon will be reduced to a point where new applications of an *uncontested* or *routine nature* may be processed." *Id.* (emphasis added). Any further steps at lifting the freeze are being carefully weighed, and the FCC has invited public comment on this matter. According to the staff of the Common Carrier Bureau, there is great trepidation among FCC staff members about the potential flood of applications which will be filed once the freeze is lifted. Apparently, the telemarketers continue to churn out applications, promising investors that they will be filed once the freeze is lifted.

To combat the application problem and allow wireless cable to continue as a viable alternative to traditional cable, the FCC recently issued several rule changes to deter the filing of speculative applications. These include disallowing settlement groups, prohibiting applicants from holding any interest in more than one application for the same channel, and restricting the transfer of MDS applications. See Report and Order, *supra*.

Beginning January 2, 1992, the FCC began accepting applications from commercial entities, such as wireless cable operators, for ITFS frequencies, subject to certain restrictions. These commercial applications are subject to the MDS filing freeze discussed above. Moreover, on February 11, 1993, the FCC imposed a "freeze" on the filing of applications for all new ITFS facilities and applications for major changes of

According to the Budget Committee Report accompanying section 308(j):

[L]otteries have been characterized by "get rich quick" appeals by firms that would submit an application for a fee, so-called "licensing mills," and by licenses landing in the hands of those ill equipped to build or operate a service properly utilizing radio spectrum.

In addition, the lottery system is widely criticized for failing to meet the FCC's public interest standard and for encouraging unproductive speculation for spectrum licenses. In the case of the spectrum lottery for cellular licenses, the rule adopted by the FCC for the lottery system failed to contain adequate financial and technical qualifying standards or anti-trafficking requirements, thereby enabling lottery winners subsequently to sell their licenses, sometimes at substantial sums, to legitimate parties who actually built the cellular system.⁵⁰

existing facilities. Amendment of Part 74 of the Commission's Rule with regard to the Instructional Television Fixed Service, 8 F.C.C.R. 1275 (1993) (notice of proposed rule making).

The FCC is also currently considering rule changes that would establish filing "windows" to permit FCC staff to more efficiently process ITFS applications. When the rulemaking proceeding is concluded, it is expected that applications may again be filed under the appropriate procedures. Only accredited educational institutions, government organizations that provide educational services to enrolled students, and nonprofit educational organizations that propose to provide educational or instructional programming to accredited educational institutions are eligible to hold ITFS licenses. The FCC selects ITFS permittees according to an elaborate point system: four points for local educational entities; three points for schools; two points if applying for four or fewer channels in the service area; one point for 21 or more hours of educational programming; two points for 41 or more hours; and one point for grandfathered E and F Group ITFS licensees that wish to relocate to other ITFS frequencies. According to the staff of the Television Services Branch at the FCC's Mass Media Bureau, however, the freeze is not likely to be removed any time in the near future. See Amendment of Part 74 of the Commission's Rule with regard to the Instructional Television Fixed Service, 8 F.C.C.R. 6277 (1993) (where FCC announced it would process applications already on file, but it would not yet accept new ITFS applications).

The ITFS freeze was initiated due to different circumstances that have proven to be more difficult to solve. In cities where wireless cable operators had obtained MDS licenses, other parties attempted to secure numbers of ITFS licenses from educational and religious entities, not for the purpose of operating wireless cable systems, but to lodge interference claims against legitimate operators who wished to establish their own ITFS channels. Once these licenses were secured, the so-called "greenmailers" would approach the legitimate operators for payments in order to withdraw their interference claims. The ITFS freeze is expected to remain in place until this problem is resolved.

⁵⁰ BUDGET REPORT, *supra* note 1, at 248.

In this context, Congress looked to competitive bidding concepts such as those used to assign rights to other public resources such as grazing lands, coal, oil and gas leases.⁵¹ The word "auction" conveys a variety of vivid images of fast talking sellers of tobacco leases and farm equipment and of sedate signalling of bids over tea cups for expensive artwork in a Sotheby's salon. Competitive bidding procedures, however, play a role in many private and public transactions including federal government procurement contracts, financial instruments and natural resources.⁵²

There are four principal forms of auctions that the FCC will consider as bidding options.⁵³ Perhaps, the most well known form is the traditional English auction which is open and interactive, typically involving participants in the same room submitting oral bids. The English auction is also commonly referred to as an "ascending price" auction. The auctioneer begins with a low asking price, often the lowest price that the seller will accept, the reservation price, and raises the asking price until only one bidder, the winning bid, is left.⁵⁴

The Dutch auction is also open and reverses the English procedure by starting with a relatively high asking price and dropping the price until the first bid, the winning bid, is offered.⁵⁵ The first and

⁵¹ *Id.* at 249.

⁵² The FCC has indicated that because it has no background in conducting spectrum auctions, it contemplates relying on the experience of other government agencies which have effectively conducted auctions. Auction NPRM, *supra* note 11, at para. 18. The CBO study lists several examples including auctions for T-Bills and short term securities by the U.S. Department of the Treasury; two-stage timber auctions by the U.S. Forest Service; and sealed bid auctions for off-shore oil leases by the U.S. Department of the Interior. CBO STUDY, *supra* note 3, at 43 & n.12.

⁵³ R. Preston McAfee & John McMillan, *Auctions and Bidding*, 25 J. ECON. LITERATURE 699, 702 (1987). See generally CBO STUDY, *supra* note 3, at 42-43; DIXIT & NALEBUFF, *supra* note 21, at 318-25.

⁵⁴ See Auction NPRM, *supra* note 11, at paras. 38-39 (discussing advantages and disadvantages). A variant of the ascending bid auction is electronic bidding. Bids can be submitted electronically by telephone or computer terminals and announced at set short time intervals. Minimum bid increments are set. Bidding would end at some predetermined time or after a set period of time had elapsed since the last bid. *Id.* at para. 39. Another variant is the so-called Japanese auction, which helps prevent collusion and provides useful information to bidders. The auctioneer asks all parties willing to pay the current price to bid and then continues to raise the price by increments until only one bidder remains. Once a bidder drops out he cannot bid again. This protects against manipulation of the bid through rapid escalation of bids followed by default of the winning bidder in favor of a colluding bidder who had a much lower second bid.

⁵⁵ CBO STUDY, *supra* note 3, at 43.

second-price sealed bid auctions involve submitting written bids that are closed.⁵⁶ In the first-price auction the highest bidder wins and pays the price bid, while in the second-price auction, the highest bidder wins but only pays a price equal to that of the second highest bidder.⁵⁷ Each of the four types of auctions can be used to sell single unit or multiple-unit items. The form of the auction that will be selected by the FCC to be tested in the 1994 PCS Auction (and special restrictions placed on the auction to comply with statutory and administrative requirements) will prove to be critical in determining the success of the first experiment with auctioning spectrum.⁵⁸

III. Legislative History

Auctioning spectrum licenses is an old idea.⁵⁹ Economists⁶⁰ and other commentators⁶¹ have long questioned why the federal government gives valuable spectrum rights away virtually for free. Although political support for dividing up the airwaves into usable allotments and selling them to the highest bidder has waxed periodically,⁶² it has largely waned,⁶³ at least until the 103d Congress.

⁵⁶ See DIXIT & NALEBUFF, *supra* note 21, at 322 (discussing the "Vickrey auction" or "philatelist auction" where the second highest sealed bid wins). See also William Vickrey, *Counterspeculation, Auctions and Competitive Sealed Tenders*, 16 J. FIN. 8 (1961).

⁵⁷ *Id.* See also CBO STUDY, *supra* note 3, at 44.

⁵⁸ For comprehensive discussions of policy considerations in making this choice, see CBO STUDY, *supra* note 3, at 44-47. See also Auction NPRM, *supra* note 11, at paras. 36-67.

⁵⁹ For a comprehensive history of U.S. spectrum regulation and auction proposals see Hazlett, *supra* note 22. The subject is addressed more extensively in Hazlett's forthcoming publication. See THE POLITICAL ECONOMY, *supra* note 22.

⁶⁰ Hazlett credits Leo Herzel as one of the first economists to advocate spectrum auctions. See Hazlett, *supra* note 22, at 137 (citing Leo Herzel, *Public Interest and the Market in Color Television Regulation*, 18 U. CHI. L. REV. 802-16 (1951)). In a 1959 article, Nobel Laureate R.A. Coase, referring to Herzel's work, also argued for auctioning spectrum licenses with a proposal, still considered radical in many quarters, that would let the market determine not only the assignment of spectrum blocks, but the allocation of that spectrum to different communications uses. Coase, *supra* note 39, at 14-17.

⁶¹ See, e.g., Robert J. Samuelson, *The Quiet Giveaway*, NEWSWEEK, May 13, 1991, at 52; *Sell the Dial*, N.Y. TIMES, May 9, 1985, at A30.

⁶² In 1958 Representative Henry Reuss (D-WI) introduced an auction bill for television licenses when more than one applicant was qualified. H.R. 11893, 85th Cong. 2d Sess. (1958). See also S.J. Res. 106, 85th Cong. 2d Sess. (1958); S. REP. NO. 1854, 85th Cong., 2d Sess. (1958) (Commission to investigate utilization of frequencies allocated to the government). Reform legislation that would have completely revised the Communications Act of 1934 was introduced without success in the late 1970s by Representative Lionel Van Deerlin (D-SD), Chair of the House Communications Sub-

Presidents Carter,⁶⁴ Reagan⁶⁵ and Bush⁶⁶ supported auction legislation that failed to become law.⁶⁷

President Clinton's budget request for 1993 also included a spectrum auction proposal.⁶⁸ H.R. 707, which provided for spectrum reallocation, but not auctions, passed the House on March 2,

committee. See H.R. 13015, 95th Cong, 2d Sess. (1978); H.R. 3333, 86th Cong., 1st Sess. (1979). Many related proposals have since been introduced in Congress. See U.S. SPECTRUM MANAGEMENT POLICY, *supra* note 7, at 99-101 (describing support within government for competitive bidding); WILLIAM B. RAY, FCC: THE UPS AND DOWNS OF RADIO-TV REGULATIONS 150-51 (1990) (providing historical anecdotes regarding FCC attempts to charge fees for broadcast licenses).

⁶³ For years the Administration, led by the Office of Management and Budget and the Congressional Appropriations Committees, would call for spectrum auctions. However, the Democratic leadership of the principle oversight committees would resist, largely reflecting the staunch opposition of regulated incumbents such as the broadcasters and later the cellular telephone industry, among others. This phenomenon is discussed in Hazlett's forthcoming book. See THE POLITICAL ECONOMY, *supra* note 22. The principle rationale was that auctions could not uphold the paramount public interest standard for assigning and regulating spectrum. In addition, it was feared that auctions would give large, well-financed interests and urban areas advantages over small businesses and rural areas. See U.S. SPECTRUM MANAGEMENT POLICY, *supra* note 7, at 102-11 (discussing opposition).

⁶⁴ President's Message to Congress Regulatory Reform of the Telecommunications Industry, PUB. PAPERS 1699, 1702 (1980).

⁶⁵ OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1988, at 2-47 (1987).

⁶⁶ OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1990, at 2-37 (1989); OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1991, at A-55 (1990); OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1992, at 3-11 (1991); OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1993, at 2-18 (1992).

⁶⁷ The 102d Congress failed to enact legislation in 1992, introduced the previous year, that transferred the use of a large portion of government-held spectrum to private use for emerging technologies. House and Senate bills introduced in the first session of the 102d Congress would have transferred 200 MHz for emerging technologies. H.R. 531, *supra* note 6; S. 218, *supra* note 6. Both the Bush administration and Senate Republicans opposed these measures because they would have used lotteries to assign the frequencies. The House had passed H.R. 531 on July 9, 1991, by voice vote. The Senate Commerce Committee approved S. 218 on May 14, 1991, but never reported the bill as drafted to the full Senate. Instead, Senators Inouye and Stevens worked out a compromise that would have allowed experimental auctions for up to 30 MHz, while exempting broadcasters and public safety users. Earlier versions of the bill had included language offered by Representative Dingell that prohibited the use of auctions. Subsequently, he agreed to drop this language. However, while the consensus grew on auction legislation, time ran out in the 102d Congress before the work on the remaining issues was completed. See *supra* note 6.

⁶⁸ OFFICE OF MANAGEMENT & BUDGET, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 1994, at 18 (1993). During the 1992 Presidential campaign candidate Clinton

1993. When the President's budget for fiscal year 1994 was released, however, it included an authority for competitive bidding, similar to that proposed by Presidents Reagan and Bush.⁶⁹ H.R. 707 was referred back to the committee, which then began altering the legislation to include auctions in preparation for budget reconciliation. With the encouragement from Commerce Secretary Brown, a compromise agreement between Senators Inouye (D-HI) and Stevens (R-AK), which allowed for a trial auction of 30 MHz, grew into a general auction authority for the entire 200 MHz Congress reallocated to emerging technologies.⁷⁰ When the House and Senate reported their bills for budget reconciliation, both included auction authority language.⁷¹

The formal legislative history of this particular provision is not as extensive as one might expect for such an important piece of legislation, because it became part of the overall budget process rather than being free standing legislation.⁷² The origins, however,

called for federal spectrum auctions. See generally BILL CLINTON & AL GORE, *PUTTING PEOPLE FIRST: HOW WE CAN ALL CHANGE AMERICA* (1992).

⁶⁹ BUDGET REPORT, *supra* note 1, at 247.

⁷⁰ See Brown letter, *supra* note 5.

⁷¹ H.R. CONF. REP. NO. 213, *supra* note 1, at 481.

⁷² The special circumstances of the budget process operated to minimize the legislative history accompanying the spectrum auction provisions. The rules governing Omnibus Budget Reconciliation Acts (OBRA) are complex. Reconciliation is a two-stage process in which Congress endeavors to bring actual spending and revenues in line with budget projections and the annual budget request of the President. The first stage involves the passage of a Concurrent Budget Resolution. This resolution lays out the guidelines for committees of jurisdiction to follow when making decisions on budget authority (increasing or decreasing outlays and revenues). The second stage involves authorizing committees to report their budgetary decisions back to the Budget Committee, which packages each committees' work as separate titles in OBRA. The sheer size of the budget undertaking overwhelms particular legislative issues that would receive much greater attention as stand alone legislation. Reconciliation legislation was first used in 1980 and has been used on an irregular, but continuous basis since, in part because stand alone bills that might fall on their own survive as part of the larger budget bill which Congress must pass to keep the government functioning. See NICHOLAS A. MASTERS, *THE CONGRESSIONAL BUDGET PROCESS*, SERIAL NO. CP-1, 103D CONG., 2D SESS. (Comm. Print. 1993); WILLIAM G. DAUSTER, *BUDGET PROCESS LAW ANNOTATED*, S. DOC. NO. 22, 102d Cong., 1st Sess. (1991).

Furthermore, an OBRA is a massive undertaking and is usually dominated by tax provisions, which receive the majority of attention by Congress, the Executive Branch, national press and public at large. Most OBRA's have been referred to as "Tax bills" in the press and common vernacular. Less time and freedom is accorded to congressional members to discuss and debate often very important legislative initiatives. In this case, when President Clinton recognized the spectrum auction proposal as a "bill payer" or revenue raiser, the proposal was not so much seen in the light of substantive

of this proposal can be traced to a series of recent budgeting and legislative initiatives starting with the budget proposal of 1989.⁷³ By 1991, support had grown for experimental auctions.⁷⁴ Increasingly, these proposals reflected a developing consensus that more spectrum should be made available to new private uses and that the existing methods of assigning licenses were seriously flawed.⁷⁵ Previously, the historical opposition of broadcast interests and others to even the precedent of charging for spectrum use for some kinds of licenses would have been sufficient to derail each

policy as much as it was seen as a means to reach the President's goal of \$5 billion in deficit reduction.

Another impediment to extended debate of the spectrum auction issue arose from the so-called "Byrd Rule." 2 U.S.C. § 644 (1988 & Supp. IV 1993). The Byrd Rule gives individual Senators the opportunity to raise "a point of order" against material extraneous to the instructions to an authorizing committee. If the point of order is sustained by the chair, the legislative provision could be stricken from the bill. The legislative history of OBRA's Title VII is silent on many substantive issues, which might otherwise have been addressed to avoid a Byrd Rule point of order. However, the conference report finesses the technicality of the Byrd Rule by incorporating provisions by reference. For example, because of the Byrd Rule conferees removed the "findings" sections of Title VII "because these provisions do not have a budgetary impact and could violate the Byrd Rule. However, the conferees believe that these findings and conclusions are important and lay the predicate for this legislation, and incorporate the findings of both bills herein by reference." H.R. CONF. REP. NO. 213, *supra* note 1, at 473-74. More specific to spectrum auctions the conferees said, "The House Committee Report [BUDGET REPORT, *supra* note 1] contains many examples of the types of licenses that would be covered by the competitive bidding procedures authorized in this Act, which are incorporated herein by reference." *Id.* at 481.

⁷³ The evolution of the current auction statute from 1989 to its enactment in 1993 is discussed in CBO STUDY, *supra* note 3, at 14-15.

⁷⁴ *Id.* at 16. Both sides agreed that a measure should pass that freed up spectrum for new industries. The Bush Administration and leading Republicans, however, balked at the idea of freeing up spectrum only to give it away through lotteries. In 1991, the House passed Chairman Dingell's proposal, H.R. 531, which would have opened up a large block of spectrum but did not include auction authority. The Senate reported the companion bill, S. 218, out of Committee and the Bush Administration threatened to veto the measure unless Congress included authority for FCC auctions. Hearings were held on Capitol Hill concerning amendments to add auction authority, but the 102d Congress neither agreed to acquiesce to auctions nor to challenge Bush on the issue. The House Subcommittee on Telecommunications and Finance held hearings on spectrum auctions in 1991 on February 21, March 12 and October 9. See *Hearings on H.R. 531*, *supra* note 6; *Hearings on H.R. 531*, pt. 2, *supra* note 6.

⁷⁵ In the legislative history, the FCC is blamed for the failure of lotteries. See, e.g., BUDGET REPORT, *supra* note 1, at 248. See also *Hearings on H.R. 531*, *supra* note 6, at 89 (exchange of Representative Markey and NTIA Administrator Janice Obuchowski).

proposal.⁷⁶ But the political dynamic changed rapidly. An explicit exemption in evolving auction proposals for non-subscription broadcast television licenses and also, perhaps, the ambitious efforts of the broadcast industry in pursuit of other priorities⁷⁷ constrained the ability of broadcasters to effectively and openly oppose spectrum auctions.⁷⁸ Finally, by 1993 the imperative of deficit reduction and the need to find enormous new sources of federal revenues not only made enactment of this once controversial provision a certainty, but also created pressure in the late stages of the legislative process that greatly expanded the coverage of the new auction law.⁷⁹ What started as a limited auction experiment permitting the FCC to choose when to conduct auctions grew to mandatory auctions for emerging technologies and further escalated to mandatory auctions for a wide array of spectrum licenses for both new and old uses.⁸⁰ In the final days of fractious debate

⁷⁶ See CBO STUDY, *supra* note 3, at 21-22 (discussing the "camel's nose inside the tent" type of argument against auctions).

⁷⁷ Such as the must carry/retransmission consent provisions eventually enacted in the 1992 Cable Act. Cable Television Consumer Protection and Competitor Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (codified at 47 U.S.C. §§ 521-55 (1992)). This Act amended the Communications Act of 1934 by adding new § 614 (47 U.S.C. § 534) (must carry) and new § 615 (47 U.S.C. § 535) (retransmission consent). These provisions and their long history are discussed in Nicholas W. Allard, *The 1992 Cable Act: Just the Beginning*, 15 HASTINGS COMM. & ENT. L.J. 305, 333-45 (1992).

⁷⁸ Other previous impediments to enactment were removed. For example, concerns over the fate of incumbent users of the frequencies that were to be allocated to PCS and other converging technologies raised by Chairman Hollings and Chairman Dingell were alleviated. Some issues, however, such as whether to require special protections for rural interests and to revamp the regulatory regime applicable to all mobile services remained extremely controversial. These concerns were ultimately reflected in specific provisions ultimately enacted in Title VI of OBRA. See OBRA, *supra* note 1, §§ 6001-03, 107 Stat. 379-400 (to be codified in scattered sections of 47 U.S.C.).

⁷⁹ A move made by Senator Dole in the course of debate on extending unemployment benefits to counter the effects of the 1991 recession brought to the forefront the issue of revenues. This issue eventually would gather support for and propel auctions. President Bush had threatened to veto unemployment benefit extension unless it complied with the 1990 budget agreement's "pay-as-you-go" provisions. Senator Dole twice attempted to include spectrum auctions in the unemployment bill as a means of paying for extra unemployment benefits. Both times the measure failed after complaints that the relevant committees had not had time to consider auctions properly. 137 CONG. REC. S11,749 (daily ed. Aug. 1, 1991) (statement of Sen. Hollings). But the idea took hold.

⁸⁰ This rapid expansion had some unintended consequences and would have been very disruptive to some existing services. After intense lobbying, for example, the wireless cable industry and others were able to obtain an exemption for most pending

over OBRA, auction provisions ironically became one of the locomotives pulling the legislative vehicle rather than heavy freight perennially decoupled and left at the station.⁸¹

The 1993 Budget Act replaces lotteries with auctions in most cases.⁸² The legislative history explains that the change was made principally because of the perceived serious shortcomings of lotteries, or at least in their management. Congress found that the FCC had failed to institute serious screening procedures to ensure that spectrum went to parties who actually intended to use it.⁸³ In the cellular telephone and wireless cable television context, this failure led to parties applying for and receiving spectrum, and then selling the spectrum for a substantial sum to other parties who actually intended to build cellular and wireless cable systems. Congress found the lottery system unacceptable because it "engendered rampant speculation; undermined the integrity of the FCC's licensing process and, more importantly, frequently resulted in unqualified persons winning an FCC license."⁸⁴ Congress felt that a system of competitive bidding would fix these problems, while raising large sums for deficit reduction.⁸⁵

IV. Statutory Analysis

Section 309(j) authorizes the FCC to issue licenses for use of the electromagnetic spectrum through a system of competitive bidding if three criteria are met. The FCC is required to use auctions if: (1) mutually exclusive applications for a license or permit have

applications (the statute allows the FCC to conduct lotteries for applications accepted for filing prior to July 26, 1993). See 139 CONG. REC. S10,960 (daily ed. Aug. 6, 1993) (statement of Sen. Inouye) [hereinafter Statement of Sen. Inouye] (explaining § 6002(e)(2) rule for existing applications); *Inouye Clarifies Deadline in Spectrum Auction Language*, TELECOMM. REP., Aug. 16, 1993, at 20. Similar efforts also led to clarification in the Conference Committee Report that ITFS frequencies licensed by educational institutions and used by wireless cable operators would not be subject to auctions even though wireless cable operators receive compensation from subscribers. H.R. CONF. REP. NO. 213, *supra* note 1.

⁸¹ See *supra* note 9. A mild flap over the tax treatment of licenses failed to derail the auction proposal. Charles R. Babcock, *When a Single Sentence Threatens Loss of Millions; Lobbyist Spots Loophole in Bill's Fine Print*, WASH. POST, July 27, 1993, at A8.

⁸² OBRA, *supra* note 1, § 6002(b)(1)(A), 107 Stat. at 392 (to be codified at 47 U.S.C. § 309(i)(1)).

⁸³ BUDGET REPORT, *supra* note 1, at 248.

⁸⁴ *Id.*

⁸⁵ *Id.* at 249.

been accepted for filing by the FCC after July 26, 1993;⁸⁶ (2) the applications filed are for an initial license or construction permit;⁸⁷ and (3) the primary use of the spectrum will or is likely to involve the licensee's receipt of compensation from subscribers either to receive or transmit directly communications signals utilizing frequencies on which the licensee is licensed to operate.⁸⁸

"Accepted for filing" is a term of art that means the application has been filed and received some initial review, and public notice by the FCC has been issued indicating that a license application has been filed which is not facially defective.⁸⁹ An interesting issue for the FCC will be whether comprehensive settlements among competing applicants, reached after mutually exclusive applications have been filed but before auction, are *not* mutually exclusive and therefore exempt from the new lottery requirements. The auctions are only required for initial licenses; the FCC may not use bidding for renewal or modification of a license.⁹⁰ The "subscribers for compensation" criterion means essentially that the license must have paying subscribers and exempts traditional broadcast license and educational licenses such as those for Instructional Television Fixed Services.⁹¹ The Act curtails the FCC's discretion to use random selection (lotteries) as a method of

⁸⁶ OBRA, *supra* note 1, § 6002(a), 107 Stat. at 388 (to be codified at 47 U.S.C. § 309(j)(1)). This cut-off exempts most pending applications for existing regulated microwave services, such as applications for the first nine interactive Video Data Services markets and pre-freeze wireless cable applications. *See supra* note 80.

⁸⁷ OBRA, *supra* note 1, § 6002(a), 107 Stat. at 388 (to be codified at 47 U.S.C. § 309(j)(1)).

⁸⁸ *Id.* § 6002(a), 107 Stat. at 388 (to be codified at 47 U.S.C. § 309(j)(2)). Note that prospective licensees must still qualify under the traditional criteria contained in 47 U.S.C. §§ 308(b) and 310 (relating to character and foreign ownership). There are a number of conditions precedent and conditions subsequent to the FCC's use of competitive bidding authority. For example, § 309(j)(10) requires that before the FCC begins to auction licenses, the Secretary of Commerce must have submitted a report on the reallocation of certain governmental frequencies which must contain certain findings. *Id.* § 6002(a), 107 Stat. at 391 (to be codified at 47 U.S.C. § 309(j)(10)(A)). Also, prior to auctions the FCC must have completed the PCS rulemaking required by § 332(c)(1)(D). *Id.* § 6002(b), 107 Stat. at 394 (to be codified at 47 U.S.C. § 332(c)(1)(D)). Additionally, the FCC's auction authority will expire after two years if certain auctions do not occur on a timely basis. *Id.* § 6002(a), 107 Stat. at 391 (to be codified at 47 U.S.C. § 309(j)(10)(B)).

⁸⁹ Statement of Sen. Inouye, *supra* note 80.

⁹⁰ H.R. CONF. REP. NO. 213, *supra* note 1, at 481-82 (incorporating by reference BUDGET REPORT, *supra* note 1, at 253).

⁹¹ *Id.* *See also* Statement of Sen. Inouye, *supra* note 80.

awarding licenses. The FCC may now only use random selection if it first determines that it is not authorized to use competitive bidding.⁹²

Congress directed the FCC to design and test different methodologies for auctioning off frequencies.⁹³ In designing its methodologies, the FCC must be responsive to certain goals:

(A) the development and rapid deployment of new technologies, products, and services for the benefit of the public, including those residing in rural areas, without administrative or judicial delay;

(B) promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses and disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by minority groups and women;

(C) recovery for the public of a portion of the value of the spectrum resource made available for commercial use and avoidance of unjust enrichment through the methods employed to award uses of that resource; and

(D) efficient and intensive use of the electromagnetic spectrum.⁹⁴

The FCC must promulgate rules outlining the methodologies it will use for auctioning frequency by March 8, 1994.⁹⁵ These rules must consider alternative payment schedules and methods of calculation, including lump sums or guaranteed installment payments, with or without royalty payments, or other schedules or methods that promote economic opportunity.⁹⁶ They must also include performance requirements, such as deadlines and penalties for performance failures, to ensure prompt delivery of service to rural areas, to prevent spectrum "warehousing" and to promote investment in and rapid deployment of new technologies.⁹⁷ The regulations must prescribe area designations and bandwidth assignments that promote an equitable distribution of licenses and services among geographic areas and pro-

⁹² OBRA, *supra* note 1, § 6002(b)(1)(A), 107 Stat. at 392 (to be codified at 47 U.S.C. § 309(i)(1)).

⁹³ *Id.* § 6002(a), 107 Stat. at 388 (to be codified at 47 U.S.C. § 309(j)(3)).

⁹⁴ *Id.* § 6002(a), 107 Stat. at 388 (to be codified at 47 U.S.C. § 309(j)(3)(A)-(D)).

⁹⁵ *Id.* § 6002(d)(1), 107 Stat. at 396.

⁹⁶ *Id.* § 6002(a), 107 Stat. at 389 (to be codified at 47 U.S.C. § 309(j)(4)(A)).

⁹⁷ *Id.* § 6002(a), 107 Stat. at 389 (to be codified at 47 U.S.C. § 309(j)(4)(B)-(C)).

mote economic opportunity for a wide variety of applicants. They must also ensure the participation of small businesses, rural telephone companies, and businesses owned by minorities and women through the use of tax certificates, bidding preferences and other methods.⁹⁸ In addition, the FCC shall require transfer disclosures and other procedures to prevent unjust enrichment from the method used to distribute licenses.⁹⁹ The FCC is granted discretion and is expressly *not* prohibited from issuing whatever geographic size of licenses it deems best whether national, regional, or local.¹⁰⁰

While one of the FCC's objectives is to raise revenues, consideration of revenues in its rulemaking and assignment of frequencies is expressly limited by the statute. In making a decision to assign a band of frequencies to a use covered by section 309(j)'s auction authority, or in prescribing regulations to promote an equitable distribution of licenses and service among geographic areas, to promote economic opportunity among a wide variety of applicants, or to promote investment in and rapid deployment of new services and technologies, the FCC is prohibited from considering the expectation of revenues from auctioning frequency when making a finding of public interest, convenience or necessity.¹⁰¹ The FCC may, however, consider the expectation of revenues when it promulgates regulations for alternative payment schedules to promote a broad dissemination of licenses, but it may not base its decision "solely or predominantly" on such expectation.¹⁰² The FCC may continue to consider consumer demand for services when making decisions.¹⁰³ The FCC must deposit all funds spectrum auctions raise into the United States Treasury except for an amount it is authorized to retain to offset the costs of the auction procedure.¹⁰⁴

The FCC's authority to use licensing is contingent upon the availability of additional spectrum for licensing. Unless the FCC complies with the spectrum reallocation provisions of the National Telecommunications and Information Administration Organization Act, the auc-

⁹⁸ *Id.* § 6002(a), 107 Stat. at 389 (to be codified at 47 U.S.C. § 309(j)(4)(D)).

⁹⁹ *Id.* § 6002(a), 107 Stat. at 389 (to be codified at 47 U.S.C. § 309(j)(4)(E)).

¹⁰⁰ *Id.* § 6002(a), 107 Stat. at 390 (to be codified at 47 U.S.C. § 309(j)(6)(F)).

¹⁰¹ *Id.* § 6002(a), 107 Stat. at 390 (to be codified at 47 U.S.C. § 309(j)(7)(A)).

¹⁰² *Id.* § 6002(a), 107 Stat. at 390 (to be codified at 47 U.S.C. § 309(j)(7)(B)).

¹⁰³ *Id.* § 6002(a), 107 Stat. at 390 (to be codified at 47 U.S.C. § 309(j)(7)(C)).

¹⁰⁴ *Id.* § 6002(a), 107 Stat. at 390 (to be codified at 47 U.S.C. § 309(j)(8)). *See also id.* § 6003, 107 Stat. at 397-400 (to be codified at 47 U.S.C. § 159).

tion authority will not become effective.¹⁰⁵ Additionally, the auction authority may lapse within two years from the date of enactment if the FCC has not further complied with that Act.¹⁰⁶ No later than September 30, 1997, the FCC must conduct public inquiry and submit a report to Congress summarizing the revenues obtained from auctions, describing the methodologies used, evaluating the advantages and disadvantages of those methodologies and recommending improvements in the process.¹⁰⁷ Unless reauthorized by Congress, the FCC's auction authority will expire on September 30, 1998.¹⁰⁸

V. *The PCS Allocation Decision*

The 1994 PCS auction will be the first test of the new law. It is essential to understand what is being offered for sale to decide whether and how to participate, and also to evaluate the success of the auction. The FCC has authorized PCS in the 2 GHz emerging technologies bands.¹⁰⁹ The FCC allocated a total of 160 MHz at 1850-1970, 2130-2150 and 2180-2200 MHz for PCS services. This is roughly four times the spectrum originally allocated for the cellular telephone service. The major elements of the FCC's allotment order are:

- 120 MHz was allocated for *licensed* PCS services (1850-1890/1930-1970 MHz and 2130-2150/2180-2200 MHz);
- 40 MHz was allocated for *unlicensed* PCS services (1890-1930 MHz);
- The licensed allocation was channelized into two 30 MHz channel blocks, one 20 MHz channel block and four 10 MHz channel blocks, as follows:

<i>Channel Block</i>	<i>Frequency (MHz)</i>	<i>Service Area</i>
A (30 MHz)	1850-1865/1930-1945	MTA
B (30 MHz)	1865-1880/1945-1960	MTA
C (20 MHz)	1880-1890/1960-1970	BTA
D (10 MHz)	2130-2135/2180-2185	BTA
E (10 MHz)	2135-2140/2185-2190	BTA
F (10 MHz)	2140-2145/2190-2195	BTA

¹⁰⁵ *Id.* § 6002(a), 107 Stat. at 391 (to be codified at 47 U.S.C. § 309(j)(10)). *See also id.* § 6001, 107 Stat. at 380 (to be codified at 47 U.S.C. § 923)).

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* § 6002(a), 107 Stat. at 392 (to be codified at 47 U.S.C. § 309(j)(12)).

¹⁰⁸ *Id.* § 6002(a), 107 Stat. at 392 (to be codified at 47 U.S.C. § 309(j)(11)).

¹⁰⁹ *See* PCS Order, *supra* note 14.

G (10 MHz) 2145-2150/2195-2200 BTA¹¹⁰

— The unlicensed allocation was channelized into two 20 MHz blocks, one for devices that will provide voice-like services and one for devices that will provide data-like services, as follows:

Voice (isochronous)	1890-1900 and 1920-1930 MHz
Data (asynchronous)	1900-1920 MHz ¹¹¹

The FCC also determined the geographic coverage and duration of PCS licenses that will be offered at auction. The PCS service area sizes were Major Trading Areas (MTAs) and Basic Trading Areas (BTAs), as defined by the Rand McNally Atlas. In the United States there are 51 MTA and 492 BTA-based service areas under the plan adopted by the FCC.¹¹² The licensing term is set at ten years, with provisions for renewal expectancy similar to those that currently apply to the cellular service.¹¹³

With regard to the critically important issue of eligibility for a PCS license, an issue which was the subject of intense lobbying on Capital Hill and at the FCC,¹¹⁴ cellular licensees are permitted to participate in PCS outside of their existing service areas or in any

¹¹⁰ PCS Order, *supra* note 14, at para. 56. The channel blocks consist of pairs of spectrum to transmit and receive with a standard separation between the pairs. *Id.* at para. 35.

¹¹¹ *Id.* at paras. 79-92. A "spectrum etiquette" plan was adopted to govern the technical operation of unlicensed equipment. The Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management (UTAM) was conditionally designated as coordinator for use of unlicensed PCS devices. The FCC conditioned its designation of UTAM upon its submitting an acceptable funding plan and stated that it will solicit public comment on any such plan before deciding its acceptability. All manufacturers of unlicensed PCS equipment would be required to participate in UTAM. *Id.* at para. 88.

¹¹² See PCS Order, *supra* note 14, at paras. 64-78. 47 MTAs and 487 BTAs are defined in the RAND McNALLY, 1992 COMMERCIAL ATLAS & MARKETING GUIDE paras. 36-39 (123d ed. 1992). In addition to the MTAs and BTAs, the FCC licenses five insular areas: American Samoa, Guam, Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands in a way that creates a total of 51 MTA and 492 BTA size licenses. 47 C.F.R. § 99.13 (1989). NTIA proposed that the FCC use 183 "economic areas defined by the Department of Commerce's Bureau of Economic Analysis (BEA) for PCS service areas." Letter from Larry J. Irving, NTIA Administrator, to James H. Quello, FCC Acting Chairman (Sept. 14, 1993) (on file with the FCC, Washington, D.C., No. 90-314).

¹¹³ See PCS Order, *supra* note 14, at paras. 130-31.

¹¹⁴ See Kirk Victor, *Not Many Wires But Loads of Lobbyists*, 38 NAT'L J., 2251 (1993); Cindy Skrzycki, *Dingell: Let Markets Guide PCS Industry*, WASH. POST, Sept. 22, 1993, at F2; Letter from Rep. Markey (D-MA) to Chairman James H. Quello (Sept. 20, 1993) (on file with the *Seton Hall Legislative Journal*); Letter from Rep. Dingell (D-MI) to

area where the cellular licensee serves less than 10% of the population of the PCS service area. Cellular licensees are defined as entities that have an ownership interest of 20% or more in a cellular system. Cellular licensees also are permitted to compete for one of the 10 MHz PCS channels in their existing service area. Local exchange carriers are permitted to apply for PCS licenses on the same basis as other applicants, except insofar as they hold interests in cellular operations.¹¹⁵ Eligibility for channel blocks C and D is addressed in the companion notice of proposed rule making award of PCS licenses through competitive bidding processes.¹¹⁶ That Notice proposes licensing preferences for small businesses, rural telephone companies and businesses owned by minorities and women. Licensees generally are authorized to aggregate up to 40 MHz in any one service area and may aggregate markets (service areas) without restriction. Cellular licensees, however, are restricted to only one 10 MHz channel block in their cellular service area. Two PCS licensees will be required to offer service to at least "one-third of the population in each market area within five years of being licensed, two-thirds within seven years and 90% within ten years."¹¹⁷

VI. *Developing Auction Rules for Assigning Spectrum Licenses*

On September 23, 1993 the FCC adopted a Notice of Proposed Rule Making to implement its new authority to use actions to award certain licenses.¹¹⁸ At the outset, the FCC identified three criteria to guide its design of the auction for PCS: (1) the auction system should be simple and therefore, easy to administer; (2) it

Chairman James H. Quello (Sept. 21, 1993) (on file with the *Seton Hall Legislative Journal*) [hereinafter Rep. Dingell letter].

¹¹⁵ PCS Order, *supra* note 14, at paras. 105-06.

¹¹⁶ Auction NPRM, *supra* note 11. See PCS Order, *supra* note 14, app. c at 18-19 (Small Business Advisory Committee Report) (on file with the FCC) (commenting on opportunities for designated entities: small business, rural telephone, minority and women owned business).

¹¹⁷ PCS Order, *supra* note 14, at para. 134. Technical standards were adopted for PCS operations. These include antenna height and power limits and standards for protecting existing microwave users and other PCS operations from interference. These standards generally will provide microwave users with the same level of protection they are now afforded. The FCC has also encouraged industry to continue its efforts to develop standards that will promote interoperability, roaming and enhanced emergency 911 capability for PCS. *Id.* at paras. 135-86.

¹¹⁸ Auction NPRM, *supra* note 11.

should be shaped by the experience of other government agencies which have effectively conducted auctions; and (3) the auctions should be designed to minimize administrative costs to applicants and to the FCC.¹¹⁹

A. *The Scope of Auctions*

The FCC is required to use auctions if, among other things, the service applied for principally involves the sale of communications services to subscribers for compensation. Based upon the "subscribers for compensation" criterion, the FCC proposed to exclude most mass media services from competitive bidding but sought comment on the treatment of subscription services such as Direct Broadcast Satellite. In addition, the FCC proposed excluding Public Safety Services, the Broadcast Auxiliary Service and services provided on subcarrier channels from auctions.¹²⁰

The FCC tentatively concluded that competitive bidding should begin in the immediate future for PCS and some services regulated by the Private Radio and Common Carrier Bureaus, such as common carrier radio services and Interactive Video Data Service, and sought comment on the application of competitive bidding procedures to these services.

B. *Participation by Small Businesses, Rural Telephone Companies and Businesses Owned by Women and Minorities*

The FCC also sought comment on a variety of proposals designed to meet the new law's requirement that small businesses, rural telephone companies and businesses owned by women and minorities be given an opportunity to participate in the competitive bidding process.¹²¹ In this regard, the FCC specifically asked for comments on setting aside blocks of spectrum for competitive bidding by designated groups, spreading payment over time and

¹¹⁹ *Id.* at para. 18.

¹²⁰ Auction NPRM, *supra* note 11, at para. 23. The FCC also sought comment on how to measure the principal use of spectrum in certain services where private use and service provided to subscribers for compensation are mixed. *Id.* at paras. 30-32. The FCC also proposed auctions for licenses for intermediate radio links used as part of a larger service offered for compensation (e.g. point-to-point microwave links that are part of a cable television system). *Id.* at paras. 28-29.

¹²¹ *Id.* at paras. 72-76.

tax certificates.¹²² The FCC also sought comment on how to define small business, rural telephone companies and businesses owned by minorities and women for purposes of competitive bidding rules.¹²³

C. *Bidding Method*

The FCC proposed that, at least initially, oral biddings should be the basic bidding method when the FCC has not explicitly specified some other method.¹²⁴ In making this tentative conclusion, the FCC explained:

We find the benefits of oral auctions are generally more likely to outweigh the costs of this method as well as the net benefits of the other auction methods considered. Oral bidding is likely to award licenses to the parties that value them the most and facilitate efficient aggregation of licenses when non-homogenous licenses are offered individually.¹²⁵

The FCC was confident that it would be able to adequately address the main disadvantage of oral auctions: the potential for collusion (oral auctions can also consume a great deal of time). The FCC is also considering an “innovators bidding preference”—a credit up to 10% of the applicants bid but was concerned about the prospect of determining eligibility for such a credit prior to bidding.¹²⁶

The FCC sought comment on the sequence in which licenses should be offered when bidding is conducted sequentially.¹²⁷ For example, should the FCC auction licenses for all geographic regions within a spectrum block, in descending order of population, before proceeding to auction licenses on the next spectrum block? The FCC also asked for comment on the general concept of bidding to aggregate groups of licenses—also known as combinational or “combinatorial” bidding—and on its tentative conclusions for implementation.¹²⁸ For those spectrum blocks where this method would be applied, the

¹²² *Id.* See also *id.* at para. 121.

¹²³ *Id.* at paras. 77-78. The FCC sought specific comment on the report submitted on September 15, 1993, to the FCC by the Small Business Advisory Committee in its PCS Order, *supra* note 14 (report on No. 90-314). *Id.* at para. 50.

¹²⁴ Auction NPRM, *supra* note 11, at para. 46.

¹²⁵ *Id.*

¹²⁶ *Id.* at para. 50.

¹²⁷ *Id.* at paras. 51-56.

¹²⁸ *Id.* at paras. 57-62. See also Rep. Dingell letter, *supra* note 114; Auction NPRM, *supra* note 11, at para. 61 n.40 (raising question regarding whether statutory authority

FCC would accept bids both for licenses individually and for all the individual licenses in block. Licenses would be awarded as a group if a bid for the licenses as a group exceeded the sum of the highest bids for the licenses individually. If the sum of the individual bids was greater than the highest bid for the group, licenses would be awarded individually. In either case, the same eligibility, performance and other requirements would apply to each individual license.

The FCC tentatively concluded that in the initial application of combinational bidding, it should first require submission of sealed bids for pre-determined groups of licenses, then conduct oral auctions for individual licenses and finally open the sealed bids. The FCC also considered and sought comment on other elements of bidding design including minimum bid requirements.

The FCC tentatively concluded and sought comment on requiring lump sum payments for bidders not receiving preferences but also sought comment on alternative payment methods for all licensees.¹²⁹ The FCC sought comment on the size of up-front payments (deposits) required to participate in the auction and requested comment on the how it should treat winners and licensees who default on payments owed the government.

D. PCS Auctions

The FCC tentatively proposed to use both oral and sealed bidding in licensing PCS.¹³⁰ Oral bidding would be used in all cases except for bids on groups of licenses. The FCC proposed to permit combinational bidding to award all of the 51 MTA licenses on each of two 30 MHz spectrum blocks (blocks A and B).¹³¹

The FCC also asked for comment on whether this procedure should be used to facilitate grouping of PCS licenses within BTA service areas.¹³² Specifically, the FCC requested comment on whether it should accept sealed bids for all BTA licenses on an MTA basis and conduct oral auctions sequentially for individual BTA licenses. Finally, the FCC sought comment on the use of this combinational bidding to aggregate 10 MHz PCS licenses into 20

exists for this method of bidding). The term "combinatorial bidding" appears in Representative Dingell's letter and its usage has since been adopted by the FCC.

¹²⁹ Auction NPRM, *supra* note 11, at paras. 68-71.

¹³⁰ *Id.* at para. 120.

¹³¹ *Id.*

¹³² *Id.* at para. 123.

MHz or 30 MHz blocks, thereby facilitating nationwide services.¹³³

The FCC tentatively concluded that to ensure that small business, rural telephone companies and businesses owned by minorities and women have an opportunity to compete for broadband PCS licenses, it would set aside one 20 MHz block of spectrum to be licensed on a BTA basis (Block C) for these designated groups.¹³⁴ In addition, it proposed that qualifying bidders competing for licenses in this block be permitted to pay their winning bid over time and that their qualifying deposit be less than that required by non-designated groups competing for other blocks of spectrum.¹³⁵ The FCC also sought comment on how tax certificates might be used to facilitate the deployment of PCS by minority or women licensees.

The FCC addressed three safeguards for the auction process: preventing unjust enrichment, performance requirements and prohibitions against collusion.¹³⁶ The statute requires the FCC to "require such transfer disclosures and antitrafficking restrictions and payment schedules as may be necessary to prevent unjust enrichment as a result of the methods employed to issue licenses and permits."¹³⁷ The FCC also proposed performance requirements to ensure prompt delivery of service and to prevent warehousing of spectrum and sought comment on procedures to prevent collusion among bidders.¹³⁸

E. *Application Procedures and Deposit Requirements*

With regard to application procedures, the FCC tentatively concluded that it should adopt a two-part application form for auction services.¹³⁹ The short-form application would include certifications regarding the prospective bidder's qualifications and, if applicable, eligibility for the special procedures open to those in economic opportunity groups designated by the statute. The FCC

¹³³ *Id.* at para. 124.

¹³⁴ *Id.* at para. 121.

¹³⁵ *Id.*

¹³⁶ *Id.* at paras. 82-94.

¹³⁷ OBRA, *supra* note 1, § 6002, 107 Stat. at 389 (to be codified at 47 U.S.C. § 309(j)(4)(E)).

¹³⁸ Auction NPRM, *supra* note 11, at paras. 90-92.

¹³⁹ *Id.* at paras. 96-101.

tentatively concluded that it would examine the long-form applications of auction winners only.

The FCC tentatively concluded that, to realize the Act's goals of ensuring prompt delivery of service and promoting rapid deployment of new technology, it should adopt procedures that limit bidding to serious, qualified bidders and minimize the probability that, after an auction is competed and participants have dispersed, the FCC finds that it cannot award a license to the auction winner. The FCC therefore proposed that, to participate in an auction, bidders would be required to tender in advance to the FCC a substantial up-front payment.¹⁴⁰ The amount of the payment would vary with the license being auctioned and would be announced well in advance of the auction via a Public Notice.¹⁴¹

In order to provide bidders with appropriate incentives to ensure they are, in fact, qualified, financially and otherwise, to be awarded a license, the FCC proposed to retain the up-front payments of auction winners even if they are later disqualified.¹⁴² The FCC also sought comment on a proposal that, either immediately or within one or two business days, auction winners be required to tender additional non-refundable payment to the FCC sufficient to bring its total deposit up to 20% of its bid.¹⁴³

VII. Regulatory Issues

The foregoing overview is but a bare summary of the myriad of issues that will be addressed by the FCC about how to run its spectrum auctions. The principal insight that might be offered about the pending rulemaking is how many details remain to be decided and how much change is likely for even the most basic elements of the proposed auction rule as tentatively announced by the FCC in the September launch of the rulemaking. The number of specific questions posed by the FCC in the NPRM is extraordinary. Fundamental elements of the auction design such as the proposal to use oral bidding and the mechanisms of the application and qualification process are hardly set in stone. Accordingly, the rulemaking

¹⁴⁰ *Id.* at paras. 102-09.

¹⁴¹ *Id.* The proposal is two cents per person residing in the license area per megahertz. So, for example, the upfront payment for a 30 Mhz MTA with a population of 20 million would be \$20 million x 30 x .02 = \$12 million.

¹⁴² *Id.* at para. 104.

¹⁴³ *Id.*

will prove to be unusually important in fleshing out the specifics of the auction design. The rulemaking also promises to be a process where major players will, as they have done during the consideration of all the FCC docket items relating to the creation of PCS, exert a massive effort to shape the rules to their advantage.

The FCC needs to make the auction process simple and straightforward or else it may not work. The FCC has done a very good job on short notice of addressing the complexity of auctions for seven spectrum bands and 51 MTAs and 492 BTAs. Still, bidders who wish to compete for more than even a few spectrum lots face great challenges in planning their bidding strategy because of the sequential nature of the proposed bidding structure and the nature of bidding for different licenses in each of the frequency blocks. What a bidder is willing to pay for a particular license depends, among other things, on what the bidder has already paid, what others paid and who won other related licenses. It will, for example, be a great challenge for firms wishing to obtain a large number of licenses to give advance bidding instructions to their bidders. Participation in numerous sequential oral auctions, for example, combined with the difficulty of valuing the various frequency blocks (which in turn will vary in value according to the location of microwave incumbents in each auction spectrum lot) will require bidders to formulate extensive and complex bidding strategies.

Confusion caused by complexity can lead to irrational bidding, unnecessary risk, and extreme results, such as winning bids that are either far too low or what is known as the "winners curse," winning bids that are far too high, i.e. winning when you wished you had not won. The current multiple auction procedure will not only tax the decision-making ability of even the most sophisticated and well financed bidders, but it also increases the chance that defaults or other problems occur that possibly might require redoing all or part of the auction. This possibility must be avoided if at all possible not only because of the chaos that would result but because of the enormous waste it would cause in terms of unnecessary transaction costs for private parties, duplication of administrative costs and waste of agency resources and delay. Finally, the FCC does not have much room for error. Its very first auction will be for the critically important PCS auctions and it will

not be able to conduct any trial runs on other smaller auctions to work out bugs.

According to Professors Barry Nalebuff and Jeremy Bulow, one solution would be to combine auctions for different band blocks and thereby reduce the number of auctions the FCC would have to run. Running separate auctions in seven bands is unnecessary and the same statutory and regulatory objectives could be accomplished by consolidating the auctions into four bands. Under the Nalebuff and Bulow proposal, there would be one auction for each of the two 30 MHz blocks within an MTA, one auction for three of the 10 MHz blocks within a BTA, and then auctions for the remaining 20 MHz and 10 MHz blocks that have been set aside for the various designated entities. The way the 30 MHz auctions would work is, for example, the top two bidders would each win a license and the higher of the two bidders would get first choice. The highest bidder would thus pay a premium according to the value he places on being able to choose between the two 30 MHz blocks. For the 10 MHz band blocks, the top three bidders would each be awarded a license with the highest bidders getting first choice. This format could work in either a sealed bid or open bid auction.

According to Nalebuff and Bulow:

The theoretical result from auctions literature predicts that selling two identical products sequentially yields the same expected revenue as selling them simultaneously. In the case of sequential auctions, each should have the same price. Otherwise, a firm would choose to wait for the second auction if it was thought to have the lower price or bid higher in the first round if that was perceived to be the better deal.

....

There is also an efficiency justification for running one auction rather than two in sequence. *When there is only one auction, the two highest bidders will always win.* Since we believe that bids are positively correlated with valuations, that means that the licenses will always go to the two firms with the highest values. In contrast, when the auctions are run in sequence, it is possible that someone other than the top two bidders might win the first auction. In the first auction, the "true" top two bidders each mistakenly think that they are the only other person who values the license at the winning price. As a result, in the second auc-

tion the price goes much higher and one of the efficient firms fails to get a license.

The culprit is bidding complexity and the role of strategic bidding. When there are two auctions you have to develop a strategy for bidding in the first versus second auction. With only one auction, you don't have to consider this issue and there is no room to outsmart yourself. By eliminating the need for strategic bidding, we also eliminate the possibility of having an inefficient auction outcome.¹⁴⁴

The PCS band blocks are not exactly identical primarily because of the different incumbents that might be located in each particular spectrum lot. But the different lots that Nalebuff and Bulow proposed combining are otherwise relatively fungible. The ability to choose first for making the highest bid is not any different than the result of a committed bidder raising his or her bid in a separate single auction to achieve the same result. This proposal also worked with the FCC's proposed experiment to permit "combinatorial" bidding for the two 30 MHz MTA spectrum blocks. Parties could submit a national sealed bid and the FCC would then conduct one open sequential auction for all of the MHz MTAs on an MTA-by-MTA basis. For each MTA the top two bidders would be identified and the results totalled. Then the national bids would be opened and the winners would be chosen by determining the higher two bids out of the national and the two total combined MTA bids. One national license would be awarded if the highest national bid exceeded the sum of the highest regional bid. Two national licenses would be awarded if both national bids exceeded the sum of the highest regional combined bid.

Making the upcoming PCS auctions simpler in this way would help bidders to focus on other aspects of the process and perhaps reduce resources spent on calculating the different value of each frequency band. Of course, this approach is simpler for the FCC because it reduces the number of auctions (from seven band blocks to four band blocks).

Under the FCC's proposed auction method, nationwide "combinational" bidders currently stand at a disadvantage compared to regional MTA bidders in the open auction because the participants in

¹⁴⁴ Barry J. Nalebuff & Jeremy I. Bulow, *Designing the PCS Auction*, in Comments of Bell Atlantic Personal Communications, Inc., Implementation of Section 309(j) of the Communications Act Competitive Bidding, PP Docket No. 93-253, Nov. 10, 1993, app. a at 4-5 [hereinafter Nalebuff & Bulow] (on file with the FCC, Washington, D.C.).

the open MTA Auction obtain information about the value of various MTA lots as the open auction proceeds. In contrast, nationwide bidders make sealed bids prior to the open auction, and are thus extremely susceptible to the "winner's curse." Lacking information concerning the true value of PCS licenses, the highest nationwide bidders will, on average, be far more likely to overbid for them.¹⁴⁵ Knowing this, nationwide bidders will tend to adjust their bids downward to avoid the winner's curse.¹⁴⁶ As Nalebuff and Bulow observe, this will render it quite unlikely that a firm will be able to bid aggressively enough to win a national license even if there are large economies of scale and scope.¹⁴⁷ Bidders in the open MTA auctions, on the other hand, are much less susceptible to the winner's curse because it is interactive and each new bid conveys information to the other bidders. To the extent that the open bidding process reduces uncertainty, it helps the regional bidders to avoid the winner's curse. The FCC's auction design should not disadvantage national bidders in this fashion, particularly because it is neither equitable nor efficient to do so and need not do so because there are many alternative designs from which to choose.¹⁴⁸ By putting national regional bidders on a

¹⁴⁵ When the market value of an object is uncertain, each bidder must estimate the object's true worth. In the presence of such uncertainty, auction theory indicates that, on average, the highest estimate will be *too* high. Thus, if the bidder with the highest estimate of the value of the object offers the winning bid for it and fails to take account of this bias, this bid will, on average, also be *too* high. Economists call this phenomenon the "winner's curse." See CBO STUDY, *supra* note 3, at 45; Nalebuff & Bulow, *supra* note 144, app. a at 15-16.

¹⁴⁶ See CBO STUDY, *supra* note 3, at 45.

¹⁴⁷ Nalebuff & Bulow, *supra* note 144, app. a at 12.

¹⁴⁸ There are many ways to mitigate the winner's curse of the combinational bidders for national licenses. The regional open auctions could be held first. This of course puts the MTA bidders at a disadvantage. Half of the regional auctions could be held before the national bids are required to be submitted. Alternatively, both the regional and national bids could be sealed. But this would make both susceptible to the winner's curse. *Id.* at 14-16.

An informal idea raised by Professor Nalebuff is that the FCC could consider giving national bidders the option, instead of submitting a numerical price in their sealed bid, of submitting a percentage premium that they will pay over the sum of their regional bids. Meetings with Barry J. Nalebuff, Professor of Economics and Management, Yale School of Organization and Management, Yale University, in New Haven, Conn. (Oct. 1993). For example, a sealed nationwide bid could be an offer to bid 10% above the sum of a bidder's regional bids. Thus, if the sum of the regional bids is \$100 million, the bidder's national bid is \$110 million.

The advantage of this proposal is that, although national bidders still remain at an informational disadvantage relative to the regional bidders as to the value of regional and national PCS licenses, they can calculate the relative value of a combined

better informational footing, the FCC would help to assure that PCS licenses will reach their truly highest valued use: whether it be aggregated as a national package or auctioned off to different entities individually.

The FCC has proposed reserving one 20 MHz (Block C) and one 10 MHz (Block D) for bidders representing small businesses, rural telephone companies and minority and female-owned businesses.¹⁴⁹ Conducting separate auctions for each of these two blocks would be a sensible way to administer the set asides given the technically significant difference in the frequencies of each block.¹⁵⁰ Moreover, to the extent that the FCC itself has raised the possibility of legal and constitutional concerns surrounding the viability of the set-asides for designated entities,¹⁵¹ running these auctions separately will minimize the possibility that any legal challenges or defects will affect the process of auctioning the other PCS licenses. The FCC has been encouraged to adopt a variety of measures to promote participation of the designated entities in the auctions. Such measures include installment payment plans with interest for the set-aside

bid and assemble a winning national network that way as compared to bidding MTA-by-MTA. Alternatively, bidders who do not plan to bid for every MTA can nevertheless calculate the percentage value above the open bids they intend to place that they would be willing to pay to obtain a national license. Once bidding begins for the MTA auctions, much more information will be revealed about the value of PCS licenses. Because national bidders will have bid a percentage premium rather than a fixed price, they will be able to retain control over their national bids through their regional bidding, and will no longer have to bid conservatively to avoid the winner's curse. *Id.* National bidders who do not wish to participate in any regional bidding or those who wish to bid only on a few MTAs obviously cannot submit a percentage premium as their sealed bid. In contrast, bidders may not wish to participate in each and every region, but may participate in enough that a premium percentage of bids they made might be a winning bid. Such parties might be willing to take regional licenses if they could get them in this way even though they would not bid for them individually. For these reasons, national bidders should be given the option of submitting either a specific dollar amount price or a percentage premium.

¹⁴⁹ See OBRA, *supra* note 1, § 6002, 107 Stat. at 388-89 (to be codified at 47 U.S.C. § 309(j)(3)(C), (j)(4)(D)).

¹⁵⁰ The 20 MHz allocation is paired in the "lower" band at 1880-1890/1960-1970 MHz, while the proposed 10 MHz is paired in the "upper" band at 2130-2135/2180-2185 MHz.

¹⁵¹ See Auction NPRM, *supra* note 11, at paras. 72-74. See also PCS Order, *supra* note 14, dissenting Statement of Commissioner Andrew C. Barrett at 4, where Commissioner Barrett stated that "set-asides for small businesses may or may not be contemplated by Public Law 103-66, and will require further, significant debate on the record at the FCC before they can be established. I do not expect that this debate will occur without controversy."

blocks, the use of tax certificates as proposed by the FCC's Small Business Advisory Committee, as well as encouraging designated entities to partner with established entities in the wireless and wired industries to form PCS consortium.¹⁵²

Although section 309(j) requires the FCC to impose "such transfer disclosures and anti-trafficking requirements as may be necessary to prevent unjust enrichment," this concern is greatly reduced in the auction (as opposed to the lottery) context.¹⁵³ As noted in the legislative history to the Budget Act, "[i]n a system of open competitive bidding, trafficking in licenses should be minimal, since the winning bidder will have paid a market price for the license."¹⁵⁴ In an unlimited bidding process, resale of the license will involve no unjust enrichment. Accordingly, there is little reason to impose restrictions on the subsequent transferability of PCS licenses.

The one exception may be the proposed set-asides for designated entities. Restricting bidder participation to designated certain groups creates a risk that the auction will not realize the full market value of the licenses, the auction winners could be able to "flip" their licenses for a profit in the aftermarket instead of building out and operating PCS systems in the manner that Congress intended. The potential disparity between auction price and market value could also create incentives for those uninterested in developing PCS to manipulate the auction process through designated entities. To address this possibility the FCC proposed imposing upon designated entities a system of financial disincentives on early transfer restrictions.¹⁵⁵ Such restrictions, while preventing speculative gain, could compound difficulties already experienced by the designated entities in attracting necessary capital. Permitting the free transferability of PCS licenses among all designated entities, such that any "set-aside" PCS licenses will remain in the hands of those intended to receive preference while providing adequate safeguard against unacceptable trafficking, permits the designated entities some flexibility in obtaining needed financing.

¹⁵² See PCS Order, *supra* note 14, app. c at 18-19 (Small Business Advisory Committee Report); Comments of Bell Atlantic Personal Communications, Inc., Implementation of Section 309(j) of the Communications Act Competitive Bidding, PP Docket No. 93-253, Nov. 10, 1993, at 15-16 (on file with the FCC, Washington, D.C.).

¹⁵³ OBRA, *supra* note 1, § 6002, 107 Stat. at 389 (to be codified at 47 U.S.C. § 309(j)(4)(E)).

¹⁵⁴ BUDGET REPORT, *supra* note 1, at 257.

¹⁵⁵ Auction NPRM, *supra* note 11, at paras. 84-85.

With respect to performance requirements for PCS, the FCC has already specified a time table for PCS license holders to "build out" their systems and serve increasing numbers of subscribers.¹⁵⁶ As long as the FCC permits the free transfer of PCS licenses, and the auctions result in fair market prices for the licenses, spectrum licenses are unlikely to be "warehoused" by PCS licensees. As the FCC observes, the cost of warehousing spectrum is the value of foregone uses that could be made of the license (either by the licensee or by others to whom the license could be sold). Licenses purchased at auctions should have a purchase price which deters warehousing.

To the extent that many of the FCC's proposals involve the use of open auctions, the FCC has also recognized that this system of bidding "may be more subject to manipulation and collusion."¹⁵⁷ The FCC therefore has requested comment on ways in which it can prevent such behavior.

As Nalebuff and Bulow observe, the susceptibility of open English auctions to manipulative bidding allows a bidding ring to rapidly escalate bids and with the initial winner defaulting to a bidder partner who placed the second highest, but artificially low bid.¹⁵⁸ For example, if Bidder 1 offers \$1 million and then Bidder 2 offers \$50 million, those who might have submitted bids falling in the interval between those of Bidder 1 and Bidder 2 never has the opportunity to do so. In the face of Bidder 1's default, the FCC has suggested that it would re-run the auction rather than award the license to Bidder 2,¹⁵⁹ which would be an extremely undesirable and costly result.

There are several ways in which the FCC can prevent the escalation and default scenario in an open auction. First, the FCC could accept "losing" bids after the auction ends. In the event that an artificially inflated winner forfeits, the FCC can then award the license to the next highest bidder, taking into account all of the bids made during the auction as well as the backup bids. This effectively prevents such high bids to be placed in the first instance, but at a minimum will prevent the necessity of having to re-run the auction because collusion can no longer create an artificially low losing bid—other bidders will

¹⁵⁶ See PCS Order, *supra* note 14, at 54-55.

¹⁵⁷ Auction NPRM, *supra* note 11, at para. 38.

¹⁵⁸ Nalebuff & Bulow, *supra* note 144, at 10-12.

¹⁵⁹ *Id.*

have been given the opportunity to "fill in" the interval.¹⁶⁰

A second solution to this problem is to allow no wild "jumps" in bidding by mandating that bidders not be allowed to increase their bids beyond certain pre-specified increments (i.e., bidders can only raise their bids by \$100,000 increments). This, too, would prevent a party from preemptive bidding.¹⁶¹

A third solution to the manipulation and default problem would be for the FCC to adopt a variation of the open English auction called the "Japanese auction." Here once bidders start bidding by raising hands or pushing buttons, they must keep bidding while the auctioneer raises the bidding by pre-specified increments or drop out for good. Bidders drop out as the price ascends beyond what they are willing to pay, and they may not re-enter the bidding once they drop out. Bidding escalates until only the winning bidders remain.

As Nalebuff and Bulow explain, a Japanese auction run in this fashion not only helps prevent parties from blocking others from bidding by rapidly escalating the bids, but has the added advantage of reducing the winner's curse.¹⁶² This is because bidders have more information than they do in any open English auction about how many bidders remain in the competition. Although theoretical auction literature predicts that prices will go slightly higher in a Japanese auction (with more information, there is less concern about the winner's curse, and more incentive to bid aggressively), the structure of the auctions eliminates the possibility of someone jumping in with a wildly irrational bid that could be more likely to yield a default.¹⁶³

While there are many steps the FCC can take to control the auction process, the FCC has far less control over unscrupulous marketing of get rich schemes to the public. Perversely, the stricter the requirements for participating in auctions, the more complicated it is for individual small investors to participate, and the easier it is for promoters of application and auction services to convince unwary investors that they provide a necessary and indispensable service in helping the individual navigate the regulatory requirements. In reality, if the cellular and wireless experience are any indication, these so-called services often have little concern about whether their license applica-

¹⁶⁰ *Id.* This is a desirable safeguard because the FCC will likely never have to use it once bidders have been apprised that the mechanism is in place. *Id.* at 11 n.11.

¹⁶¹ *Id.* at 11.

¹⁶² *Id.* at 11-12.

¹⁶³ *Id.*

tions comply with regulatory requirements or are even facially defective. Their primary objective is separating individuals from their wallets.

Given the large amounts of money likely to be involved in the upcoming auctions and in light of the elevated rhetoric about the market value of the licenses, it is a virtual certainty that efforts will soon begin to raise money from small investors with unrealistic promises of high profits and low risk. Appropriate law enforcement authorities would be well advised to anticipate these activities and to take precautions such as issuing investor alerts and monitoring promotions that soon will appear in television and printed advertisements. Industry groups can be relied on to cooperate with law enforcement and regulators to protect investors from fraud.¹⁶⁴

A final word is warranted about the inflated expectations for the revenue raising potential of the upcoming auctions. A careful reading of all of the congressional budget analysis on this subject reveals just how tenuous are even the best available revenue projections.¹⁶⁵ In plain words, no one really knows until the bidding starts what spectrum licenses will bring at auctions. In some instances, bidding for MTAs in densely populated major markets such as California, New York and Chicago, particular businesses may place such a premium on winning a license to compliment their existing market business interests that bids could dramatically exceed expectations. More generally, however, bidders will be constrained by the very substantial other costs connected with building out an ill-defined and interested PCS business. As this writing, it is difficult to be more precise than acknowledging that auctions will not, in themselves, eliminate the federal deficit, although they have reasonable promise of raising significant revenue.

VIII. Conclusion

The new spectrum auction law evokes one of the biggest changes in the history of United States regulation of the airwaves since the sinking of the Titanic led the federal government to seize

¹⁶⁴ See, e.g., Memorandum from Robert L. Schmidt, Wireless Cable Ass'n Int'l Inc., Policy Statement on Investment Proposal (Nov. 4, 1993) (on file with the *Seton Hall Legislative Journal*).

¹⁶⁵ CBO emphasizes that its estimates are highly uncertain. See CBO STUDY, *supra* note 3, at 22, 33-38. Estimates are based on assumptions that may not reflect current allocation rules or auction methodology. *Id.* at i-xiii, 39-46.

control of the airwaves.¹⁶⁶ It is probable that the success or failure of the FCC in this decade, as the country heads into the 21st Century expectant of an advanced, affordable network of communications and information services, will be judged largely by what is accomplished in fulfilling the high expectations for spectrum auctions. The record of the FCC in the array of regulatory issues on its agenda such as regulating cable rates, promoting competition in the local telephone market and other such important matters could be over-shadowed if the new spectrum auction law is implemented in a way that raises significant revenues for the deficit ridden federal treasury, streamlines and enhances the fairness of the FCC's assignment process, and most of all, serves to propel rather than impede the availability to the public of emerging new technologies and related services.

In this regard, the FCC is in a difficult and somewhat precarious position. The expectations for the revenue potential of the auctions may be greatly overstated. The recent PCS allotment decisions are unlikely to help. The decision not to offer nationwide licenses is a prime example. A reality check is in order. The Congressional Budget Office freely concedes how problematic it is to project the auction revenues and many of the assumptions in its analysis are inconsistent with the FCC's allotments and tentative auction procedure.¹⁶⁷ It is appropriate to refine and obtain more realistic projections of what revenues should be, recognizing that the dizzying pace of market developments such as AT&T's acquisition of McCaw, the recent spate of telco-cable deals, and the BT acquisition of MCI, could have a dramatic external pressure on auction prices either way.

Similarly, expectations are over-inflated for the prospects of auctions to curtail shams, chicanery and speculation. The hustlers

¹⁶⁶ Georgetown University Law Professor Thomas G. Krattenmaker explains the causal link between the sinking of the Titanic and the passage of the Radio Act of 1912. In brief, the congressional investigation into the disaster revealed that the Titanic's distress calls had been received by the Marconi station in Newfoundland. Amateur radio interference along the east coast prevented the signals from reaching potential rescuers in the vicinity of the Titanic. The Titanic incident helped to propel efforts to obtain government control of the airwaves. The history is vividly portrayed in greater detail in THOMAS G. KRATTENMAKER & LUCAS A. POWE, JR., *REGULATING BROADCAST PROGRAMMING* (forthcoming 1994) (draft on file with Thomas G. Krattenmaker, Professor, Georgetown Univ. Law Center).

¹⁶⁷ CBO STUDY, *supra* note 3, at ix-xiii, 33-38, 43-47.

are hard to stop. They can't help themselves when the stakes are as high, for example, as they are in the PCS market. The FCC has been unfairly pilloried in the past for actions that are often beyond their control. And auctions are not golden bullets that will kill all swindles. Fraud is a matter for appropriate law enforcement and consumer protection authorities and they would be well advised to be on alert prior to the auctions, rather than to try to respond after the fact as in the cellular and wireless cable experiences. Moreover, the FCC's ability to restrain unfair windfalls and trafficking on one hand and warehousing of licenses on the other are constrained by the economic need for an efficient secondary market. Restrictions on post-auction transactions will diminish the value of the licenses and consequently auction revenues as well. Such restrictions could also frustrate rapid development of new technologies.

There will be less of an excuse if the auctions become an administrative quagmire rather than a marked improvement over comparative hearings and lotteries. There really is sufficient time to get it right and the FCC should and, under the statute, can afford to pay outside consultants to get this procedure right. After all, if an auction can be briskly run at an estate sale of odd lots of baubles and some treasures, and all involved can leave feeling the result has been fair and a good measure of value, then the FCC should be able to conduct auctions of a package of infinitely more fungible goods—different spectrum lots.

While PCS will arrive, the questions of when and what have yet to be answered. PCS has been so hyped that it is inevitable that expectations will not be fully really realized in the immediate future. If there are problems with the FCC auctions, these in turn might be blamed for almost inevitable snags in the roll-out of PCS even if the delay is, in reality, unrelated to the auctions.

There is then the potential for the FCC to take a very big fall and the stage is littered with banana peels. Still there is also reason to believe that the FCC is up to the challenge. For six decades, the FCC has not raised any revenue from licensing richly valuable spectrum. Even if the auctions begin to generate very substantial sums, which do not meet Congressional estimates, this will be a major positive change—and should be perceived as such. There is also good reason to believe that many problems associated with comparative hearings and lotteries can be avoided. The Department of

Justice, the Federal Trade Commission and the National Association of State Attorneys General have become active and should be able to take steps that will protect investors and consumers. Administratively, it will not take too much progress to create and manage an assignment process that is a marked improvement over the past, a process that encourages investment, innovation and business growth.

Any concept of the nation's future communications infrastructure includes a vast array of wireless technologies as a major part of the network. The opportunities are great, the obstacles are real and the need of the United States economy and the public for jobs and services are acute. The success of spectrum auctions will be a critical step in assuming that the telecommunications sector achieves its full potential.