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# The Unfinished Task of Spectrum Policy Reform

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In a landmark event worthy of the sixtieth anniversary of the Communications Act, the Federal Communications Commission (FCC or Commission) in 1994 began using competitive bidding to assign certain radio frequency spectrum licenses. As a longtime advocate of spectrum auctions, I was heartened by this development stemming from the Omnibus Budget Reconciliation Act of 1993, which authorized the FCC to use auctions. As the National Telecommunications and Information Administration (NTIA) concluded in a report issued during my tenure there, "greater reliance on market principles in distributing spectrum, particularly in the assignment process, [is] a superior way to apportion this scarce resource among competing and often incompatible users."[\(note 1\)](#)

Based on the outcome of the initial auctions, the FCC deserves praise for developing a successful auction process. The Commission's competitive bidding rules ensure that the winning bids reflect the value of the licenses being auctioned and that the licenses are assigned to those who value them most. The introduction of spectrum auctions is an important step toward applying market principles in the management of the U.S. spectrum resource. But as NTIA noted in the report, *U.S. Spectrum Management Policy: An Agenda for the Future*, another critical set of spectrum management policy reforms also is needed to ensure the efficient use of spectrum: greater flexibility must be allowed in the offering of services within the existing spectrum block allocation scheme.[\(note 2\)](#) Flexibility in spectrum use and auctions is an equally crucial component in ensuring that spectrum is used in a manner that maximizes consumer welfare.

My purpose in this article is to sound a warning. There is a very real risk that single-minded focus on the first reform—the introduction of auctions—could undermine achievement of the second objective—increased flexibility in spectrum use. The ongoing auction process at the FCC could create new institutional forces, both within the Commission and in the telecommunications industry, that are opposed to granting substantial new flexibility within previously allocated spectrum blocks.

The prospect of generating large amounts of revenue from auctioning newly allocated spectrum blocks may create unintended incentives for the FCC to go slowly in granting greater flexibility in existing blocks. When the FCC does move to allow increased flexibility, auction winners will cry injustice if the value of their licenses falls as a result. But the FCC should not be in the business of creating spectrum scarcity through unnecessary or obsolete regulatory restrictions. By implementing auctions and flexibility in spectrum use with equal ardor, the FCC will ensure that all spectrum is put to the uses that are most valued.

When the NTIA Spectrum Report was published in 1991, the odds that its recommendation concerning spectrum auctions would be adopted did not look favorable. A *Newsweek* columnist put the odds at "less than 50-50."[\(note 3\)](#) The FCC lacked authority under the Communications Act of 1934 (Communications Act) as amended to use spectrum auctions instead of lotteries or comparative hearings to select licensees, and key members of the Democratic majorities in both houses of Congress remained implacably opposed to amending the Act to grant the FCC such authority. In March 1991, one month after the Spectrum Report was published, Congressman Edward J. Markey (D-Mass.), then Chairman of the House Telecommunications Subcommittee, restated his opposition to competitive bidding and his preference for comparative hearings to select licensees. He referred to the auction concept as my "pet rock."[\(note 4\)](#)

But by mid-1993, the budget deficit imperatives facing the new Clinton administration and Congress, and possibly a public policy conversion, had prompted a change of heart. Seeking additional revenues needed to meet the deficit targets of the 1993 budget deal, Congress amended the Communications Act, granting the FCC authority to use auctions.[\(note 5\)](#) The administration estimated at the time that auctions for personal communications service licenses alone would generate about \$10 billion in revenues for the U.S. Treasury. Although Congress's approval of auctions was driven substantially by this revenue imperative, the amendments to the Communications Act sought to insulate the FCC from relying on a revenue-raising rationale in managing spectrum assigned through auctions.[\(note 6\)](#) Acting on its newfound authority, the FCC adopted generic and service-specific auction rules in its general docket 93-253

proceeding, and in July 1994, the Commission conducted the first ever spectrum auctions in the United States.

In the area of spectrum flexibility, the NTIA Spectrum Report focused on ways to eliminate inefficiencies caused by the rigid service distinctions in the existing spectrum block allocation regime. While acknowledging the benefits of the block allocation system, the report suggested ways to break down arbitrary and inefficient boundaries among spectrum users. Specifically, it recommended that:

Service definitions be made more flexible, in order to accommodate a wider range of potential uses within a given block of frequencies;

The FCC reduce the number of spectrum blocks that are subdivided or "suballocated" among specific groups of users based on those users' identity or purpose. Suballocations create demand inefficiencies by artificially excluding similar services from one another's spectrum, the report found;

Innovation in the various radio-based services be promoted by allowing greater "technical flexibility" through the use of adaptable technical standards for services within a frequency block; and

"User flexibility" be promoted by granting licensees more discretion to determine the most valuable use for assigned spectrum and the right to use spectrum flexibly.

As NTIA noted in the Spectrum Report, the FCC had already taken initiatives in several services to allow greater user flexibility.[\(note 7\)](#) In the mid-1970s, for instance, when the FCC established the Specialized Mobile Radio Service (SMRS) in the 800-900 MHz bands, it defined SMRS to serve a wide range of users.[\(note 8\)](#) This contrasted with the approach taken before 1974 in the Private Land Mobile Radio Service (PLMRS), where most allocations were made for specific categories of users, such as police, taxicab, and business radio services. In 1984, the Commission acted to eliminate artificial service barriers in the spectrum bands allocated for public land mobile services other than cellular radio by eliminating the separate allocations for wireline and nonwireline common carriers.[\(note 9\)](#) This change allowed either type of common carrier to use those spectrum bands.

In another action, the FCC in 1990 granted in part a waiver allowing FleetCall, Inc. (now Nextel Corp.) to develop its digital "Enhanced Specialized Mobile Radio" system, which Nextel is using to offer commercial mobile services similar to cellular telephony.[\(note 10\)](#) The Spectrum Report recommended that a more comprehensive approach be adopted to extend the benefits of increased flexibility across the regulated spectrum bands.

In the almost four years since the Spectrum Report was released, the Commission has continued to take specific steps to allow greater flexibility in spectrum use, although its approach has not been as comprehensive as one might have hoped. In 1991, for instance, the FCC began the private radio docket 91-170 proceeding to identify ways to "refarm" or reapportion PLMRS frequencies below 470 MHz, with the goal of providing for their more efficient use. The FCC later issued a rulemaking notice proposing specific changes that would allow greater flexibility in the PLMRS frequencies, although it has yet to adopt an order implementing the proposed rule changes.

The FCC should replicate the process undertaken in the PLMRS spectrum refarming proceeding by identifying opportunities to allow greater spectrum use flexibility in all of its existing frequency allocations. Efficient use of the spectrum will be maximized only if licensees are given the widest possible latitude in determining which services to offer within their assigned frequencies. In principle, the flexibility granted to licensees should be limited only to the extent necessary to prevent radio frequency signal interference with other users.

To the extent possible, a key objective should be to eliminate suballocations within frequency blocks and otherwise aggregate spectrum into larger blocks. The Spectrum Report noted the development of broadband radio transmission technologies and the opportunities they afford to achieve greater efficiency in the use of spectrum through sharing.[\(note 11\)](#) Technological advances have continued in these broadband transmission systems, including code division multiple access, and in frequency agile radio receivers. These advances have made the use of spread-spectrum transmission techniques more cost effective.[\(note 12\)](#) The spectrum efficiency gains achieved by these systems can be exploited fully only if they can be used to transmit signals over a wide band of frequencies. This fact argues strongly in favor of allocating new spectrum for radio services in relatively large blocks and, where possible, aggregating

previously allocated spectrum into larger blocks.

Generally, rules the FCC has adopted or proposed in the 1990s to govern the provision of services in newly allocated spectrum blocks are model implementations of the flexibility principles I am advocating. In allocating 120 MHz of spectrum for personal communications services (PCS), the FCC deliberately adopted a broad definition of the service in order to give future licensees the maximum possible flexibility in developing new mobile communications services.[\(note 13\)](#)

Similarly, in the FCC's rulemaking proposal to make 18 Gigahertz of spectrum in the "millimeter wave" frequency bands above 40 GHz available for the introduction and development of new commercial communications services, allowing flexibility appears to be a priority for the Commission.[\(note 14\)](#) Under the proposed rules, the eventual licensees in those frequencies would have wide latitude in selecting the types of services to offer via millimeter wave technologies. Also, given the interference characteristics of radio signals transmitted above 40 GHz, the Commission proposed to allow additional flexibility by permitting the use of unlicensed radio devices in 8.5 GHz of the proposed spectrum allocation. These proposals are consistent with the Spectrum Report's recommendation that the FCC experiment with greater user flexibility in frequencies above 10 GHz that are not heavily used.[\(note 15\)](#)

The PCS rules and the proposed rules to govern millimeter wave communications services can and should serve as models for increasing flexibility in previously allocated spectrum bands. The most significant fact about the PCS and millimeter wave rules, however, is that they will apply to services for which the licenses will be auctioned. It is no coincidence that the FCC incorporated substantial flexibility into the rules for these services. The greater the flexibility allowed in the use of the spectrum, the higher the value of the spectrum to potential licensees. Higher-value licenses will fetch higher prices at auction.

Conversely, however, granting greater flexibility to spectrum licensees in other services will reduce the value of licenses sold at auction, particularly if the flexibility is sufficient to allow a licensee to offer services that compete with the auction winner's offerings. Given these trade-offs, I see a danger that the introduction of auctions to assign licenses in the PCS, millimeter wave, and other newly allocated spectrum blocks could have the unintended consequence of hindering the extension of flexibility in previously allocated spectrum blocks.

First, increased flexibility in other services is inimical to the interests of the successful bidders in the auctions. Having paid large sums of money to win the right to offer mobile services, for instance, the new PCS licensees are likely to oppose proposals to allow the provision of similar services in spectrum bands previously limited to nonmobile applications. The PCS licensees will argue that it is unfair to grant existing licensees in other services the right, free of charge, to compete with PCS. Auction winners also will argue that increased flexibility in other services will devalue their licenses. Indeed, such arguments were made in the 103d Congress by parties opposed to legislative provisions that would have allowed broadcasters to use new technologies to provide additional radio-based services over their broadcast frequencies. In summary, the auction winners likely will form a significant interest group opposed to allowing increased flexibility in spectrum use.

Second, and of greater concern to me, the auction may create perverse incentives for the FCC itself to slow or halt progress in granting flexibility within existing spectrum allocations. Despite the statutory prohibition that bars the FCC from taking potential auction revenues into account in its allocation decisions, political realities are likely to intrude. Implicitly, the "success" of the auctions is being judged, in part, by how much money they raise for the U.S. Treasury.

The value of the licenses assigned through competitive bidding, and hence the prices bidders are willing to pay, are determined by several factors, including the total amount of spectrum available for use in providing comparable services. License values also will be affected by perceptions of the extent to which the FCC is committed to allowing flexibility in the use of other parts of the spectrum. Just as the substantial flexibility allowed under the PCS rules increases the value of PCS licenses to prospective bidders, increased flexibility in other services will depress the value of PCS licenses. Unless it is checked, the FCC's instinct may be to seek to maximize revenues from the auctions, rather than overall consumer welfare.

What should be done? The FCC's spectrum management duty is to ensure the efficient use of the U.S. spectrum resource. Allowing greater flexibility in spectrum use is consistent with this responsibility. Thus, even as the auctions

unfold, the FCC should give clear and consistent signals of its commitment to spectrum use flexibility. It can do so in many ways, such as by completing the long-pending private radio docket 91-170, the PLMRS spectrum refarming proceeding.

In order to value the spectrum being offered at the auctions, potential bidders have the right and the need to know the FCC's intentions regarding spectrum use flexibility. The FCC should meet their needs by committing itself to the systematic implementation of the flexibility recommendations contained in the NTIA Spectrum Report.

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## Notes

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1. National Telecomm. and Info. Admin., U.S. Dep't of Commerce, Special Publication No. 91-23, U.S. Spectrum Management Policy: An Agenda for the Future 1 (1991) [hereinafter Spectrum Report]. [Return to text](#)
2. *Id.* [Return to text](#)
3. Robert J. Samuelson, *The Quiet Giveaway*, Newsweek, May 13, 1991, at 52, 52. [Return to text](#)
4. *A Bill to Establish Procedures to Improve the Allocation and Assignment to the Electromagnetic Spectrum: Hearings on H.R. 531 Before the Subcomm. on Telecommunications and Finance of the House Comm. on Energy and Commerce*, 102d Cong., 1st Sess., 87 (1991) (statement of Congressman Edward J. Markey (D-Mass.)). [Return to text](#)
5. 47 U.S.C.A. 308, 309 (West Supp. 1994). [Return to text](#)
6. 47 U.S.C.A. 309(j)(7) (West Supp. 1994) (prohibiting Commission from basing allocation decisions on revenue expectations, and limiting Commission in basing design of auction procedures on revenue expectations). [Return to text](#)
7. Spectrum Report, *supra* note 1, at 60; Douglas W. Webbink, *Radio Licenses and Frequency Spectrum Use Property Rights*, Comm. and the Law, June 1987, at 3, 3. [Return to text](#)
8. *In re Future Use of the Frequency Band 806-960 MHz, Second Report and Order*, 46 F.C.C.2d 752, para. 29-43 (1974), *Memorandum Opinion and Order*, 51 F.C.C.2d 945, para. 2 (1975); *see also* National Ass'n of Regulatory Util. Commissioners v. FCC, 525 F.2d 630, 642 (D.C. Cir.), *cert. denied sub. nom.* National Ass'n of Radiotelephone Sys. v. FCC, 425 U.S. 942 (1976). [Return to text](#)
9. *In re Elimination of the Separate Frequency Allocation Structure in Public Land Mobile Services, Report and Order on Reconsideration*, 57 Rad. Reg. 2d (P & F) 547, para. 1 (1984). [Return to text](#)
10. *In re Request of FleetCall, Inc., for Waiver and Relief to Permit Creation of Enhanced Specialized Mobile Radio Systems in Six Markets, Memorandum Opinion and Order*, 6 FCC Rcd. 1533, *reconsideration denied*, 6 FCC Rcd. 6989 (1991). [Return to text](#)
11. Spectrum Report, *supra* note 1, at 1, 62. [Return to text](#)
12. *See* George Gilder, *Auctioning the Airways*, Forbes, Apr. 11, 1994, at 99, 100; George Gilder, *The New Rule of*

*Wireless*, Forbes, Mar. 29, 1993, at 96, 96; George Gilder, *What Spectrum Shortage?*, Forbes, May 27, 1991, at 324, 324. [Return to text](#)

13. *In re* Amendment of Commission's Rules to Establish New Narrowband Personal Communicating Services, *First Report and Order*, 8 FCC Rcd. 7162, 7163 (1993). [Return to text](#)
14. New Rules Proposed to Increase the Amount of Spectrum Available for Commercial Use, *Notice of Proposed Rulemaking* in ET Dkt. No. 94-124 (Oct. 20, 1994). [Return to text](#)
15. Spectrum Report, *supra* note 1, at 7. [Return to text](#)