

TECHNOLOGY POLICY INSTITUTE

▫ Studying the Global Information Economy ▫

March 20, 2014

Office of Science and Technology Policy
Eisenhower Executive Office Building
1650 Pennsylvania Ave, NW
Washington, DC 20504
Attn: Tom Power

Re: Agency Incentives—Spectrum

These comments are in response to the Office of Science and Technology’s Notice of Request for Information of February 14, 2014. OSTP is requesting input “regarding market-based or other approaches that could give departments and agencies greater incentive to share or relinquish spectrum, while protecting the mission capabilities of existing and future systems that rely on spectrum use.”

These comments are drawn from our earlier Technology Policy Institute paper on options for increasing spectrum for broadband.¹ Although major elements of our proposal have been summarized in the Institute for Defense Analysis’s Science and Technology Policy Institute review commissioned by OSTP,² it seems useful to supplement that review with a more complete discussion as presented in our paper.

These comments are primarily responsive to Question A:

(A) With respect to spectrum user fees, what are the lessons learned from the United Kingdom’s experience as well as any comparable efforts in other countries? To the extent that Federal agencies seek spectrum assignments based on mission-based needs, how would the imposition of user fees affect agency demand for spectrum? How would a system of spectrum user fees operate in the context of the traditional Federal appropriations process?

¹ Thomas M. Lenard, Lawrence J. White, and James L. Riso, “Increasing Spectrum for Broadband: What are the Options,” February 2010, available at http://www.techpolicyinstitute.org/files/increasing_spectrum_for_broadband1.pdf. Lenard and White are the authors of these submitted comments.

² <https://www.ida.org/upload/stpi/pdfs/p5102final.pdf>.

The essence of our proposal consists of two elements:

1. The establishment of a Government Spectrum Ownership Corporation (GSOC) that would own government-used spectrum and lease it to agencies at market-based rates, much in the same way as the General Services Administration (GSA) does with real estate.
2. Making spectrum allocation decisions a more integral part of the annual Office of Management and Budget (OMB) budgeting process.

These proposals are discussed in more detail below.

The Problem: Government Spectrum Use and Opportunity Costs

There is a widespread consensus that spectrum in government hands is likely not being used efficiently and that some—perhaps a significant amount—could be reallocated to more efficient private uses.³ However, efforts to determine the extent of this “surplus” and then to devise a method of freeing it from government hands confront a dilemma: the absence of a market mechanism, or even a budgetary mechanism, that could encourage this reallocation.

First, government agencies do not operate in a market context, and profit maximization is not their goal. Consequently, the “opportunity cost” paradigm that naturally applies in a market-oriented context is often neglected within government agencies.

Second, unlike most of the inputs that are used by a government agency—e.g., personnel, materials, vehicles and equipment, rental real estate—which are subject to annual budgetary allocations, the spectrum that is under a government agency’s control was received from the Department of Commerce and now is effectively “owned” by the government agency. From the agency’s perspective (i.e., the perspective of the agency’s senior management), the spectrum is a free resource, for which it pays no rent or upkeep costs. The perceived opportunity costs of spectrum are small at best, since there is no market for this spectrum.

Further, even if there were an active market for government-held spectrum (and hence readily apparent opportunity costs), and even if a government agency were interested in increasing the resources that are at its disposal, the agency could nevertheless be largely indifferent to those opportunity costs for the following reason: If an agency were to sell its spectrum, the agency’s net

³ This is implied by the broadly popular Radio Spectrum Inventory Act, which is premised on the ability to “promote the efficient use” of spectrum. Bykowsky and Marcus (2002) note that some observers believe that the public sector employs too much spectrum to meet its ends; e.g., in 1996 former Senator Larry Pressler recommended that the federal government reallocate 25% of its holdings below 5 GHz (see <https://www.policyarchive.org/bitstream/handle/10207/8335/bg-1085.pdf>, p. 8). In addition, Cave and Morris (2005), and Carter and Marcus (2009) illustrate why the nature of government users leads to the expectation that they will not use spectrum efficiently.

gain might be far smaller than the selling price—or even zero. That result could occur due to budget reallocations that would net out the agency’s gain. From an agency’s perspective, a better strategy might well be to make some use of the spectrum under its control (even if that use is of low value, as judged by opportunity costs), or even to let the resource lie idle and wait for some future use, since doing so is costless.

As an analogy, one might think of real estate that, at some time in the past, had somehow come under a government agency’s ownership and control. If that real estate has little or no upkeep costs, then from the agency’s perspective it is a free resource. The opportunity costs of the real estate may be of little interest to the agency, for the budgetary recoupment reasons mentioned above. The agency may put the real estate to low-value uses, or even keep it idle. When challenged by higher governmental authority, an agency’s narrow interests will be best served by claiming that the real estate is vital to the agency’s current and future functions.

There are limits, of course, to the real estate analogy. As compared with spectrum, the opportunity costs of an agency’s real estate holdings are likely to be much clearer. Physical inspection of the property to determine whether the agency is making reasonable use of it (in light of its opportunity costs) is surely easier as well.

Accordingly, the task of determining the extent of surplus spectrum in government hands and “liberating” it for reallocation to wireless broadband use will be even more difficult than if the resource being considered were real estate. Further, implicit in this discussion is the inability to bring the power of the profit motive as a force for assisting in the reallocation.

As a consequence, the effectiveness of market or quasi-market mechanisms in identifying and freeing up government spectrum might be limited—at least in the short run. The experiences of other countries support this pessimism. Although many governments give some lip service to improving their allocation of spectrum, only the United Kingdom appears actually to have instituted a system of “administered incentive pricing” (AIP), which has provided direct pricing incentives for some government agencies to use spectrum more efficiently. But the United Kingdom began developing its AIP policies over a decade ago, and AIP appears to have induced only marginal results during that time.⁴

This general skepticism of the ability of market-based efforts to identify and free up existing spectrum that is in government hands does not extend to the use of market-based methods when agencies seek additional spectrum. In such instances, agencies should be required to pay the opportunity costs for their spectrum use. Consistent with this approach, agencies should also be

⁴ See, for example, Cave and Morris (2005); HM Treasury (2005); Ofcom (2006, 2007); Cave et al. (2007); UK Spectrum Strategy Committee (2009); and Carter and Marcus (2009).

encouraged to purchase *communications services* rather than the spectrum itself, since such purchases would likely mean greater economizing on the use of the spectrum.

Short-Run Recommendations

Administrative mechanisms hold the greatest promise, at least for the short run:

1. NTIA should prepare an annual report that presents data on the government's spectrum inventory, the opportunity costs of the various bands, and the likely sources of surplus spectrum. The data on surplus positions should take into account changes in usage and technology.
2. OMB, as part of its annual budget process, should require any U.S. government agency that has a spectrum allocation to provide an annual accounting of that agency's use of that spectrum. OMB should have a heightened awareness of spectrum as a scarce resource (the NTIA estimations of opportunity costs would help in this awareness) and should routinely search for under-utilized spectrum that could be auctioned by the FCC.⁵ In essence, OMB should become a skeptical auditor of government-held spectrum, its use, and its opportunity costs.
3. OMB should encourage (and provide the funding for) agencies to create employee incentive plans that would provide rewards (including cash awards) to agency employees for devising ways for their agency to economize on its use of spectrum. The spirit of these awards would be consistent with other government awards that encourage employees to take special efforts to utilize resources efficiently and to provide outstanding performance.

Long-Run Recommendation: A Government Spectrum Ownership Corporation

Pricing mechanisms for allocating existing government-held spectrum are likely to be ineffective for the short run, but the federal government should pursue AIP mechanisms over the longer run.

One simple model for exploration in this direction is based on the market-oriented rental rates that agencies are charged when they lease space in buildings that are owned (or leased) by the GSA. The GSA's Federal Buildings Fund (FBF) provides recognition of the opportunity costs of those buildings.⁶ The government agencies make rental payments to GSA, which can use the money to acquire additional property if necessary. These rental payments provide an incentive for government agencies to economize on space.

⁵ OMB should also be encouraging agencies to share the use of under-utilized spectrum, again encouraging greater efficiency.

⁶ As another analogy, government agencies pay postal rates to the U.S. Postal Service (USPS) when the agencies make hard-copy mailings through the USPS.

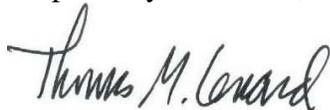
Suppose, then, that all U.S. government-used spectrum were “owned” by a central government agency and leased to government users. In this case, the idea that the spectrum-using agencies should pay rental fees to—and that those rental fees should represent something approximating the opportunity costs of the spectrum holdings—would not be much different from the practice that government agencies pay rent for their use of the GSA’s buildings.

Accordingly, the federal government should create a “Government Spectrum Ownership Corporation,” or GSOC. The GSOC would take possession of all government-held spectrum, with the existing user agencies granted annual leases (that are perpetually renewable at the option of the agency) at annual rental rates that are determined by the GSOC, based on its estimates of the relevant opportunity costs. The GSOC would forward its net proceeds to the Treasury. In the first year OMB would add to each using agency’s budget a sum that is just equal to the rental payment, so the first year’s financial transactions would be a “wash” for all agencies (and for the Treasury).

In subsequent years the agencies’ budgets would start from the base that included the initial allocations and rental charges; but the GSOC would change the rental rates in light of updated information about opportunity costs. The agencies and OMB would then negotiate (as they do now) over resource usage and budget allocations; but, although the agency’s budget would take into account its spectrum rental costs, there need not (and should not) be a one-to-one adjustment in an agency’s budget allocation in relation to any changes in its spectrum rental costs. Instead, the agency’s budget allocation should reflect its overall resource needs in light of its overall mission and operations. Thus, this “normal” budgetary negotiation process would recognize the opportunity costs of spectrum in the same ways that the opportunity costs of an agency’s use of other resources are recognized.

The goal would be that such a system would (like the GSA framework) provide sensible incentives for agencies to economize on spectrum use. The GSOC might then have a surplus of spectrum that it could sell or lease to the private sector (or turn over to the FCC for auctions). The GSOC could also accumulate a fund (again, similar to GSA) that could be used to purchase additional spectrum if needed for leasing to government agencies.

Respectfully Submitted,



Thomas M. Lenard
President, Technology Policy Institute



Lawrence J. White
Professor of Economics, NYU Stern School of Business