



**PHOENIX CENTER FOR ADVANCED LEGAL
& ECONOMIC PUBLIC POLICY STUDIES**

5335 Wisconsin Avenue, NW, Suite 440

Washington, D.C. 20015

Tel: (+1) (202) 274-0235 • Fax: (+1) (202) 318-4909

www.phoenix-center.org

Lawrence J. Spiwak, President

30 January 2019

Hon. David J. Redl
Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, D.C. 20230

RE: Developing a Sustainable Spectrum Strategy for America's Future (Docket
Number: 181130999-8999-01)

Dear Assistant Secretary Redl:

On December 20, 2018, NTIA requested comments from interested parties with regard to the development of a comprehensive, long-term national spectrum strategy. To this end, please find attached some of the Phoenix Center's scholarly research in this area which we hope you find helpful as you undertake this important and complex task. For your convenience, these papers are summarized briefly below in reverse chronological order by date of publication.

I. PHOENIX CENTER POLICY PERSPECTIVE NO. 18-10: *Addressing Holdouts in the Repurposing of Spectrum for Broadband Services (December 19, 2018).*

Market activity to address spectrum shortages for commercial mobile wireless broadband services have met with some success. In recent years, the Federal Communications Commission has proven willing to allow private transactions to move spectrum among users so that the scarce resource is in the hands of those that value it the most. In those instances where large blocks of spectrum are held by a single licensee, the market works well. But when a buyer must accumulate many licenses from a diverse set of licensees to cobble together sufficient spectrum to offer broadband services, the problem of the "holdout" arises. As has long-been recognized, holdouts can foreclose socially-valuable aggregations of property and thus constitute a form of market failure. Repurposing spectrum for broadband uses—the most common driver today for

repurposing efforts—not only offers private benefits to new users but also involves a social premium from expanded broadband deployment and adoption. Thus, the cost of holdouts may be sizable and solving the problem is of great social concern.

In this paper, we present a simple economic model of holdouts and extend that model to consider a sensible solution to the holdout problem. This solution involves the compensation of incumbent licensees with a new spectrum license, in the same or otherwise compatible band, that permits an equivalent level of service, with all relocation costs paid by the innovator. Such a program sends a clear signal that holdouts will not be tolerated, thereby encouraging market transactions early in the repurposing process.

II. PHOENIX CENTER POLICY PERSPECTIVE NO. 18-08: *Expediting Spectrum Repurposing Through Market Transactions (October 12, 2018).*

The exponential growth in mobile broadband data consumption continues unimpeded, stretching the electromagnetic radio spectrum resource required to support that data flow to its limits. While spectrum auctions are the favored mechanism of rights assignment, identifying spectrum, clearing it, and getting it on the auction block takes, on average, a decade or more. An alternative approach is for the Federal Communications Commission to encourage, or continue to encourage, market-based solutions whereby parties negotiate directly among themselves to repurpose spectrum. While voluntary commercial negotiations are desirable, there is nonetheless a risk of “holdups” where sellers delay making an agreement in order to earn higher profits from the sale of licenses. Such delays, while privately profitable, postpone the repurposing of the spectrum to a higher-valued use and thus destroy value. These losses are a pure, unrecoverable loss to society.

In this paper, we present an economic model of how to design sensibly a market-based repurposing program using the concept of an expiring “transaction window.” Specifically, we consider a two-stage process whereby incumbent licensees are first granted a fixed period of time to sell, acquire, or repurpose their licenses. To ensure an expeditious repurposing, this transaction window expires at a known, fixed date, at which time licenses held by incumbents that are not participating in or eligible for providing the “new” service receive a compensation level established by the Commission, such as relocation to new spectrum bands where a functionally equivalent flow of services may be obtained. The motivation to act fairly and quickly during the transaction window depends on the Commission’s chosen level of compensation when the windows expires.

III. PHOENIX CENTER POLICY BULLETIN NO. 40: *Skin in the Game: Interference, Sunk Investment, and the Repurposing of Radio Spectrum, (March 2017).*

Radio spectrum is a scarce and finite resource, essentially all of which has been allocated to particular uses and licensed to commercial, non-commercial, or government users. But as spectrum gets moved about to suit modern demands, interference problems within and across spectrum bands are certain to arise. As a result, the Federal Communications Commission’s policies on spectrum interference could have significant effects on the wireless marketplace: poor interference management could sabotage

existing services, affect the value of spectrum licenses and, most importantly, attenuate investment incentives for wireless networks.

In this paper, we attempt to shed some light on the optimal design of Commission rules and practices for addressing interference disputes. Since spectrum licenses produce no benefits without large and mostly sunk investments in communications networks, we focus on investment incentives and find that the FCC's optimal interference policy should necessarily deal with different license holders differently when their sunk network investments vary. Our focus on sunk investments is important, because if the FCC permits interference-causing repurposings that give an existing network operator's significant sunk assets short shrift, then the rational response of private parties is to curb further investment. A reduction in investment will reduce the value of wireless services and, in turn, the value of the spectrum. Accordingly, our model of interference dictates that license holders who have made little or no sunk investment in capital to generate benefits from their license would receive little relief under an optimal rule, but those licensees with substantial sunk network investments would receive expansive treatment by the regulator.

IV. *Taxation by Condition: Spectrum Repurposing at the FCC and the Prolonging of Spectrum Exhaust*, 8 HASTINGS SCIENCE AND TECHNOLOGY LAW JOURNAL 183 (2016).

In this paper, we show how the Federal Communications Commission's regulatory process may be used by special interests (and by the Agency) to impede the efficient functioning of a secondary market for commercial spectrum. In particular, we show that imposing (and threatening to impose) significant conditions when firms seek to repurpose spectrum from a low-value to a higher-value use acts as a "tax" and thus reduces the incentives of firms to exchange spectrum in the secondary market. As a result, "taxation by condition" will discourage the larger scale transactions necessary to resolve the acknowledged spectrum shortages in the commercial mobile wireless industry, though we may still observe many deals of a less material nature that will attract less attention and thus fewer conditions. Our analysis also reveals that in many cases the arguments to condition spectrum licenses based on "market power" concerns are misguided. Market power does not over-motivate licensees to repurpose spectrum. In fact, economic theory shows that a monopolist will repurpose spectrum to a degree less than or equal to a benevolent "social planner." Accordingly, under the threat of a spectrum shortage, "taxing" efforts to repurpose spectrum is perhaps the worst of all policies.

V. *Market Mechanisms and the Efficient Use and Management of Scarce Spectrum Resources*, 66 FEDERAL COMMUNICATIONS LAW JOURNAL 263 (2014).

Today, the Federal Government has assignments for about half of what is considered to be "beachfront" spectrum. However, most agree Government agencies, and the Government as a whole, use and manage spectrum resources inefficiently. In this paper, we examine the difficult yet key question of how policymakers can improve Federal Government use and management of scarce spectrum resources so as to possibly free up and repurpose some spectrum for commercial use. After review, we conclude that if the

goal of spectrum use and management is economic efficiency, then policymakers should expand the private sector's management of the nation's scarce spectrum resources.

To begin, we evaluate whether or not several proposed "ghost market" solutions to the efficiency problem will be effective. These proposals range from a General Services Administration-type model to the spectrum sharing proposal by the President's Council of Advisors on Science and Technology. While we find that these particular proposals may not ultimately lead to significant or long-term improvements in government spectrum efficiency, we conclude that a robust movement toward a more market-oriented approach is essential for efficiency.

Next, we turn to the Federal Government's management of spectrum. We find that even when the Government is assumed to act rationally, Government management of spectrum resources is not desirable beyond some minimum level. Accordingly, we demonstrate that any proposal that contemplates leasing of Government-managed spectrum to the private sector may be presumed to include "too little" auctioning of government spectrum to the private sector in the form of exclusive licenses.

VI. *Wireless Competition Under Spectrum Exhaust*, 65 FEDERAL COMMUNICATIONS LAW JOURNAL 79 (2012).

In this paper, we demonstrate that in the face of spectrum exhaust for commercial mobile services, policies which impede incumbent carriers from acquiring more spectrum – via either auction or acquisition – may do harm rather than good.

In most policy debates, it is generally presumed that there is a direct relationship between the number of firms and market performance – *i.e.*, prices fall as the number of firms increase and, conversely, that prices rise as markets become more concentrated. However, we find that the addition of a spectrum constraint to the traditional economic model of competition turns the conventional view of wireless competition on its head. Even using the standard economic model of competition that is otherwise consistent with the traditional view that high industry concentration is a bellwether of poor economic performance, we show that under a binding spectrum constraint, a reduction in the number of firms will produce lower prices and possibly increase sector investment and employment. This seemingly "contrarian" effect arises from the simple fact that prices will likely fall as scarce spectrum resources are employed more efficiently, permitting firms to increase output in response to rising demand for bandwidth. With more firms, total industry capacity is lower, so that rising demand must be rationed with higher prices. As a result, our economic analysis shows that the market participation restrictions are unlikely to be welfare enhancing.

VII. *A Policy Framework for Spectrum Allocation in Mobile Communications*, 63 FEDERAL COMMUNICATIONS LAW JOURNAL 639 (2011).

In this paper, we find that limiting the amount of additional spectrum available to larger competitors would have little, if any, impact on price, but would likely reduce the quality of advanced mobile services provided to consumers in the future. As such, we conclude that the imposition of incumbent-exclusion rules such as spectrum caps on

future transactions or auctions are not likely to be welfare enhancing. We come to our conclusion based upon four primary factors: First, an incumbent-exclusion rule is not “pro-entry,” but instead seeks to select one form (price cutting) of entry over another (quality improving); second, given the existing number of firms in the U.S. market, the potential for sizeable competitive price effects from additional firms is low; third, the economic benefits of advanced wireless services are likely to be very high; and finally, access to spectrum resources does not necessarily convey financial success, as spectrum is but one of many inputs necessary to provide service. In other words, the notion that “more spectrum automatically equals more firms” simply is not true.

VIII. *A Policy and Economic Exploration of Wireless Carterfone Regulation*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 647 (2009).

Critics assert that certain practices by wireless service providers—such as handset locking, data bandwidth limitations, and control over features included on handsets—unduly hamper the ability of consumers to access advanced data communications services. Whether these wireless service providers should be required to open their networks to users’ choices of wireless handsets has been the focus of policy debates in the United States surrounding potential regulatory intervention. This intervention, often called “wireless *Carterfone*” rules (after an FCC 1968 decision for the landline telephone network), would ban some of these practices and mandate that service providers design their networks to accommodate the user’s choice of wireless handsets and equipment.

This paper explores the historical background of the *Carterfone* decision and its application to the contemporary wireless industry in light of two significant economic implications. First, the regulations that commoditize the wireless network services industry may harm the prospects for entry and competition in that industry. Therefore, while the concentrated nature of the wireless market is often cited as a reason for imposing wireless *Carterfone* rules, those rules may in fact exacerbate that market concentration.

Second, wireless *Carterfone* rules may have the effect of increasing prices for handsets without any offsetting price decrease for wireless network services. As a result, consumer welfare may decrease without any guarantee that producer or social welfare will increase. In particular, we warned that breaking the “complementarity” between handsets and wireless service would result in higher handset prices which, in turn, would reduce demand, which, in turn would slow the innovation cycle.

Unfortunately, but not unexpectedly, we were proven correct. As FIERCEWIRELESS reported last summer:

... carriers continue to push equipment installment plans (EIP) for smartphone purchases rather than through two-year subsidies. Meaning customers are no longer purchasing a free or \$200 smartphone alongside a two-year service contract and then getting a new phone after that two-year contract is over; instead, they’re seeing the full price tag for the phone through their EIP fee and are paying that gadget off in monthly installments of \$20 or \$40. Carrier executives have acknowledged how

EIPs—alongside the rising cost of handsets—are pushing Americans to hold on to their phones for longer periods of time.¹


Accordingly, our paper demonstrates that government efforts to mandate “interoperability” must be made with care and only after a thorough vetting of the economics.

IX. *Developing A National Wireless Regulatory Framework: A Law and Economics Approach*, 16 COMMLAW CONSPECTUS 391 (2008)

In this paper, we demonstrate that wireless services should be governed by a single national framework rather than a patchwork of fifty different state regulatory regimes. As our paper’s economic model details, when state law applies to a product or service that is actually national in scope such as telecommunications or the Internet, even if each state acts with the purist of intentions to protect their respective constituents’ interests, there is the risk of harmful conflicts in the rules as the states will inevitably vary in their legal regimes. As a result, there will be extra-jurisdictional effects of state-by-state regulation on a national service, making society worse off. To quote former FCC Chief Economist Michael Katz on state-level business rules, “policies that make entry difficult in one geographic area may raise the overall cost of entering the industry and thus reduce the speed at which entry occurs in other areas.” Accordingly, when state and local regulation can spill across borders, our economic model dictates that society is typically better off with a single national regulatory framework.

Again, we hope you find the attached scholarly material helpful as you undertake your efforts to develop a sustainable spectrum strategy for America’s future. If we can be of further assistance, please do not hesitate to contact us.

Sincerely,



Lawrence J. Spiwak

CC: John Alden
Office of Spectrum Management, NTIA

¹ M. Dano, *As Cellphone Bills Rise, Americans Aren’t Buying New Phones*, FIERCEWIRELESS (July 13, 2018) (available at: <https://www.fiercewireless.com/wireless/as-cell-phone-bills-rise-americans-aren-t-buying-new-phones>).