
THE FUTURE OF AMERICAN SPECTRUM POLICY

By FCC Commissioner *KATHLEEN Q. ABERNATHY**

When I arrived at the Federal Communications Commission about a year ago — after stints in wireless, satellite, incumbent and competitive wireline telephony businesses, as well as in government — I had a pretty clear set of general regulatory principles.¹ Those principles continue to prove useful, but over the last few months I have devoted significant energy to organizing and honing my views on spectrum policy. There is a reason so many Commissions have struggled with this issue — it is extremely complex. But regardless of the difficulties, I believe I and the FCC have an obligation to tackle it.

My remarks today will focus on four areas: first, why spectrum management is important; second, the contours of the spectrum policy debate and the FCC's role; third, the key values and considerations I believe should guide that debate; and fourth, where we go from here. My goal is to provide a framework for my consideration of spectrum issues, give advocates a sense of my thinking, and hopefully contribute to the larger debate that continues on the Hill, in industry, and as a part of the FCC's own Spectrum Policy Task Force.²

I. Why is spectrum management important?

Although it may seem obvious, explicitly identifying the answer helps to guide and focus the spectrum debate.

In my view, spectrum is important because it is a finite natural resource with immense potential value to the American people. Fallow spectrum, in general, has little value. Developing the potential value of commercial spectrum is the task of private parties. So in many ways, the goal of the FCC is to create regulatory policies that foster effective investment to deliver services to the American people. If private parties don't invest, any intellectualized spectrum policy is meaningless, because the Commission must rely on the private sector to make it all happen.³

Making it happen is exactly what our licensees have done in many spectrum bands. The mobile phone industry is transforming Americans' lives, increasing penetration rates, continuing their build out, and driving innovation.⁴ Our DBS satellite licensees have broken the monopoly hold of cable.⁵ The unlicensed service bands are creating a vast series of wireless local areas networks that are solving the "last hundred feet" problem.⁶ And that is only what is happening today; there is so much on the horizon for tomorrow.

II. The Contours of the Spectrum Policy Debate

So spectrum policy is important. But before setting out our path, it's important to figure out where we are today. As an FCC Commissioner, there is this temptation to think big — we should move this over there, grant these licenses this way, and behave like we have tens of megahertz of virgin undeveloped spectrum. Needless to say, that is not the case. The Commission's spectrum management policies must be implemented in the context of numerous restraints, some legal and some factual.

The Commission is limited by the scope of its legal authority over spectrum. In addition to the shared responsibility with NTIA,⁷ the Commission's discretion is also statutorily constrained.⁸ My job is not to question these constraints but rather to work within them. In addition to the legal limitations, we are also limited by the fact that the spectrum is largely encumbered. There are exceptions of course. The Commission recently initiated a rulemaking to develop rules for the 70, 80 and 90 GHz bands.⁹ But these bands are a rare new frontier for U.S. spectrum policy. But most bands under our jurisdiction have significant incumbencies, which means that any new spectrum policy must be implemented with a recognition of the rights of incumbents.

Within these legal and factual limits, the FCC is charged with three main stages of spectrum decision-making. First, the Commission promulgates an allocation — for example, fixed or mobile, aeronautical or satellite. Second, the Commission develops service rules to guide the use of the spectrum within the confines of the allocation. Third, the Commission adopts a method for distributing the rights (defined by the allocation and service rules) to private parties. In performing these tasks, the FCC also must exercise its fundamental responsibility to limit harmful interference to spectrum users.

I will examine each of the three roles played by the Commission. Unfortunately, I believe there has been a "squish problem" in the spectrum policy debate. Advocates tend to squish all the respective roles and stages of spectrum policy together. This undermines policymakers' ability to focus on the tasks at hand. So, in an effort to prevent the "squish problem," I will assess each aspect of the policy process separately.

A. Allocations

Spectrum policy making at the FCC begins with an allocation. The radio spectrum is divided into blocks or bands of frequencies for categories of services. Allocation decisions, more than any other aspect of spectrum decision-making, is closely linked to international decision-making. For example, it may do little good for the United States to allocate a spectrum band for an international non-geostationary satellite service, unless the rest of the world is prepared to do the same. This global approach is necessary because non-geostationary satellites must have the ability to traverse the globe and utilize roughly the same spectrum bands in each country in order to be viable. Even outside the satellite context, harmonized international allocations can create the scale economies that are essential for the private sector to invest resources in, and in turn for Americans to be able to utilize, the spectrum resource. In this regard, the International Telecommunications Union ("ITU")¹⁰ process, and the World Radio Conferences in particular, play a significant role in spectrum management.¹¹ Therefore, United States leadership in these forums is essential to robust spectrum management that opens the door to innovation and fosters successful markets.

There was a time when allocations — like most spectrum management — were very detailed and narrow. For example, an allocation would allow for Fixed Point-to-Point Microwave and nothing more. Times have changed at the Commission; the Commission is increasingly inclined to grant broad and flexible allocations where internationally permitted to do so. Now allocations are more often very broad, for example, including all fixed and mobile uses. Gaining such flexibility has been, and continues to be, our goal in international fora, such as the ITU. I believe this is clearly the right approach.

B. Service Rules

We have similarly evolved in our approach to service rules. There was a time when the Commission would decide that a licensee would provide mobile wireless services to the forestry industry in this band and load at least “X” number of mobiles per base station within “Y” months. Thankfully, that approach has now changed. Today the Commission uses its broad discretion in crafting service rules in the public interest to grant far more flexibility to our licensees.

A couple quick caveats that apply to both the trend toward flexible service rules as well as flexible allocations:

First, the Commission remains committed to preventing harmful interference. If the Commission is going to create an environment conducive to investment and deployment, we must recognize that service providers and investors need to understand the rules of the interference road. Knowing the rules of the road will also allow private parties in the marketplace to negotiate private interference protection arrangements where they advance the parties’ interests. Nonetheless, government may itself eschew flexible allocations and service rules in order to prevent harmful interference through some spectrum “zoning” that attempts to group similar types of allocations and services together to maximize overall utility.

Second, Congress has limited the Commission’s authority to decide on a license distribution mechanism based on the type of allocation or service rules involved. So, for example, spectrum allocated and used for international satellite services cannot be distributed via auction.

Bottom line: To the extent the Commission has discretion to act, the Commission will generally grant significant flexibility in the allocation and service rule stages of spectrum policy. However, interference concerns and/or distribution considerations may limit that flexibility.

C. Rights Distribution

Over the years the FCC’s spectrum rights distribution mechanism has evolved — from first-come, first-served to comparative hearings; from lotteries to auctions. This has largely resulted from shifts in the Commission’s statutory authority and mandate.¹² As a result, there is no current uniformity in the distribution mechanism used across spectrum bands — even among like services. While today’s broadcaster may pay at auction, yesterday’s did not. Cellular licensees did not pay, PCS did.

In response, I believe policymakers should make the “Legacy Concession.” That is, we cannot go back and make everyone equal — and it will tie us in knots if we try. Instead, the Commission must maximize the public interest from where

we sit today. Although I recognize what may appear to be the “unfairness” of this approach, I have been unable to develop any paradigm that would allow us to achieve retroactive uniformity. So I believe making the “legacy concession” is a condition precedent to a productive discussion of future spectrum policy.

To summarize: There is widespread agreement that flexibility in allocations and service rules advances the public interest, and the Commission has substantial discretion in formulating the bundle of rights associated with that flexibility. In developing these rights, however, interference protection remains one of our paramount concerns. Once the allocation and service rules have been developed consistent with interference protections, the Commission then must determine how best to distribute that bundle of rights. This third decision point is where Congress has most limited the agency’s discretion and where some of the most heated spectrum battles are likely to be waged in the years ahead.

III. The Key Battleground in the Spectrum Debate: How to Decide Who Gets the Rights?

A. To License or Not to License?

So what is FCC licensing?

It’s a way of government distributing a good and sanctioning its appropriate use.

What should be the Commission’s goal?

To maximize the efficiency of commercial spectrum use by promptly getting as many rights as possible into the marketplace, while protecting licensed uses from harmful interference.

Two effective paradigms for rights distribution are: (1) private property rights; and (2) the “commons.” Although the U.S. economy provides examples of each — and a number of blended examples — I believe these two paradigms are useful in analyzing spectrum policy.

First, an example of the property rights paradigm: Land is distributed through market-based mechanisms and, in a second step, government sanctions the appropriate use of that land through zoning, building permits, and liability rules. The rules provide protection against owners who may otherwise be able to externalize costs to other, often adjacent, land owners.

Second, government may distribute rights via the “commons” model by allowing some goods to be enjoyed by all people so long as certain government-sanctioned norms are followed. So, for example, while land is largely distributed by a market-based private property mechanism, the use of the roads that connect private lands is sanctioned as a common. So long as users obey certain government imposed norms — don’t speed, use a safe vehicle, have reasonable eyesight, have insurance — users are free to use the common.

The distribution of rights to spectrum can be analyzed as a continuum between these two paradigms; from a full property rights model to a pure commons model.

B. Law or Technology Triumphs?

The private property-like rights model is a lawyer’s dream, in which spectrum rights are distributed like any other piece of property. Ideally this occurs mostly in a secondary

market with limited government involvement. But full implementation of this model is foreclosed by the statutory bar on ownership interests in spectrum licenses. The Act's Section 301 states: "It is the purpose of this Act to provide for the use of such channels, but not the ownership thereof."¹³ In recent years, however, the Commission has utilized the flexibility granted under the Act¹⁴ to move towards a quasi-property rights model (*e.g.*, the auction process).¹⁵ Under the property-like approach, maximizing flexibility in service rules and allocations serves the public interest by allowing the "property" to be developed to the greatest degree. The "property" is then sold to the highest bidder in a very efficient auction process, and the government role is complete. The market in spectrum becomes a series of secondary transactions with little government intervention.

In contrast, the pure commons approach, as exemplified by the FCC's unlicensed bands, is an "engineer's dream." The unlicensed bands do not provide for any real interference protection or for any exclusive licensee rights to spectrum. Instead, guided by some technical limitations, the bands are open to all comers so long as they operate approved equipment. This openness eliminates the entry barrier created by the auction price in the property-like rights model, but creates a different kind of barrier by imposing the more detailed technical rules of the common. In unlicensed bands, users rely on technology to overcome the risk of the traditional tragedy of the commons by engineering their devices so as to avoid any harmful interference. Traditionally, property rights theorists have noted that "commons," absent adequate safeguards, are inherently prone to suffer from the "tragedy of the commons."¹⁶ In other words, communal use will result in such reckless abuse or overuse by individual users (who have minimal individual interest in the health of the common) that the common may become useless to the whole group. In the spectrum context, full implementation of a true common — that is, without any restrictions on use — would similarly render it virtually impossible for anyone to responsibly invest in equipment in the band. However, like commons operated by government today, such as parks and roads, spectrum commons can and have survived through more restrictive allocations and service rules that inhibit an individual's ability to spoil the common for the whole.

One observation on the commons model — lawyers are not as comfortable with it because it's very messy! Terms of use are less clear, interference from other services is always possible, and this approach sometimes relies on future technological developments for survival. These characteristics make the commons unpredictable and an act of technological faith. These are not characteristics favored by lawyers. Similarly, the capital community can be nervous about the lack of property rights associated with a core business input like spectrum. I believe it is important to emphasize, however, that one of the challenges faced by the agency is to overcome this inherent skepticism in order to secure full acceptance of the commons model as a consistent, viable, yet distinct, alternative to licensed use.

IV. Where do we go from here?

In light of these two polar views of spectrum policy, what is a regulator to do?

The Commission is well served by utilizing both the property-like rights approach and the commons model. Just as a city has private land linked together by common roads and parks, so too may the spectrum community enjoy and fully utilize both private property and the commons.

A. Licensed Spectrum

What should be the guiding principles of licensed spectrum policy?

In order to maximize spectrum utility, the FCC should endeavor to get spectrum rights rapidly into the hands of those who can use them most completely.

The first and fundamental policy question is whether the band should be licensed or unlicensed. As set out above, I believe the Commission should utilize both models. For ease of intellectual administration, I have separately set out the policy process for licensed and unlicensed bands below. The initial decision as to which model should apply will depend in large part on the current supply and demand for each type of service in the current marketplace at the time the rights are to be distributed.

The method for achieving this goal will depend largely on the nature of the bands involved.

1. Virgin Spectrum Bands

For virgin bands to be licensed, the Commission must determine whether the likely potential uses are mutually exclusive of one another. Mutual exclusivity is important because it is the statutory trigger as to whether the Commission is required to auction the spectrum (although of course there are statutory exceptions).¹⁷

a. Mutually Exclusive Applications

Flexibility in the Commission's service rules and allocations makes predicting the types of uses likely in a given band very difficult. Without any certainty about the types of services that would be offered in the band, it is virtually impossible to state that mutual exclusivity will not occur. Therefore, in order to maintain the viability of flexibly allocated bands with similarly broad service rules, the Commission generally presumes mutual exclusivity and requires an auction. This ensures that any resulting licensee will be free to provide its service of choice and gives licensees flexibility to allow the services to evolve to higher valued uses over time.

Auctioning also requires us to address the auction exemptions. We have a number of ongoing dockets looking at these issues, but I will only note that there should be auction-exempt spectrum specifically designated for public safety, non-commercial and educational broadcasters, and international satellite services. But we must not allow the existence of these exemptions to undermine flexibility.

b. Non Mutually Exclusive Applications

There are rare cases where the allocation, the service rules, or the nature of the technology are so discrete and narrow that the Commission can say with certainty that mutually exclusive applications will not be filed. In those cases, the Commission should move promptly to distribute the rights. There

has been a tendency within the FCC to feel compelled to auction everything. Although that approach has an appealing symmetry, it is not what the statute requires, and it does not fit every factual circumstance. So, while I believe auctions do offer an efficient rights distribution mechanism, it does not mean all auctions all the time.

2. Spectrum with Incumbencies

In the vast majority of spectrum proceedings, the FCC will be faced with incumbents occupying the band. The FCC will be asked to evaluate whether new services should be permitted into the band either to share with the incumbent or to supplant it.

When faced with incumbent licensees in this situation, the Commission should first ask itself: What is the bundle of rights associated with the current licensee? Licensees must be granted certainty about the bundle of rights they have acquired to enable investment and innovation.

Once government affirms the bundle of rights held by the incumbent, the Commission must turn to the advocates of the new services. Does the incumbent hold the rights to the spectrum use proposed? If the answer is yes, I believe one possible approach is to allow the advocates of the new service to negotiate with the rights-holding incumbent to obtain (or not obtain) the necessary authorization.¹⁸ Of course this policy preference is only possible if there is an effective secondary market for spectrum — a topic I will return to in a moment.¹⁹

If the answer is no, that is, if the incumbent does not hold the rights to the spectrum use proposed, then we turn to the next inquiry.

a. Is Sharing Possible?

Are the proposed new uses mutually exclusive with the current use? In other words, would sharing result in harmful interference or substantial efficiency losses?

There are times when this question is easier to answer than others. For example, if the incumbents' or new entrants' rights are extremely narrow, it is easy to assess the potential for sharing.

The most difficult aspect is defining what rises to the level of harmful interference? Or what rises to the level of substantial loss of efficiency? This analysis is further complicated when the proposed new uses represent a new technology or are not clearly defined.

I'm not going to address those issues here. My goal is to sketch out a spectrum policy decision tree — not to draw the leaves on every branch. I will save these questions for another day, but they do represent a significant spectrum management challenge.

i. Sharing is Possible

If sharing is possible, then I believe the Commission should treat the subset of rights available as a “virgin” spectrum resource and handle them as described above. So if a domestic satellite use can be made available without harmful interference or substantial efficiency losses to the incumbent terrestrial licensee, the Commission should get those rights into the hands of commercial interests as set out above.

ii. Sharing is Not Possible

If sharing is not possible, the Commission is faced with another question: Should the incumbent be forcibly moved,

or should the proposed new rights be granted to the incumbent? When granted discretion, I begin with the presumption that relocation of incumbent service providers is complex, imposes costs on the economy, takes time, and may undermine investment incentives. Moreover, I am generally very reluctant to insert government into the marketplace on the basis of some asserted “better understanding” of what is the “right” service offering in a band.

Nonetheless, there may be cases where government is fairly certain that a new use is more highly valued than the current use or that the incumbent would not rationally exercise the rights if they were granted to them. I have defined three situations where it may be justifiable for government to forcibly relocate incumbents: (a) Failure of the Secondary Market; (b) the Irrational Holdout Problem; and (c) Temporal Urgency.

(a) Failure of the Secondary Market

Granting incumbents rights that they may not themselves use works only if there is an effective secondary market in spectrum rights — something we do not have today. Absent a secondary market, incumbents may be unable to sell the additional rights, thus preventing spectrum from evolving to its higher valued use. There may be situations where the sheer number of incumbents or their identity (such as public safety licensees) may also inhibit a secondary market. In these cases, forced relocation may be the only way to maximize utility through the introduction of new services. Obviously if the incumbents will utilize the rights themselves, the importance of a secondary market in rights distribution is less significant.

Nonetheless, our secondary markets proceeding is an essential piece of our future spectrum policy. We must have secondary markets (that will withstand judicial scrutiny) if the property-like rights-driven license model is to succeed. We must overhaul the antiquated test set forth in *Intermountain Microwave*,²⁰ we must speed spectrum transactions that do not raise competitive concerns; and we must facilitate spectrum leasing. The secondary markets proceeding is therefore critical to effective spectrum management.²¹

(b) The Irrational Holdout Problem

The irrational holdout problem is one reason government has the power of eminent domain — to prevent any individual property holder from irrationally blocking the property from evolving to its most valued use. This can be a real problem even in fully functioning markets. So, on rare occasions, the Commission should be prepared to step in to force holdouts out of a band. If the secondary market is functioning, however, I generally believe the Commission should do so only reluctantly, and on a case-by-case basis.

(c) Temporal Urgency

Finally, government may consider forcible relocation when there is some temporal urgency. Sometimes markets take time to develop and, in extremely rare circumstances, the Commission may need to intervene to enable the offering of some new service immediately essential to the public welfare.

To the extent we ultimately force relocation, we presumably would have already identified potential uses and implemented a relocation scheme that keeps incumbents

whole. We would then move to assess the allocation, service rules, and license distribution issues described above.

B. Unlicensed Spectrum

As I mentioned before, on the other end of the spectrum continuum from the property-like rights/licensed approach we have the commons/unlicensed approach. Unlicensed spectrum services are the first spectrum-based services at the broadband party. And our history of regulatory restraint in these bands provides a useful lesson in the benefits of allowing nascent services to develop.²² Unlicensed devices have rapidly become commonplace in the American home and office.²³ They are relied upon for many everyday functions in consumers' lives, encompassing appliances from cordless phones, computers, baby monitors, garage door openers, and PDAs to wireless local area networks.

To take one example of this growth, in 1990 there were only 50 authorizations for unlicensed spread spectrum devices, compared to close to 350 authorizations in 2000.²⁴ Recently, the Synergy Research Group reported that the Wireless LAN market posted its eighth consecutive quarter of double-digit growth and grew by more than 150 percent from 2000.²⁵ It was estimated that 5 million Wireless LAN adapters were shipped in 2001.²⁶ It has also been predicted that 21 million Americans will be using Wireless LANs by 2007.²⁷ Today, millions of unlicensed devices are in operation, either independently or complementing licensed services. Ironically, this explosion of services and providers was largely unanticipated when unlicensed services were first authorized. In fact, the flexibility afforded licensees was largely a function of the initial lack of interest in these bands. Our challenge will be to exercise such restraint when everyone knows the stakes are high. Regardless of how we got here, unlicensed spectrum services dramatically illustrate the power of spectrum-based services and effective regulatory policy.

1. The Rules of the Common

The success of the unlicensed approach (as with licensed services) depends in large part on the Commission's willingness and ability to clearly define the rules that govern the service. This is important if capital is to flow to service providers, and, in turn, services are to reach the American people. The threat of the tragedy of the commons is real. And the Commission must recognize that risk and respond accordingly if it is to protect the vital contribution of unlicensed services.

But we also must be clear what the unlicensed bands are not. They do not create property-like rights but rather focus on communal use. Some will be tempted to change the common into individual property by squatting or other forms of adverse possession, and we must not give in to the temptation to transform these spectrum rights. Instead we must protect their inherent communal nature without restricting use to the point of creating quasi-property rights for individual uses or users.

The Commission does have considerable discretion in creating allocations and service rules and then distributing rights via the designation of a band as "unlicensed."²⁸ Part 15 and the use of unlicensed devices began in 1938 and continued more or less along a consistent path through 1989.²⁹ In 1989, the Commission added additional flexibility to the types of de-

vices eligible for certification and opened the 2.4 GHz band to unlicensed development.³⁰ In 1997, the UNII bands at 5 GHz were added to the mix.³¹ Today additional spectrum around 60 GHz and 76 GHz are available for unlicensed use and additional bands in the 70, 80, and 90 GHz bands are under consideration.³²

In supervising these bands or designating new ones, our rules should be as clear as practicable, strictly enforced, and maximize utility. Some commons may have more stringent rules than others, where such rules justifiably allow for diverse uses. People don't drive their cars on the bike trails, or have picnics in the middle of a highway. But each is a valuable common, and society benefits from the picnickers and drivers so long as they are in the appropriate spot with similarly-situated neighbors.

I also believe there is significant benefit to internationally harmonizing unlicensed bands where practicable. Unlicensed bands benefit from the scale and scope that international harmonization can provide. The FCC must lead the international effort to ensure U.S. commercial interests are advanced through global harmonization of licensed and unlicensed bands.

Finally, we must resist the temptation to constantly change the rules of the common and therefore undermine investment. The commons is a precarious place. Although the temptation at times will be great, constantly changing rules do not benefit anyone. We must endeavor to craft rules in the first instance that allow for technological advancement without a technological train wreck. Our rules should be flexible and agile to provide the foundation on which to continue to build an industry.

2. New Commons?

Once we have established the types of rules necessary, the question remains when and where to implement spectrum commons.

Based on limitations in our statutory authority, I believe government currently is unlikely to force the relocation of existing licensees to permit unlicensed use. Most significantly, it is not clear that government would be prepared — or is currently authorized — to pay the price tag for moving incumbents to create a common. Unlike the property-like rights model, which has new entrants willing to pay at auction to relocate incumbents, government creates and maintains the commons — and only government is currently available to pay the price to move incumbents. There may come a day when, like a state building a new highway, government will pay auction revenue or tax dollars to relocate spectrum licensees to make way for common use. Going forward, I think the FCC and the industry must think creatively about what can be done on the regulatory side — and the industry and Congress must similarly think creatively on the statutory side. We must assess where and how new commons opportunities can be created.

In addition to relocation, the FCC could establish a commons through an overlay authorization. Under this regime, the Commission concludes that sharing between current users and unlicensed devices is possible and issues corresponding technical rules. Any sharing should be designed so as to allocate only those rights not granted to existing licensees. So, for example, when the Commission permitted Ultra Wide Band devices, it concluded they would operate below the current noise

floor and would not cause harmful interference.³³ I am generally skeptical of these types of overlay unlicensed operations because of the difficult technical issues involved and the degree to which they may diminish the property-like rights associated with licensed services. Nonetheless it remains another way to develop additional unlicensed services.

Finally, there are some finite opportunities to create additional commons in virgin spectrum. The Commission must first make a call about the most valuable use for a given band. In reaching this policy, the challenges faced by the unlicensed community are somewhat unique: The decision to allocate to unlicensed use must almost absolutely be made as part of the initial allocation and service rules. Plus, the unlicensed community by definition will not “own” the spectrum rights. Thus, there is little incentive for any individual company to invest in advocacy for the creation of a commons — a challenge similar to that faced by the environmental community seeking to buy land as communal green space. So, there is some imperative for the unlicensed community to organize and to identify potential virgin bands extremely early in the process and then press for designation for unlicensed use. I think it is fair to say that between the positive experiences with the rights-driven model and the revenue associated with spectrum auctions, the quest for additional unlicensed bands from virgin spectrum may prove difficult.

The power of the unlicensed bands — and the corresponding boom in consumer utility — is one of the great success stories of U.S. telecommunications policy. I think we have learned important lessons from those experiences that can inform and shape future spectrum policy.

Conclusion

The importance of our spectrum resource commands a thoughtful and deliberate approach to its management. The United States cannot afford to use spectrum inefficiently or allow it to lay fallow. Although difficult, the task of developing a new spectrum management paradigm is not insurmountable. Rather, we must build on what we have learned, be creative in our policies, and focus on maximizing spectral use to maximize the public interest.

* Commissioner Abernathy was nominated by President George W. Bush on May 1, 2001. She was unanimously confirmed by the Senate on May 25, 2001, and sworn in as FCC Commissioner on May 31, 2001. Her term ends June of 2004. Before her appointment to the FCC, Commissioner Abernathy was Vice President of Public Policy at BroadBand Office Communications, Inc.; a partner in the Washington, DC, law firm of Wilkinson Barker Knauer, LLP; Vice President for Regulatory Affairs at U.S. West; and Vice President for Federal Regulatory Affairs at AirTouch Communications. She was also legal advisor to FCC Commissioner Sherrie Marshall and Chairman James Quello. Major portions of this article were originally part of two spectrum policy speeches delivered in July 2002. For the full text of those remarks and other information on Commissioner Abernathy, visit her website at www.fcc.gov/commissioners/abernathy/.

Footnotes

¹ Kathleen Q. Abernathy, *My View from the Doorstep of FCC Change*, 54 Fed. Comm. L. J. 199, 199-223 (2002).

² See Spectrum Policy Task Force — FCC Homepage (available at <www.fcc.gov/sptf/#sec3>).

³ Obviously spectrum is also vital to non-commercial activities, such as homeland security, radio astronomy and amateur radio. Moreover, the Department of Commerce, through NTIA, administers spectrum utilized by the federal government. While these spectrum users are significant, they are subject to a distinct set of policy considerations outside the scope of this article.

⁴ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993/Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Seventh Report*, FCC No. 02-179, at 4-5 (rel. July 3, 2002).

⁵ *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Eighth Annual Report*, CS Docket No. 01-129, at 4, 17 FCC Rcd. 11,579 (rel. June 14, 2002).

⁶ *Sixth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, FCC No. 01-192, at A11-13 (rel. July 17, 2001).

⁷ See Communications Act of 1934, as amended, 47 U.S.C. § 902 (hereafter “the Act”).

⁸ See, e.g., 47 U.S.C. § 309 (j) (auction exemptions for international satellite, public safety).

⁹ See generally *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, WT Docket No. 02-146 (rel. June 28, 2002); Commissioner Kathleen Q. Abernathy, *Separate Statement Re: Service Rules for Use of the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands, Notice of Proposed Rulemaking* (adopted June 13, 2002) (available at: <www.fcc.gov/commissioners/abernathy/statements2002.html>).

¹⁰ See International Telecommunications Union Homepage (available at <www.itu.int/home/>).

¹¹ See 2003 World Radiocommunication Conference — FCC Homepage (available at <www.fcc.gov/wrc-03/>).

¹² See 47 U.S.C. § 309(j).

¹³ See, e.g., *id.* § 301.

¹⁴ See *id.* § 151 *et seq.*

¹⁵ See, e.g., *id.* § 309(j).

¹⁶ See Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

¹⁷ 47 U.S.C. §§ 309(j)(1) & (6)(E)(2000).

¹⁸ There may be rare circumstances under which government could become involved in this process if the new entrant’s service were designed to compete with the incumbent’s service.

¹⁹ For a general discussion, see *In the Matter of Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, Notice of Proposed Rulemaking*, WT Docket No. 00-230, 15 FCC Rcd. 24,203 (rel. Nov. 27, 2000) (“Secondary Markets NPRM”).

²⁰ *Intermountain Microwave*, 24 Rad. Reg. (P&F) 983.

²¹ See Secondary Markets NPRM.

²² See generally *The Nascent Services Doctrine*, Remarks of Kathleen Q. Abernathy before the Federal Communications Bar Association, New York Chapter, July 11, 2002 (available at <www.fcc.gov/Speeches/Abernathy/2002/spkqa217.html>).

²³ See *Amendment of Part 15 of the Commission’s Rules Regarding Spread Spectrum Devices*, ET Docket No. 99-231, at 56, 17 FCC Rcd. 10,755, (rel. May 30, 2002).

²⁴ Equipment Authorization Statistics compiled by Office of Engineering and Technology, Federal Communications Commission, 2000.

²⁵ Synergy Research Group, *Worldwide WLAN Equipment Market Grew 150% in 2001* (available at <www.synergyresearchgroup.com/2-25-02.html>).

²⁶ Joanne Jaffe, *Wireless Data LANs*, Communications Week Int’l, Dec. 17, 2001.

²⁷ Michael Pastore, *Big Years Ahead for WLAN Market*, Markets Wireless, Feb. 14, 2002 (available at <cyberatlas.internet.com/markets/wireless/article/0,,10094_974711,00.html>).

²⁸ See generally 47 C.F.R. § 15 (2001).

²⁹ *Id.*

³⁰ *Amendment of Parts 2 and 15 of the Rules with Regard to the Operation of Spread Spectrum Systems*, Gen. Docket No. 89-354, 5 FCC Rcd. 4123 (rel. July 9, 1990).

³¹ *Amendment of the Commission’s Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket No. 96-102, 12 FCC Rcd. 1576 (rel. Jan. 9, 1997).

³² *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, Docket No. WT 02-146, 17 FCC Rcd. 12,182 (rel. June 28, 2002).

³³ *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, RM-98-153, 17 FCC Rcd. 7435 (rel. Apr. 22, 2002).