

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

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| In the Matter of |) | |
| |) | |
| Commission Seeks |) | |
| Public Comment on |) | ET Docket No. 02-135 |
| Spectrum Policy Task Force |) | |
| Report |) | |
| |) | |

**COMMENTS OF THE
TELECOMMUNICATIONS INDUSTRY ASSOCIATION**

The Telecommunications Industry Association (“TIA”) hereby submits comments in response to the Public Notice in the above-captioned proceeding.¹ TIA is the leading trade association representing the communications and information technology industry, with 1,000 member companies that manufacture or supply the products and services used in global communications. Among their numerous lines of business, TIA member companies design, produce and deploy terrestrial and satellite wireless network and terminal equipment including equipment that is subject to the rules that guide how the nation’s spectrum is managed and utilized. As a result, TIA has substantial interest in

¹ Public Notice, FCC 02-322 (released Nov. 25, 2002); Order, DA 02-3400 (released Dec. 11, 2002) (extending comment and reply comment filing deadlines).

current and future Federal Communications Commission (“Commission” or “FCC”) decisions related to spectrum policy reform.

The Commission seeks comment on the findings and recommendations contained in its Spectrum Policy Task Force Report released on November 15, 2002 (“SPTF Report” or “Report”). The Task Force, established by FCC Chairman Michael Powell in June 2002, has concluded its comprehensive review of spectrum policy at the FCC and has presented its report intended to assist the Commission effort to modernize and evolve the spectrum management framework from a traditional government “command and control” model to a more flexible, consumer-oriented approach.

I. Introduction

TIA is encouraged that the Commission, through the SPTF, has undertaken this major initiative to examine its approach to spectrum management. The SPTF Report is a useful tool for continuing the dialogue on future spectrum policy. Specifically, the Report has created an open process and encouraged dialogue between industry and the Commission, recognizing that a “one-size-fits-all” solution to managing spectrum does not exist. The Report also addresses the need for providing greater certainty to incumbents regarding their interference protection rights. Furthermore, it recognizes the distinct nature of spectrum requirements for critical services, such as public safety. Finally, the Report acknowledges that global and regional harmonization has significant advantages and should be a factor in determining uses of spectrum.

While the Report touched on some Government spectrum issues, the Commission and the National Telecommunications and Information Administration (“NTIA”) of the Department of Commerce need to work together to develop a unified, national approach to spectrum management. While technology advancements promise continued improvement in spectrum usage efficiencies, technology must not be depended on as a panacea replacing sound spectrum management policy. Additionally, the benefits of new technologies must be carefully weighed against consumer costs/market attractiveness of the actual equipment.

While TIA supports the SPTF addressing cutting-edge and forward-looking issues (i.e. using "white spaces" - temporal sharing), the Commission must recognize that many of the technologies cited (*e.g.*, opportunistic devices, software defined radios that are completely agile in terms of operating frequencies, bandwidths, and modulation formats, and ultra wide band radios) are not likely to be ready for commercial availability for some time. Finally, the Task Force promotes concepts (such as the “interference temperature”) that today are unproven and undefined. Allocations based on anticipated advances in technology are dangerous, and should await the demonstrable existence of such technology at reasonable costs for widespread deployment.

Overall, TIA believes that the efforts of the Task Force should be applauded and its Report recognized as a first step in opening a discussion on spectrum reform.

II. Discussion

1. Key Elements of New Spectrum Policy

Maximize Flexibility of Spectrum Use

As recognized in the Report, flexibility should only be provided within a technical envelope that provides protection from interference. Flexibility is often mistaken to mean total flexibility to provide any service, under almost any technical parameters. However, allowing extreme variations in technical flexibility can result in systems with radically different power and operating characteristics to operate co-channel or adjacent channel, creating the potential for interference, uncertainty in the radio operating environment and inefficiencies in how the spectrum is used. Accordingly, service flexibility should be provided consistent with a well-defined set of technical rules.

There is wide recognition that grouping services with similar technical characteristics will reduce interference, provide for more efficient use of the spectrum, and limit the need for guard bands. As recognized in the Report, this is inconsistent with the desire of some to provide complete technical flexibility.

Clear and Exhaustive Definition of Spectrum Rights and Responsibilities

TIA agrees with the need to clearly define licensees' spectrum rights. The report lists several areas where rights should be defined:

- Designated frequency range and Bandwidth
- Geographic scope of right to operate
- Maximum RF output (in-band and out-of-band)
- Interference protection
- Terms of license
- Secondary markets

TIA agrees that these are key areas. The FCC generally has well described the first three of these elements in establishing rules in the past, although in some instances, such as rules adopted for the spectrum recently auctioned in the lower broadcast band (channels 52-59), the definition has been very broad and has not sufficiently considered the potential interference impact on other users, including adjacent channel users. The fourth element (interference protection) always has been only vaguely defined and should be clarified with the intent of protecting services. The last key areas (terms of license and secondary markets) require further definition on whether the licensee maintains exclusive rights to the use of its spectrum and whether express permission is required by the licensee before operations are permitted by a second party.

Accounting for All Dimensions of Spectrum Use

While it is appropriate for the Commission to pursue maximizing the intensity of use of spectrum by exploiting the time dimension, the Commission must proceed carefully so as not to jeopardize or degrade existing services. There are many difficulties associated with exploiting spectrum use in the time domain and considerable work

remains to fully understand how best to take advantage of the time dimension. In most instances, allowing additional use of licensed spectrum should be done through secondary market agreements or permission from the incumbents, particularly where incentives exist for efficient spectrum use. TIA supports the development of a secondary market that would allow licensees to transfer their assigned spectrum through sale, lease, or subdivision. It is essential, however, that the FCC not rely on new and unproven technologies as a substitute for active management of the spectrum.

Promoting Efficiency

Incentives for efficient spectrum use should be provided. While different incentives are appropriate depending on the licensee and service, there should be consistency in how incentives are applied across all spectrum. The Report mentions providing incentives for government use of spectrum where incentives do not currently exist. NTIA and FCC should work together to ensure that a consistent approach to providing incentives is pursued.

“Good Neighbor” Incentives

As discussed in the section on flexibility, systems with similar technical characteristics should be grouped together in order to minimize the use of guard bands that consume valuable spectrum, or expensive filtering systems to avoid adjacent band interference.

Periodic Review of Rules

Periodic review of the FCC's rules is desirable. The Commission already undertakes a biennial review of its regulations, which applies to many of the service rules. The 5-10 year review of spectrum use proposed by the SPTF is consistent with long-term spectrum planning. The Commission should pursue this recommendation and use 5-10 year reviews as a basis of a long-term plan to meet changing user and service requirements and to advance our leadership in international spectrum debates. The International Telecommunications Union World Radio Conference preliminary agendas are set six years in advance so timing of the proposed periodic reviews should take into account tentative trends developing internationally.

Enforcement

TIA supports the FCC maintaining a well-equipped and technically competent Enforcement Bureau that is able to quickly respond to and address interference issues.

TIA is concerned that the FCC is withdrawing from oversight and management of spectrum -- in fact, exporting its statutory and public interest responsibilities to the private sector. This is occurring as the underlying spectrum itself is becoming more and more congested in certain bands, while others are lying fallow due to regulatory inaction. The result is a transition toward placing spectrum in the hands of the private sector to manage, despite the increasing conflicts, competing uses, public interest obligations, and national security interests. Moreover, there appears to be an elevation of using money as

a regulatory tool which is on its face unsupportable – as money alone cannot always buy the right solution or resolution.

2. Interference Avoidance

Adopting Quantitative Standards: Interference Temperature

The Commission’s proposed policies are credibly based on the premise that any arrangements that promote spectrum flexibility and spectrum access should not generate interference into systems operated by a licensee. TIA believes that the long-term use of an interference measure focused on the receive environment could provide greater certainty of the expected interference in a given band. However, because any certainty would be dependent upon the uniformity of signal levels in a given area, and the density of (“interference temperature”) measured devices, it is questionable whether a single (average) measure could practically be used over a finite area to accurately describe the noise environment.

Thus, the use of interference temperature as a “cap” to permit spectrum sharing by operators who can operate below the recommended temperature is potentially problematic. First, the acceptance of a noise cap (interference temperature) above the noise floor necessarily subjects the licensed, victim wireless system to increased external interference. Also, actions necessary to mitigate the impacts of additional interference can require a reduction in victim system capacity and/or a reduction in cell size. Finally, determining the source of interference is problematic in the opportunistic environments described in the Report.

The use of a noise temperature cap to effect spectrum sharing would appear to be difficult to implement. If aggregate users cause the noise in a given band to exceed the cap, who among the multiple (underlay) users would be forced to abandon the use of the spectrum?

The long-term use of interference temperature as an alternative to transmitter filtering appears questionable. For example, a carrier who chooses to eliminate transmitter filtering and use interference temperature sensing to identify useable spectrum would likely be severely limited in the spectrum in which it can properly operate.

Additional Methods of Interference Control

TIA supports creating incentives for efficient use of spectrum and where applicable, further study of elements of interference protection such as voluntary receiver standards. Power control, which already is used in many wireless technologies, should be implemented/enhanced in those technologies where it is not available or not fully deployed. The Commission's Rules relative to interference avoidance are not easily found within Title 47 of the Code of Federal Register. As suggested by the Task Force's Interference Protection Working Group, the Commission should develop a web site that would help a user find the locations of relevant interference information.

3. Spectrum Usage Models

TIA is pleased that the Task Force concluded that there is no “one size fits all” in spectrum management. The three models, Command-and-Control, Exclusive use, and Commons are appropriate models and we agree that there should be a balance between them.

TIA agrees with the Task Force’s conclusion that bands below 5 GHz are better suited for exclusive use licensing than for a commons approach. While it is appropriate to have some commons spectrum in these bands, the emphasis should be on exclusive use. There are numerous reasons to favor this approach in these lower bands. Access to others in this exclusive use spectrum can be through secondary markets. Forced access would limit innovation and harm the ability of incumbents to implement new technologies.

New exclusive allocations for unlicensed uses should be made in unencumbered spectrum to provide maximum flexibility and possibility for innovation.

If encumbered spectrum is allowed by regulators to be used by devices on an unlicensed basis, technical studies must demonstrate that such uses will operate on a non-interference basis to licensed services in the same and adjacent bands. The ability to introduce unlicensed operations in encumbered bands, and the conditions for doing so, will greatly depend on the nature and characteristics of the primary operations in the band. In particular, bands that are used for critical operations will be less tolerant to

interference. Furthermore, the use of unlicensed devices in encumbered bands must be subject to clear and enforceable service rules.

International and Satellite Issues

Congress recognized the potential adverse repercussions on the U.S. satellite industry should orbital resources for international/global satellite systems be subject to auction. Therefore, Congress consistently over several years and throughout the various bills addressing the Open-Market Reorganization for the Betterment of International Telecommunications Act of 2000 (“ORBIT Act”) issues included provisions not only prohibiting the FCC from auctioning spectrum for international/global satellite systems, but also instructing the President to advocate against auctions in international fora. The rationale that supported the enactment of this provision of the ORBIT Act remains true today -- the financial and business repercussions and uncertainties associated with such an assignment method should be avoided so as not to jeopardize U.S. leadership in this field. Moreover, the SPTF rationale for suggesting that the Commission seek legislative change to acquire auction authority is based on a purely theoretical assumption that the satellite industry (whether Fixed Satellite, Direct Broadcast Satellite, or, even, Mobile Satellite) is interested in obtaining licenses that provide for full, flexible use of spectrum. There is no indication that the satellite industry is so inclined.

In the context of satellite services, the standard of "harmful interference," as currently used, affords licensees greater flexibility in negotiating acceptable arrangements

on a one-to-one basis resulting in a greater sharing efficiency of spectrum among satellite operators.

In its 5-10 year long-term planning process, the Commission should review the industry's changing user and service requirements and use this review as a basis for further action and planning.

Public Safety

TIA is pleased that the Commission recognizes both the critical need for dedicated spectrum for public safety and that such spectrum should remain under the command and control model. TIA also agrees that any secondary use of spectrum dedicated to public safety be controlled by the public safety licensee through a secondary market arrangement.

TIA does not agree that access to additional narrowband spectrum for public safety communications should be made through market acquisition. Public safety requirements for additional spectrum should be reviewed and appropriate actions planned on a periodic basis.

Moreover, TIA is skeptical that an arrangement to access spectrum from licensed uses during periods of high demand can address the critical needs of public safety.

The public safety community developed a spectrum requirements estimate through 2010 in the Public Safety Wireless Advisory Committee ("PSWAC") report. These requirements have not yet been met. The Commission should take immediate

action to make available the spectrum allocated and licensed to public safety in the 746-806 MHz band, but which is still encumbered by television broadcasters. It is imperative that the Commission move quickly to do so. The Commission should also swiftly conclude development of the service rules for the 4.9 GHz band that has also been allocated to public safety, but cannot be used without these rules. Finally, as part of the proposed 5-10 year review of spectrum use, the Commission should develop a plan for meeting the PSWAC requirements.

Broadcast Spectrum

With the vast majority of the U.S. population accessing television stations through cable and satellite systems, it is appropriate to seek ways to transition an increasing amount of spectrum currently dedicated to broadcast use to other uses, including licensed mobile services. As part of the 5-10 year planning effort, the Commission should explore ways to do so.

Transition Issues

The Report's focus on the long term and relative lack of discussion of more immediate steps toward greater access to spectrum and interference avoidance control perpetuates uncertainty for licensees and investors. Small innovative companies seeking capital for technologies that can be deployed today or in the near term suffer from this uncertainty.

Greater certainty regarding the availability of spectrum should help minimize the cost of spectrum and the 5-10 year planning process should help provide that certainty. However, the Commission should also explore alternatives to auctions when licensing spectrum. While auctions provide a short-term benefit to the U.S. treasury, auctions drain resources from carriers and make it more difficult and costly to deploy services, ultimately harming rather than benefiting the public. The Commission should seek legislation that would give it flexibility to license spectrum as it finds appropriate rather than being required to license pursuant to auction.

TIA strongly agrees with the Task Force proposal to support legislative efforts to amend the Communications Act to authorize use of auction funds to pay incumbent's relocation costs and to expand the trust fund to include non-Federal entities. This will provide greater certainty regarding the cost of spectrum for new services and certainty to incumbents that they will be reimbursed.

4. Promoting Access to Spectrum

Experimental Licensing

To promote research and development in new technology to improve spectrum efficiency or exploitation of higher frequency bands, the Commission must improve the existing licensing process in terms of transparency and timing. The modifications suggested by the Task Force should improve the existing process and minimize delays.

Obtaining authorization for experimental uses generally, but including in bands allocated to the Federal Government, occasionally has been problematic for the industry.

