Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
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Commission Seeks Comment On Spectrum Policy Task Force Report	)	ET Docket No. 02-135
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COMMENTS OF THE CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION

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SUMMARY

CTIA strongly believes that reform of the existing FCC spectrum policies would promote the public interest. Such reform, particularly in the allocation context, is essential to ensuring that the wireless industry will have a known, predictable path to meet the increasing demands of consumers for mobile wireless voice and data services. The tremendous effort that the Spectrum Policy Task Force has expended in developing the Task Force Report – a significant first step in the spectrum policy reform process – must be applauded. At the same time, a great deal of challenging work remains to be done because the benefits of reform can only be realized if critical details are resolved effectively. The need for spectrum policy reform cannot be overstated, however, and CTIA believes such reform can, and indeed must, occur in the near future.

In general, CTIA supports the key elements of new spectrum policy identified in the Report. First, CTIA supports maximizing the flexibility of spectrum use through the adoption of "flexible" allocation and service rules established before spectrum is assigned or made available to new uses, so that these rights can be factored into auction decisions. However, the grant of unbridled flexible use to incumbent licensees who do not have a market incentive to use spectrum efficiently may cause interference with third-party operations, create inequities that harm competition and consumers, and perpetuate – instead of fixing – inefficient allocation and assignment schemes.

Second, CTIA has traditionally supported, and continues to support, incentives designed to promote efficient use of the spectrum. Certain basic mechanisms for promoting efficiency, such as rigorous pre-allocation cost-benefit analyses and licensing practices that encourage applicants with concrete and realistic spectrum use plans, can and should be applied to all

spectrum bands. CTIA also agrees that in those instances where market-forces are lacking, alternative measures to improve efficiency should be considered.

Third, CTIA concurs with the Task Force that clearly defining the rights and responsibilities of spectrum users, especially the rights and responsibilities regarding interference protection, is a key element of reform. Finally, periodic review of the Commission's rules is also essential, provided those reviews are timed and executed in a manner that does not undermine efforts and resources invested by licensees in bringing communications services to the American public.

With respect to the Task Force's conclusions on interference protection, CTIA agrees that it is essential to establish a more quantitative approach to interference management that accurately reflects real-time spectrum use and provides incumbent licensees with greater certainty regarding the right to be protected from interference. While CTIA supports the general concept of establishing of a clearly defined "threshold" to set maximum permissible levels of interference, the precise meaning of the Report's "interference temperature" approach remains unclear, and CTIA cannot support the concept without understanding how the theory would be rendered into practice. Any proposed interference threshold must be conclusively demonstrated, based on actual tests, to protect licensed operations from interference before being implemented in any band.

CTIA generally agrees with the Task Force's conclusion that "one size does not fit all" when it comes to effectively managing spectrum and supports the Task Force's recommendation that future spectrum policies should move away from command-and-control regulation towards an increased reliance on both the exclusive use and commons models, where appropriate. The exclusive use model, with its "property-like" rights of exclusivity, flexibility and transferability,

creates a strong incentive to put spectrum to its highest valued use and should be applied to most spectrum bands. Because the potential for harmful interference from unlicensed systems is also significant, the authorization of "underlay" operations in licensed spectrum should be approached with extreme caution. Clear and explicit policies and procedures must be in place to protect licensed users from harmful interference caused by these types of operations prior to authorization and widespread deployment. In a similar vein, the secondary markets mechanism of increasing access to licensed spectrum – rather than an "easements" approach – will best fulfill the Commission's goals of encouraging more efficient, more effective use of the spectrum.

While CTIA generally supports the creation of some additional "commons" spectrum that is allocated for unlicensed use, obtaining increased access to additional *harmonized* and *licensed* spectrum is the most pressing challenge facing the CMRS industry, both in the near and far term. It is essential, therefore, that a need for additional unlicensed spectrum be clearly demonstrated before the Commission considers any additional unlicensed or "commons" allocations. Equally essential is that the rights of licensed users to remain free from interference and the responsibilities of unlicensed users to remedy any such interference must be made explicit if any additional unlicensed allocations occur.

As a final matter, the Commission should take the opportunity created by the Task Force's initial efforts to address several additional key elements of needed spectrum reform. First and foremost, the Commission should initiate a more systematic longer-term spectrum planning process, a concept that was outside the scope of the questions posed by the Task Force and therefore excluded from consideration in the Report. CTIA submits that a rolling spectrum planning process, as outlined in its July Comments in this docket, should be a major focus of the FCC's future reform efforts. Additionally, neither the industry nor the FCC can continue to

ignore large blocks of inefficiently utilized spectrum. For example, the use of spectrum by satellite carriers, broadcasters, public safety, and federal government users must also be reviewed and reforms brought to bear. These efforts should include positive incentives for these users – who are not typically forced by market pressures to use spectrum efficiently – to make their spectrum use more efficient. Moreover, the Commission should consider alternative mechanisms, such as a relocation fund for federal users, that will help to free up encumbered spectrum while minimizing the cost burden on auction winners and their customers.

In sum, CTIA is gratified to see the Commission undertaking a comprehensive review of spectrum policy, and is extremely supportive of the Task Force's work to date. The Task Force Report identifies – and proposes innovative, and constructive means to address – many of the shortfalls of historical spectrum planning. CTIA urges the Commission to realize the promise of the Task Force's initial effort by fleshing out the concepts with additional detail and continuing to pursue real reforms.

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COMMENTS OF THE CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION

The Cellular Telecommunications & Internet Association ("CTIA")[1] hereby submits its comments in response to the Commission's *Public Notice* seeking comment on the Spectrum Policy Task Force Report.[2] On November 7, 2002, the Commission released the Spectrum Policy Task Force Report.[3] This Report presents recommendations to modernize the rules that guide how the nation's spectrum is managed and utilized, and suggests an evolution from a traditional government "command and control" model to a more flexible, consumer-oriented approach.

CTIA strongly believes that reform of the existing FCC spectrum policies would promote the public interest. The Report released by the Task Force is a significant and positive step

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1 CTIA is the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the association covers all Commercial Mobile Radio Service ("CMRS") providers and manufacturers, including cellular, broadband PCS, ESMR, as well as providers and manufacturers of wireless data services and products.

2 *Commission Seeks Public Comment on Spectrum Policy Task Force Report*, ET Docket No. 02-135, Public Notice, (rel. November 25, 2002) ("Notice").

3 *Spectrum Policy Task Force Report*, ET Docket No. 02-13, (rel. November 7, 2002) ("Task Force Report" or "Report").

toward beginning that process of reform. Because the existing process is unwieldy and politicized, reform is of paramount importance to the commercial wireless industry, which will continue to require additional spectrum to serve its customers' needs in the future. Reform of the spectrum management process, particularly in the allocation context, is an essential step to ensure that the wireless industry will have a known, predictable path to meet the increasing demands of consumers for mobile wireless voice and data services over the next decade and beyond.

I. INTRODUCTION

CTIA commends the FCC for undertaking a comprehensive look at spectrum policy reform, and explicitly recognizes the tremendous effort of the Task Force and its constituent working groups. The need for spectrum policy reform cannot be overstated. As CTIA observed in its original comments, the inherent inefficiency and politicized nature of the existing national spectrum allocation, licensing and use policies have drawn criticism from all quarters: the Administration, Congress, industry, as well as from within the FCC itself. Indeed, the General Accounting Office (GAO), the Office of Management and Budget ("OMB"), the National Telecommunications and Information Administration ("NTIA"), and the FCC are all engaged in serious studies to develop reform proposals.

While CTIA applauds the Task Force Report as an important positive step in the spectrum policy reform process, significant technically and administratively challenging work remains to be done. The Report highlights numerous elements of spectrum reform and outlines a broad framework for spectrum policy in the future, but critical details remain to be filled in before the benefits of reform can be realized. For example, while CTIA strongly supports the concept of interference protection for incumbent licensees, the establishment of an "interference

temperature," as introduced in the Report, will require a great deal of theoretical and field engineering before the concept can serve as a useful tool in administrative spectrum decisions.

CTIA also believes that the Commission must continue the process of translating the concept of "radio licenses as exclusive property" into explicitly established rights granted to licensees to use their spectrum above a clearly defined interference threshold. Because the potential for harmful interference from unlicensed systems is significant, CTIA believes that the authorization of "underlay" operations in licensed spectrum should be approached with extreme caution. Clear and explicit policies and procedures must be in place to protect licensed users from harmful interference caused by these types of operations prior to authorization and widespread deployment. CTIA further believes that the secondary markets mechanism of increasing access to licensed spectrum – rather than an "easements" approach – will best fulfill the Commission's goals of encouraging more efficient, more effective use of the spectrum while at the same time providing adequate interference protection for licensed users.

As a final matter, the Commission should follow through on this impressive first step by addressing several additional key elements of needed spectrum reform that were not adequately focused on in the Task Force Report. As CTIA stated in its original comments in response to the questions posed by the Task Force, the most important overall reform of spectrum management should be the initiation of a more systematic longer-term spectrum planning process. Unfortunately, this concept was outside the scope of the questions posed by the Task Force, and therefore excluded from consideration in the Report. CTIA submits that a "rolling" spectrum planning process should be a focus of the FCC's future efforts. Additionally, neither the industry nor the FCC can continue to ignore large blocks of inefficiently utilized spectrum. The use of spectrum by broadcasters, public safety, and federal users must also be reviewed and

reforms brought to bear. Finally, the Commission must consider policies for the reallocation of encumbered spectrum to free spectrum for future growth. These efforts should include positive incentives for users not typically subject to market discipline to make their spectrum use more efficient, and should consider alternative mechanisms, such as a relocation fund for federal users, that will help to free up encumbered spectrum in a way that reduces the cost burden on auction winners and their customers.

II. KEY ELEMENTS OF NEW SPECTRUM POLICY

A. Flexibility of Spectrum Use

CTIA agrees with the Task Force that flexibility in spectrum regulation can improve access to spectrum, promote efficiency and allow spectrum to migrate to the most highly-valued uses.[4] In particular, CTIA supports "flexible" allocation and service rules that are established before spectrum is assigned or made available to new uses, so that those rights can be factored into auction decisions. CMRS licensees and consumers benefit from sufficient flexibility in technical service rules that facilitate carriers' ability to upgrade their networks on a technology-neutral basis without having to go to the Commission for minor rule waivers. CTIA therefore supports flexibility in operational rules for wireless services that promote technology neutrality and enable carriers to serve their customers' needs and foster innovative, state-of-the-art service offerings.

As the Task Force recognized, however, certain restrictions on flexible use are required in some circumstances in order to promote the public interest.[5] As CTIA has previously noted, the grant of unbridled additional service flexibility to incumbent licensees can lead to a variety of

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4 *See* Task Force Report at 16.

5 *See id.*

problems that have the potential to outweigh any perceived benefits of this approach. A grant of "retroactive" flexibility to an incumbent licensee not subject to market incentives for an entirely different service than contemplated in the original allocation and licensing scheme, for example, may result in spectrum inefficiency, raise interference concerns, and create inequities that will harm competition and consumers in the long run. In addition, post-licensing grants of "retroactive" flexibility could lead to significant uncertainties and distortions in the competitive bidding process, as potential bidders attempt to grapple with a spectrum landscape that could change at any time. In short, the application of unconstrained flexible use policies that change the fundamental character of the service to existing licensees who are not subject to market incentives to use their spectrum efficiently can both undermine the value of other licensees' spectrum assets and interfere with third-party operations, as well as perpetuate – instead of fixing – inefficient allocation and assignment schemes.

As CTIA has noted, the 2 GHz Mobile Satellite Service (MSS) proceeding is a good example of the potential for misuse of flexible spectrum use policies. Prior even to obtaining their initial licenses, MSS proponents declared that they required an ancillary terrestrial component ("ATC") for their businesses to be viable. ATC, using infrastructure that is technically indistinguishable from CMRS, purportedly would allow MSS licensees to serve their customers in urban environments.[6] CTIA has argued that the Commission should consider such requests – the proposal to provide an entirely new and separate service, combined with evidence

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6 *See Ex parte Letter of New ICO Global Communications (Holdings) Ltd.*, IB Docket No. 99-81 (dated March 8, 2001).

that the original service is not economically viable – to be a signal that the spectrum at issue should be a candidate for reallocation.[7]

CTIA suggests that the threshold question when presented with a flexible use proposal should be to consider whether the scope of the request suggests that the spectrum is being underutilized. In such cases, the band may be a candidate for reallocation. The FCC should not reflexively resort to the "easy fix" of giving inefficient or commercially non-viable incumbents flexibility to provide any service under the guise of increasing innovation.

B. Clearly Defining the Rights and Responsibilities of Spectrum Users

As the Task Force noted, there is widespread agreement that spectrum users' rights and obligations are not always defined with sufficient clarity under the Commission's current rules.[8] The definition of a licensees' rights is critical for several reasons. First, a full understanding of those rights creates predictability for licensees, which is vital to long-term planning and investment. Defining the rights that have been granted also will smooth any interference resolution process between licensees, avoiding difficult proceedings like the 800 MHz rebanding initiative. Clearly defined rights and responsibilities also simplify the analysis of whether new products or services not controlled by a licensee can and should be introduced in licensed bands. Moreover, a more clearly defined understanding of spectrum rights would improve the auction process and serve as a critical underpinning of the Commission's proposed secondary market policies.

With these goals in mind, CTIA therefore agrees with the Task Force's conclusion that the Commission must clearly and exhaustively define spectrum users' rights in terms of

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[7] *See Comments of Cellular Telecommunications & Internet Association*, at 9, ET Docket No. 02-135, filed on July 8, 2002 ("CTIA July Comments").

[8] Task Force Report at 17.

spectrum rights that are excluded, prohibited, or limited.[9] To this end, the Task Force identified four "basic spectrum rights parameters" that must be clearly defined for all licensed and unlicensed spectrum users:

- Designated frequency range and bandwidth;
- Geographic scope of right to operate;
- Maximum RF output (in-band and out-of-band); and
- Interference protection, *i.e.*, the maximum level of noise/interference that the spectrum user must accept from other RF sources.[10]

While the first three typically have been defined with relative particularity in the Commission's rules, as the Task Force noted, there is almost unanimous agreement that the interference protection parameter is *not* clearly defined.[11] As CTIA observes in Section III, *infra*, the concept of an interference threshold should be cautiously explored as one way to provide licensees with further clarity in this respect. CTIA further believes that consumers as well as carriers would benefit if the Commission more exhaustively and clearly defined the protection from interference that licensees enjoy.

C. Promoting Efficiency

CTIA has traditionally supported, and continues to support, incentives for efficient use of spectrum. Although CTIA agrees with the Task Force that the selection of a single, objective metric for comparing efficiency across different radio services is neither possible nor appropriate, certain basic incentives for promoting efficiency *can* be applied across *all* spectrum bands. For instance, the Task Force recommends that the Commission conduct a cost-benefit

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9 *See id.*

10 *See id.* at 18.

11 *See id.*

analysis as a part of its spectrum management process.[12] CTIA agrees and urges the Commission to build this inquiry into all future allocation decisions, rigorously considering the economic benefits and costs (both quantitative and qualitative) of the proposed allocation. Such an analysis will provide the Commission with an insight and understanding of both the technical and financial ramifications of the allocation decision and may help to avoid repeating the mistakes of prior allocations that have proven, over time, to have resulted in inefficient use of the spectrum.

Additionally, CTIA supports the concept of grouping "technically compatible systems and devices in close proximity."[13] As services mature and adapt to changing technologies, it is more likely that systems that are technically compatible at the allocation and licensing stages will remain compatible as they mature. Placing like services in "spectrum neighborhoods"[14] during the allocation and licensing phases likely will result in a reduced need for guardbands and other forms of interference protection, thereby saving spectrum resources and reducing the need for expensive technical fixes.

Another basic efficiency incentive is the adoption of licensing practices that encourage applicants that have concrete and realistic plans to use the spectrum. The Commission should actively discourage speculative filings that seek to "reserve" a spectrum block in the hope that future financing will enable the development and deployment of services at some point in the distant future. In circumstances where there is no market-based incentive to use spectrum efficiently, as is the case for satellite companies who do not obtain their spectrum through auction, it is critically important that the Commission take steps to ensure that spectrum is not

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12 *See id.* at 21.

13 *See id.* at 22.

14 *Id.*

left unused or underutilized indefinitely. Accordingly, when market-based incentives for quickly constructing and deploying systems are lacking, construction and service milestones should be much more aggressive than they have been in the past to reflect the increasing urgency of ensuring that spectrum is not allowed to lay fallow.

If the appropriate policies and procedures are in place, the services with market incentives (*i.e.*, auctioned services like CMRS) already have every incentive to maximize spectral efficiency and evolve their service offerings in new and innovative ways. In circumstances where market incentives do not operate, *e.g.*, spectrum allocated for government, satellite, broadcasting or public safety use, CTIA agrees with the Task Force's conclusion that alternative measures to improve efficiency should be considered.[15] CTIA therefore urges both the Commission and NTIA to inventory current spectrum use to consider whether spectrum is being used efficiently. If not, both agencies should consider whether a particular band is a candidate for reallocation or whether other alternative mechanisms to create incentives for efficient use must be created.

D. Periodic Review of Rules

The Task Force has also recommended that the Commission periodically review its rules to determine if adjustments are warranted to account for newer, more efficient technologies and services that may develop over time.[16] As the Task Force recognized, however, it is critical that such reviews do not undermine the significant efforts and resources that the wireless industry has invested in bringing the many recognized benefits of wireless communications to the American public. CTIA agrees with the Task Force's conclusion that a degree of stability and certainty in

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15 *See id.* at 21.

16 *See id.* at 22.

the marketplace is an "essential prerequisite" to investment in today's rapidly evolving telecommunications marketplace.[17] Particularly in services (such as CMRS services) that require significant planning, capital expenditures, coordination and infrastructure prior to deployment, any rule changes should have a long lead-time in order to avoid upsetting the significant investments and reasonable expectations of both the wireless industry and end-users. With a long-term plan in place, these periodic reviews should seek to supplement and enhance the spectrum policy goals of the Commission. Regardless of the specific time-frame established for a periodic review of the Commission's rules, however, it is essential that such reviews move away from the current "reactive" approach towards an approach that provides more – not less – predictability and stability in the wireless marketplace.

III. INTERFERENCE PROTECTION

The Task Force recommends that the Commission adopt, where feasible, a more quantitative approach to interference management that accurately reflects real-time spectrum use.[18] Although CTIA strongly supports the Task Force's efforts to provide incumbent licensees with greater certainty regarding the right to be protected from interference, the establishment of an "interference temperature metric," as introduced in the Report, will require a great deal of additional work before it can be shown to be an effective tool for quantifying and managing interference. The concept that there exists an objective and universal scale for measuring interference is beguilingly simple and brooks no disagreement; the difficulty is developing the tools and techniques to identify changes in the radio environment and to be able to use that information in a meaningful way. Thus, while CTIA supports the general concept of establishing

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17 *See id.* at 23.

18 *See id.* at 26.

a clearly defined "threshold" to set maximum permissible levels of interference, the precise meaning of the Report's "interference temperature" approach remains unclear, and CTIA can not support such a concept without a more precise definition.[19]

The "interference temperature metric" is a long-term and largely conceptual mechanism, requiring an *immense* amount of work before its usefulness at quantifying and measuring interference can be established.[20] As the Report notes, the ability to estimate accurately the RF environment at any one location is dependent on a myriad of factors, including "transmitter signal ranges, uniformity of signal levels over an area, the density of temperature measuring devices and the sharing of data taken by nearby devices."[21] Any proposed interference threshold must be conclusively demonstrated, based on *actual tests*, to protect licensed operations from interference before being set in any band. Conducting these tests and establishing appropriate interference thresholds will be an extremely difficult and potentially contentious process, requiring close consultation with all affected interests. CTIA therefore urges the Commission to consult closely with industry engineers as it further explores this process in general, and in particular when measuring the RF environment in any band, geographic region or service.

In light of the daunting challenges the FCC will face as it considers how best to proceed in its examination of the proposed "interference temperature metric," CTIA urges the Commission to proceed down this path very cautiously. In this regard, it seems puzzling for the Commission to embark on a proceeding to consider additional unlicensed uses in licensed

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19 "Interference Temperature" is vaguely defined in the Report as "a measure of the 'noise' power in a particular band and location" or a measure of "the RF power available at the receiving antenna per unit bandwidth." Task Force Report at 57.

20 *See id.* at 33 (recognizing that "there are hurdles that must be overcome before the interference temperature metric could serve as a useful management tool.").

21 *Id.* at 28.

spectrum at this time,[22] when so much work lies ahead even to pin down the concept of a meaningful interference protection threshold, let alone do the actual tests necessary to validate it. While CTIA certainly agrees that broadcasting bands are at the top of the list of spectrum that should be more efficiently utilized, it nevertheless seems premature to pursue this proceeding before an appropriate conceptual framework is developed.

CTIA further notes that the Task Force places a great deal of emphasis on the future ability of new technologies, such as software-defined radios, to monitor their local RF environment and operate more dynamically than traditional technologies in responding to unwanted interference. CTIA's members fully expect to utilize these types of radios when they have been proven in real-world scenarios; however, such "smart" technologies are still currently in the developmental stages, and at the present time have not been proven either technically or economically viable. Until these systems have significant additional development and evolve to the point of commercialization, and the efficacy of the interference avoidance techniques are measured in the real world, software-defined radio should not be positioned as a spectrum management *panacea*.

Additionally, the Commission should recognize that, as newer technologies attempt to pack in increasing amounts of data, they may become more susceptible to noise at a particular threshold, instead of less. The Commission must be very sensitive to the potential for such trends as it embarks on this process.

As a final matter, the Commission should also give some consideration to developing a mechanism for *tightening* the established metric should unexpected interference to licensed users

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22 *See e.g., In the Matter of Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band,* ET Docket No. 02-380, Notice of Inquiry, FCC 02-325 (rel. Dec. 20, 2002) (seeking comment on the feasibility of allowing unlicensed devices to operate in the television broadcast bands and the 3650-3700 MHz band).

materialize. This is particularly important if such unexpected interference occurs in a band where unlicensed users have already been deployed without the benefit of a clearly defined threshold. In the absence of perfect models, the Commission's policies must retain the flexibility to adjust operating parameters of equipment designed to operate on a non-interference basis. For example, equipment permitted to operate based upon the interference avoidance metric could be required to be capable of responding appropriately to RF-transmitted software updates to the equipment firmware. This would enable the Commission to maintain control over the operating environment on an as-needed basis while permitting manufacturers flexibility in their designs.

IV. SPECTRUM USAGE MODELS

A. Comparison of Alternative Spectrum Usage Models

CTIA generally agrees with the Task Force's conclusion that "one size does not fit all" when it comes to managing spectrum effectively. CTIA also generally supports the Task Force's recommendation that future spectrum policies should attempt to achieve a balance between the three basic spectrum rights models, moving away from command-and-control regulation towards an increased reliance on both the exclusive use and commons models. In this regard, CTIA agrees with the Task Force's conclusion that the exclusive rights model should be applied to most spectrum, particularly in the bands where scarcity is relatively high and protection from interference is essential. CTIA also agrees that commons model is of more limited usefulness in the vast majority of bands. As the Task Force recognized, because the commons model lacks a mechanism for allocating scarce resources and provides no interference protection for competing users, the model necessarily includes a risk that the "tragedy of the commons," *i.e.*, interference and over-saturation, will occur.[23]

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[23] *See* Task Force Report at 37.

B. Application of Exclusive Use and Commons Models

The Task Force concluded that the exclusive use model should be applied to most spectrum, particularly to bands (such as those below 5 GHz) where incumbent licensee use of the spectrum is considerable and a high demand for a relatively small amount of available spectrum exists.[24] CTIA believes this approach is fundamentally sound because the exclusive use model, with its "property-like" rights of exclusivity, flexibility and transferability, creates a strong incentive to put spectrum to its highest valued use and can provide a clear framework for market-based assignments and negotiation of access rights among competing users.[25]

The recognized benefits of an exclusive use model can only occur, however, if the rights and responsibilities of licensed users, including the essential right to operate free of harmful interference, are *clearly defined and effectively enforced.* Accordingly, the Commission should explicitly establish that licensed users have the exclusive right to use their licensed spectrum above a clearly-defined interference threshold.[26] Spectrum users operating above the interference threshold should *only* be permitted to operate in licensed spectrum if they obtain express permission to do so from the licensee through the use of secondary market arrangements.[27]

The Task Force also suggested the Commission consider the creation of "underlay rights" for unlicensed users below the proposed "interference temperature threshold" in exclusive use

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24 *See id.* at 38.

25 *See id.*

26 As was more fully discussed in Section III, *supra*, any established interference threshold must be conclusively demonstrated, based on *actual tests*, to protect licensed operations from interference.

27 As is discussed more fully in Section V, *infra*, CTIA believes that the secondary markets approach, which affords licensees the ability to ensure that their operations will not be subject to interference by new uses that do not comply with the existing technical and service rules, is preferable to an "easements" approach which affords no such protection.

bands.[28] Given that the potential for harmful interference from unlicensed systems is significant, CTIA believes that "underlay" operations should not be authorized in licensed spectrum unless they are: (1) below an interference threshold which can be conclusively demonstrated, based on actual tests, to protect licensed operations from interference;[29] and (2) required to cease – and be practically capable of ceasing – operation immediately if they cause interference to licensed users.[30]

In striking a balance between the exclusive use and commons models, CTIA supports the Task Force's recommendation that the commons model be applied primarily in higher spectrum bands, and that these commons allocations should be internationally harmonized to the extent possible.[31] CTIA recognizes that the dedication of spectrum to unlicensed uses has promoted the rapid development of new technology, and CTIA's member companies plan to use unlicensed as well as licensed spectrum to bring innovative products and services to the American public. In order to continue to afford licensed users full protection from interference, however, it is essential that the Commission establish as a baseline that any unlicensed use must not interfere with licensed uses, and that unlicensed operations have no rights to protection from interference, regardless of whether its source is in-band or out-of-band emissions.

Spectrum management reform should also, in balancing commons and exclusive use licensing, recognize the relative difficulty of securing spectrum for new licensed services. While

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28 Task Force Report at 39.

29 *See* Section III, *supra*.

30 As noted above, "smart radio" technology, capable of actively monitoring and responding to unwanted interference, is still in the developmental stages and can not currently be relied upon as a mechanism for addressing and resolving interference to licensed users resulting from unlicensed "commons" use of licensed frequencies.

31 *See* Task Force Report at 39, 42. CTIA believes, however, that there may be opportunities for "commons" spectrum allocations in lower bands, as well.

CTIA does not oppose additional unlicensed spectrum use where there is a demonstrated need, the virtue of these operations is that they can be deployed higher up in the spectrum range, and in spectrum shared for other purposes as well. On the other hand, over time CMRS carriers require – and will continue to require – additional large infusions of contiguous radio spectrum on a globally-harmonized basis, in lower spectrum bands. Because of the immense challenges of identifying available spectrum to meet these goals, the Commission must prioritize the search for licensed spectrum first and foremost.

C. Limited Use of Command and Control

CTIA agrees that it is "critical to distinguish between special interest and the public interest"[32] when deciding whether to retain the limited use of command and control regulation in any particular context. The Commission's spectrum management policies must create incentives for *all* services to use spectrum more efficiently, including — indeed especially — those services that are not subject to market discipline, such as the satellite, broadcast, and public safety service sectors. CTIA supports a more aggressive rethinking of whether command-and-control regulation remains justified in these areas, and how these services can be transitioned to more flexible and market-oriented rules to the maximum extent possible. For instance, CTIA strongly supports the Task Force's recommendation that the Commission consider a statutory proposal for Congress to assess whether Section 647 of the Open-Market Reorganization for the Betterment of International Telecommunications Act of 2000 ("ORBIT Act") should be modified to permit the Commission to utilize competitive bidding when considering applications for global and international satellite services.[33] CTIA also urges the Commission to work closely with NTIA to

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32 Task Force Report at 41.

33 *See id.*

move away from command and control regulation towards more positive market-oriented spectrum management policies for spectrum allocated for U.S. government use.

D. Transition Issues

Recognizing that most spectrum within the Commission's jurisdiction is occupied by incumbent spectrum users, many of whom are governed by legacy command-and-control regulations "substantially limit[ing] allowable uses of the spectrum," the Task Force recommends several options for the Commission to consider when transitioning underutilized or inefficiently used bands to more "flexible rights" models, such as the exclusive use and commons models.[34] The Report correctly concludes, however, that there is not a significant near-term need for changes in the CMRS bands, as these bands already have realized many of the benefits of increased flexibility noted in the Report.[35]

CTIA believes that the public interest will best be served by transitioning inefficiently used bands through reallocations that utilize the competitive bidding mechanism to grant new licenses with expanded usage rights. By affording other interested parties an opportunity to compete for the new authorizations made available by such reallocations, use of the auction process will ensure that the scarce spectrum resource is put to its highest and best use.[36] Of the four transition mechanisms outlined in the Report, CTIA therefore believes that "Option A," reallocating underutilized or inefficiently used bands through the assignment of expanded rights

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34 *See id.* at 46-51.

35 *See id.* at 46.

36 See *NextWave Personal Communications, Inc. and NextWave Power Partners Inc. (Petition for Reconsideration Public Notice DA 00-49 Auction of C and F Block Broadband PCS Licenses); In re Settlement Request Pursuant to DA 99-745 For Various Broadband PCS C Block Licenses*, 15 FCC Rcd 17500 at ¶ 27 (2000) ("Section 309(j) embodies a presumption that licenses should be allocated as a result of an auction to those who place the highest value on the use of the spectrum. Such entities are presumed to be those best able to put the licenses to their most efficient use.").

to new licensees and the mandatory relocation of incumbents, will in most circumstances best ensure that new, more efficient and innovative use of the spectrum resource occurs.[37] As the Report notes, this approach has already been successful in the broadband PCS context.[38] CTIA also urges the Commission to explore "Option C," the establishment of market-based exchange mechanisms to encourage voluntary band-clearing or restructuring incentives, in a separately issued Notice of Inquiry or Notice of Proposed Rulemaking.[39] As the Report notes, although this option has the potential to facilitate fast and efficient transitions to new or expanded uses, this option has not been employed in the past, and will require a significant amount of additional consideration and analysis before any possible implementation.[40]

CTIA is concerned with "Option B" and "Option D," however. Option B would grant new usage rights under new licenses that are "overlaid" on top of the incumbent licensees, which retain their usage rights on a grandfathered basis. As the report notes, this mechanism requires a significant amount of unlicensed "white space" that lends itself to an "overlay" of licenses, as well as "generally compatible" incumbent and new uses. Thus, at least for this foreseeable future, this option would be of limited use in most of the currently allocated spectrum, which does not contain a significant amount of unencumbered "white space" that could be utilized by other services with current or near-future technologies. This approach also raises significant interference concerns, as new overlay uses may not always be "compatible" with the incumbent licensees' operations. Additionally, as this approach has been used in the SMR, MDS and paging contexts, no determination was made as to whether the current use of the spectrum by

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37 *See* Task Force Report at 48, 50.

38 *See id.* at 48.

39 *See id.* at 48, 50.

40 *See id.* at 50-51.

incumbents was efficient or appropriate. Therefore, CTIA believes this option is of limited utility as it may only exacerbate the existing underutilization of scarce spectrum.

Option D would grant expanded flexible rights directly to incumbents through modification of their existing licenses. For the reasons stated above in Section II, *supra*, and in its July Comments, CTIA believes that the retroactive grant of broader expansive service rule flexibility to incumbent licensees that do not have a market incentive to use their spectrum efficiently can lead to a variety of problems that have the potential to negate any benefits that the FCC might hope to attain, perpetuating inefficient allocation and assignment schemes instead of fixing them.

V. PROMOTING ACCESS TO SPECTRUM

A. Designating Spectrum Bands For Unlicensed Use

The Report notes that there is a significant market for unlicensed devices, and one of the recommended means to optimize spectrum access is the designation of additional bands for unlicensed use. As noted above, CTIA generally supports the creation of some additional "commons" spectrum that is allocated for unlicensed use, and CTIA's member companies look forward to continuing to bring such innovative unlicensed products and services to the American public. Obtaining increased access to additional *harmonized* and *licensed* spectrum is the most pressing challenge facing the CMRS industry, however, both in the near and far term. Indeed, as noted above, licensed uses will likely remain the primary priority for the vast majority of reallocated spectrum, given the importance of interference protection to most user experiences. It is essential, therefore, that a need for additional unlicensed spectrum be clearly demonstrated before the Commission considers any additional unlicensed or "commons" allocations. Equally essential is insuring that licensed uses of spectrum are not degraded by the creation of additional

unlicensed bands. The rights of licensed users to remain free from interference and the responsibilities of unlicensed users to remedy any such interference must be made explicit if any additional unlicensed allocations occur. Moreover, it would not be appropriate to grant users or products in licensed spectrum any rights to protection from interference -- for that, they must resort to licensed spectrum.

B. Secondary Market Rights and Easements

CTIA supports the adoption of a "secondary markets" approach that grants licensees broad flexibility to lease spectrum usage rights voluntarily to secondary users desiring access to exclusive use spectrum "above the threshold." Adoption of a secondary markets approach will go a long way towards achieving the major goals of spectrum reform. For, as the Commission recognized in its *Notice of Proposed Rulemaking* in the Secondary Markets proceeding, the leasing of spectrum through secondary market arrangements should "promote more efficient use of spectrum and allow more entities to gain access to spectrum so that it may be put to innovative uses."[41] As the Task Force noted, "the secondary markets model takes advantage of the flexibility and adaptability of the market to solve access problems."[42] Perhaps most importantly, by bringing market forces to bear on spectrum use decisions, liberal spectrum leasing policies will ensure that spectrum is put to its highest and best use, reaping the greatest benefits for consumers.

The adoption of an easement approach to secondary access "above the threshold," in contrast, would be a step in the wrong direction. First, the application of the easement model "above the threshold" raises serious interference concerns. Under a secondary markets approach,

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41 *In re Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, FCC 00-402, Notice of Proposed Rulemaking, at ¶ 18 (2000).

42 Task Force Report at 57.

licensees retain the ability to ensure that their operations will not be subject to interference by secondary uses that do not comply with the existing technical and service rules. An "easements" approach, in contrast, affords licensees no such protection and instead relies on the government to specify regulations and protocols to ensure licensed users are protected from interference, as well as to administer and resolve any harmful interference issues that arise. As the Task Force notes, the significant danger to licensees posed by increased "easement" uses is also evident when one considers the legal and political difficulties of shutting down supposedly "non-interfering" operations that are widely deployed and relied upon by consumers if those operations do, in fact, cause harmful interference to licensed users of the spectrum.[43] This is especially troublesome given how difficult it is likely to be in practice for licensees to identify whether the source of the interference their customers might experience is an unlicensed operation.

Second, proponents of an "easement" approach place heavy reliance on the ability of new technologies to monitor the surrounding RF environment actively and immediately respond to any interference to licensed uses caused by the device. As noted above, however, the ability to measure the RF environment accurately at any one location is dependent on a myriad of factors, and the so-called "smart" technologies are still in the developmental stage and largely unproven.[44] Moreover, as the Report recognizes, the secondary market approach also has "significant potential" to foster the development of such "smart" technologies.[45]

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43 *See id.*

44 *See generally Revision of part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, FCC 02-48, First Report and Order, (2002).

45 *See* Task Force Report at 57.

CTIA believes that the secondary markets mechanism of permitting access to licensed spectrum, rather than an easements mechanism, will best fulfill the Commission's goals of encouraging more efficient, effective use of the spectrum and allowing for maximum feasible flexibility of spectrum use by licensed and unlicensed users alike. On the other hand, rather than moving away from reactive, command-and-control regulation towards more flexible, market based models, the easement approach instead "inherently limits the flexibility afforded to the licensee" and "relies on government [rather than the market] to define the scope of the easement."[46] CTIA therefore urges the Commission to focus on the secondary markets mechanism to facilitate access to spectrum and increase spectral efficiency, while at the same time protecting licensed users from harmful interference.

VI. OTHER SPECTRUM POLICY REFORMS NECESSARY TO ENSURE A PROACTIVE ALLOCATION ENVIRONMENT

As a final matter, while CTIA urges the Commission to take on the challenges set forth in the Task Force Report, CTIA also recommends giving substantial consideration to other reforms that are not explicitly addressed. CTIA applauds the Commission for undertaking this evaluation of spectrum policy reform. The Report contains many recommendations that, if implemented wisely, will foster innovation in the wireless marketplace and maximize the potential public benefits that can result from spectrum-based products and services. Several key elements of reform were not addressed in the Report, however, and should be included with this spectrum reform initiative as it moves forward.

As CTIA stated in its original comments in response to the questions posed by the Task Force, the most important overall reform of the spectrum management process should be the initiation of a more systematic longer-term spectrum planning process. In its July Comments,

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46 *See id.* at 58.

CTIA urged the Commission to consider developing a "rolling" long-term spectrum planning process.[47] Current spectrum allocations would be reviewed to determine which bands should be considered for reallocation for a different use, or could be shared. The goal of such a process would not be to specify immediately how the reallocated spectrum should be used, but rather to identify what spectrum could be made available for uses other than the *status quo* in the future. The designated use of any spectrum identified for reallocation could be decided upon separately, and later.

The goal of such a long-term spectrum planning process would be to provide more predictability and policy guidance to the allocation process. To be more effective, the U.S. must move away from the current "reactive" approach and lessen the tie between allocation decisions and the budget process that so often has resulted in inefficient and poorly-timed spectrum decisions. The increased predictability that would flow from such a process would immeasurably improve the ability of both the Government and the private sector to implement better spectrum management policies. CTIA therefore again urges the Commission to consider adopting a systematic longer-term spectrum planning process.

Additionally, the Commission cannot continue to ignore large blocks of inefficiently utilized spectrum. For example, the use of spectrum by broadcasters, public safety, and federal users must be reviewed and ultimately improved. The Commission and NTIA should intensify their search for spectrum that is being used inefficiently, to determine if particular bands should be candidates for reallocation. This review is especially important for services that are not

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[47] For instance, CTIA suggested a process involving two separate "rolling" plans: a 3-year and a 10-year plan. The 3-year plan would provide more near-term predictability on the availability of spectrum over the next three years. The 10-year plan would aim for more rational, less political spectrum management decisions over time and review all government and non-government spectrum uses. See CTIA July Comments at 4.

subject to market-based incentives to use their spectrum efficiently, such as satellite services or federal government users. A multi-level long-term "rolling" spectrum management process, as discussed above, perhaps in combination with independent review mechanism similar to the Base Realignment and Closure Commission (BRAC) process, could help identify such spectrum.[48] Rather than resorting to the "easy fix" of giving inefficient or commercially non-viable incumbents flexibility to provide any service, the FCC and NTIA should consider reallocating the spectrum that is not being efficiently used, whether because the intended service did not materialize, the original assignments were not conducive to providing service, or for any other reason.

Finally, the Commission must address the future need for the reallocation of encumbered spectrum by supporting positive incentives for inefficient users to make their spectrum use more efficient. For example, if congressional authorization is forthcoming, a relocation fund could be employed when Government spectrum is reallocated and auctioned. The relocation fund would help to release encumbered spectrum, ensuring incumbent users' needs are fully accommodated, while at the same time minimizing the cost burden on auction winners and their customers. Proceeds of the auction would be used to relocate Government users and enable scarce commercial capital to be devoted to deploying infrastructure and improving service quality, instead of being used to relocate and upgrade incumbents.[49]

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48 *See,* CTIA July Comments at 5.

49 As CTIA noted in its July Comments, the Commission currently does not have the statutory authority to implement a reallocation fund. However, the Administration proposed such legislation in the last Congress and it is anticipated that the legislation will be introduced again this session. *See Comments of Cellular Telecommunications & Internet Association*, at 9-10, ET Docket No. 02-135, filed on July 8, 2002.

VII. CONCLUSION

CTIA commends the Commission and the Task Force for taking this bold and far-reaching first step towards spectrum reform. The Task Force Report contains valuable recommendations that, if implemented wisely, will improve immeasurably today's spectrum management process. CTIA urges the Commission to pursue the proposed recommendations, consistent with the concerns discussed in these comments, and thereby promote increased access and efficient use of the spectrum for all.

Respectfully submitted,

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