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

The Spectrum Policy Task Force Seeks Comment on Issues Relating to the Commission's Spectrum Policies	ET Docket No. 02-135

COMMENTS OF THE
SATELLITE INDUSTRY ASSOCIATION

The Satellite Industry Association ("SIA") hereby submits these comments pursuant to section 1.415 of the Commission's rules, 47 C.F.R. §1.415, and in response to the Federal Communications Commission's ("FCC" or "Commission") request for comments in the above referenced proceeding.

I. Introduction

SIA is a U.S.-based national trade association representing the leading U.S. satellite manufacturers, service providers, and launch service companies. SIA serves as an advocate for the U.S. commercial satellite industry on regulatory and policy issues common to its members. With its member companies providing a broad range of manufactured products and services, SIA represents the unified voice of the U.S. commercial satellite industry. SIA's Executive Members are: The Boeing Company; Globalstar, L.P.; Hughes Network Systems; ICO Global Communications; Intelsat; Lockheed Martin Corp.; Loral Space & Communications Ltd.; Mobile Satellite Ventures; Northrop Grumman Corporation; PanAmSat Corporation; and SES Americom, Inc. Inmarsat participates as an SIA Associate Member.

The SIA shares the Commission's strong interest in efficient use of spectrum as detailed in the report of the Spectrum Policy Task Force ("SPTF" or the "Task Force"). Many of these proposed policies are familiar to the satellite industry, which has long had extremely compelling financial incentives to use spectrum efficiently, flexibly and cooperatively[1].

The nature of the satellite business, with expensive spacecraft normally thousands of miles from Earth, makes it essential that these long-lived assets maximize the performance possible from the limited power and spectrum available. Furthermore, the international nature of satellites makes it essential that satellite operators share spectrum not only with other domestic satellite operators, but with users from other countries as well. The satellite industry has a long history of successful coordination and spectrum sharing.

As the Commission considers the recommendations of the Task Force, it needs to recognize that the satellite industry has already adopted many of the principles of efficient spectrum management:

- Satellites share in frequency, angular, geographic (and occasionally temporal) dimensions with high efficiency. Most U.S.- licensed geostationary satellites reuse spectrum in 2 degree increments as seen from Earth and often in more fine angles as seen from space.
- Satellites have well established interference policies largely based on degradation to receiver noise temperature. Within operating bands, standards for power density, spectrum utilization, out-of-band emissions and other factors are internationally established, allowing systems of different providers to co-exist.
- Satellite downlinks have almost completely uniform power densities. The SPTF report identifies the desirability of uniform densities to interference mitigation and sharing. Although this can be difficult to achieve in terrestrial systems it is a characteristic that comes naturally to satellites.
- Satellite regulators and operators together have even managed to develop trans-national bandwidth allocation and management based on usage (L-band) – going beyond domestic usage-based flexibility to achieve this internationally.

[1] SIA has not taken a position on the spectrum sharing issues in IB Docket 01-185 (involving spectrum flexibility for MSS licensees). These comments are not intended to address those issues and should not be read as doing so.

- Satellites are routinely relocated around the world to cover outages, backup existing systems or add capacity for events. This ability to move capacity to match demand and recover from failures on a global scale is unmatched by any other service.
- Satellite operators have for decades offered pre-emptible service, allowing priority-based assignment to emergency needs. By selling capacity at different prices based on its "pre-emptibility", operators can match the quality-of-service to price for both routine and extraordinary conditions.
- By reusing the orbital space efficiently, multiple providers offer service to almost any location on Earth in the same band, often with the same equipment. This makes the resale market efficient and competitive while providing strong redundancy to mitigate potential outages.
- The satellite industry has a vibrant secondary market in most bands - access to spectrum is not constrained as in many terrestrial wireless bands. Significant capacity is bought and sold on the spot market or on-demand from vendors to meet the needs of newsgathering, disaster recovery and military operations.

II. Spectrum Auctions

The Open-Market Reorganization for the Betterment of International Telecommunications Act (the "ORBIT Act"), prohibits the FCC from assigning by auction "orbital locations or spectrum used for the provision of international or global satellite communications services."[2] The SIA strongly supports the retention of the no auction provision of the ORBIT Act and therefore opposes the Task Force recommendation that the U.S. Congress eliminate it.

The Task Force report neither discusses, nor even recognizes the rationale behind the statutory prohibition; it makes no effort to acknowledge the complexity or danger of auctions for international or global satellite systems, opting instead simply to note that auctions might be useful for increasing flexibility. It is entirely unclear from the report how auctions would advance the goal of flexibility. or why this goal is worth risking significant and unpredictable financial damage of a vital U.S. industry.

[2] 47 U.S.C. § 765f.

In its wisdom, Congress recognized the potential adverse repercussions on the US satellite industry should orbital resources for international/global satellite systems be subject to auction. Therefore, it consistently over several years and throughout the various bills addressing the 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 such auctions in international fora. The rationale that supported the enactment of this provision of the ORBIT Act remains equally true today -- the financial and business repercussions and uncertainties associated with such an assignment method – whether implemented on a sequential or global manner -- should be avoided so as not to jeopardize US leadership in this field. Moreover, the limited rationale offered for the Task Force recommendation is based on a purely theoretical assumption that the satellite industry is interested in obtaining licenses that provide for full, flexible use of spectrum. There is no indication that there is any such interest in full flexible use.

Although unrelated to the Task Force report, it is ironic that at the same time that the Task Force prepared its recommendation, the Commission has been considering adoption of a more streamlined approach to satellite licensing that would effectively result in the elimination of possibilities for mutual exclusivity to exist among satellite applicants. Therefore, it seems even more inappropriate for the Task Force to recommend that the Commission seek a legislative change to the "no auction" provision given the pendency of the rulemaking proposing major reforms to the current satellite licensing system in an effort to streamline and reduce delays in

licensing[3]. That said, we offer a few comments in this section in response to the Task Force report's brief overture to spectrum auctions for global and international satellite services.

In passing the Orbit Act[4], Congress recognized that auctioning spectrum for international or global satellite services would cause significant harm to the ability of the US satellite industry to maintain and advance its commercial lead internationally. The Act states:

> **"***Notwithstanding any other provision of law, the Commission shall not have the authority to assign by competitive bidding orbital locations or spectrum used for the provision of international or global satellite communications services. The President shall oppose in the International Telecommunication Union and in other bilateral and multilateral fora, any assignment by competitive bidding of orbital locations or spectrum used for the provision of such services.*[5]**"**

A. HARMS FROM AUCTIONS

1. **<u>Discouraging Investment</u>** - Congress recognized that if the U.S. were to hold spectrum auctions for international satellite systems, then other nations would follow the U.S. lead particularly, since foreign satellites providing service in the U.S. would be subject to auctions if they wished to use the U.S. locations. This certainly has been the example in the commercial wireless arena, assisted in part by the U.S. efforts to export its terrestrial auction policies.

Sequential spectrum auctions would follow and would deter investment in satellite systems by raising the cost of such systems and by adding regulatory uncertainty to the system

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[3] IB Docket No. 02-34

[4] Pub.L. 87-624, Title VI, sec. 647, as added Pub.L. 106-180, sec. 3, Mar. 17, 2000, 114 Stat. 57.

[5] Pub.L. 87-624, Title VI, sec. 647, as added Pub.L. 106-180, sec. 3, Mar. 17, 2000, 114 Stat. 57.

design and implementation. Satellite operations require securing a bundle of rights rather than a single right. Authorization of a spacecraft to orbit at a particular location, granted through national licensing and International Telecommunications Union (ITU) coordination of the space segment, is one of those rights. This authorization is required to control interference and otherwise manage the orbit-spectrum resource. Rights to transmit signals to and receive signals from the satellite in each individual country covered by the satellite's footprint (spectrum assignments, or landing rights) are separate. There is a potential for individual countries to withhold such rights, in sequential auctions, by demanding high auction fees through limiting spectrum or excessive reserve pricing. As a result, sequential auctions could yield economic obstacles of such magnitude as to stifle an enterprise entirely. Satellite operators would have little or no ability to counter such behavior as earlier auctions fees committed or paid would be non-refundable. Yet, an operators entire business plan could be jeopardized by "hold out" administrations**.**

2. **Regulatory Chaos –** Patchwork rights do not work for international satellite services. To the contrary, giving a system operator the ability to serve a country, region, or broader area is the foundation of the satellite business.

Patchwork rights, however, are all but inevitable with sequential auctions. Having a separate auction for the right to serve each country within a satellite's footprint virtually guarantees that there will be multiple rights holders for the same footprint.

For example, there could be separate high bidders for the rights to serve the United States, Canada, and Mexico from a particular orbital location using C-band or Ku-band frequencies. What then? You cannot have three different satellites serving North America. And what if the auctions were for different periods of time? The United States typically licenses

space station operators for fifteen years, but Mexico has a ten year license term and Canada expects their licenses to be renewed on an annual basis.

In addition to promoting regulatory gridlock, sequential auctions provide powerful incentives for greenmail and other anti-competitive activity. Less than scrupulous companies will be tempted to pay top dollar for the rights in one or two key countries in an effort to extract money from those with a bona fide need for the rights or to prevent a competitor from providing service. In short, sequential satellite auctions are a recipe for disaster.

3. <u>Repercussions for International Coordination</u> - Currently, numerous frequency bands allocated internationally for satellite services are subject to the ITU international coordination and registration process. Any deviation from the current international system would inflict more harm on U.S. operator's than others. As the leader in satellite technology and implementation of satellite systems –U.S. licensees have been prime beneficiaries under the current system.

If some countries do not follow the US and do not introduce auctions, we can expect system operators to choose to operate under administrations that offer less onerous licensing mechanisms. There would be little incentive for a prospective satellite operator to seek an operating license from the U.S. if it could obtain an operating license significantly more efficiently from another country.

We can expect auctions in the U.S. to change the incentives of individual administrations. Currently, U.S. authorization of a satellite system that serves markets outside the U.S. does not deny the regulatory authority in those markets any revenue. With the advent of auctions, however, other nations may try to stake their claim to prospective auction revenues through "paper applicants", by claiming slots that U.S. systems need that are never actually built. Unlike

today's approach to international coordination can resole the "paper satellite" issues, in an auction regime U.S. operators would be forced to purchase rights to use the same orbital slots.

4. Delay and Denial of Service - Auctions of licenses to provide international or global satellite services in the U.S. also may harm consumers by adding costs and delaying and denying service.

Suppose sequential auctions do occur. What then is the decision process facing a system operator? How can it estimate the total costs of a project until auctions have been conducted in all countries? If the economic feasibility of a project depends upon the service revenues in other countries, then a satellite operator must wait until all (or at least most) nations have completed their authorization process before the operator can safely design its satellite system and forecast the business case. Because it will be impossible to calculate the costs associated with these sequential auctions, a satellite operator will not be able to forecast the total system cost, design the system, or determine whether the system will be sustainable and profitable. This uncertainty may make it more difficult for an operator to obtain financing or it may result in the delay or cancellation of the venture entirely. Clearly, several nations cannot conduct their auctions as quickly as one nation. At a minimum, this will cause delay in the planning, design, and commencement of services.

III. Satellite-Related Interference Considerations

SIA applauds the Task Force for recognizing the need to protect incumbent users from new sources of interference that could disrupt existing operations and future business plans.[6] While SIA recognizes the Task Force's desire to develop quantitative standards for defining harmful interference from new sources, SIA urges the Commission to avoid adopting any such quantitative standards that would unduly constrain the continued deployment of more advanced and spectrum-efficient technologies. In this regard, SIA requests that the Commission take into account the following concerns about quantifying harmful interference with respect to satellite-based services.

Today's satellite networks are more efficient, and the services they provide are available to a wider class of users than ever before. Indeed, satellite operators have every internal incentive to deploy systems that are resistant to interference and use spectrum as efficiently as possible: A typical GSO spacecraft costs hundreds of millions of dollars to construct, insure, and launch, and NGSO systems cost even more. Satellites have design lives that are very long compared to the equipment used in terrestrial networks. Moreover, satellites are not capable of being modified or repaired once they are placed into orbit. These factors, and the current frequency congestion in many satellite bands, provide compelling reasons for satellite licensees to develop and deploy interference resistant and spectrally efficient systems.

The enhanced capabilities of today's satellite networks have been enabled by a regulatory approach that has fostered a continued and significant technological evolution in satellite network design. And, if satellite systems remain adequately protected from interference through

[6] Report at 25-26.

appropriate spectrum management, SIA believes that the future presages continued technological advances, and corresponding public interest benefits.

The higher-data-rate and lower-cost services offered on today's spacecraft have been facilitated by, among other technological advances, spacecraft receive antennas with greater G/T performance, and the use of higher order modulation schemes. Such better-performing satellite receive antennas allow the use of smaller spot beams, and support the use of smaller, lower cost, lower-power earth terminals operating at higher data rates. Similarly, the development of new modulation schemes, such as 8PSK and 16QAM, allow more information to be transmitted in even less bandwidth. As a result of these advancements in design, satellite networks now provide greater overall capacity, achieve a higher level of frequency reuse, and share spectrum with other satellite networks on a geographically closer basis, than ever before.

Similarly, advances in earth terminal technology over the past few decades have fostered the use of satellite services by a wider range of users. Earth terminals have shrunk in size, use lower-powered amplifiers, and are less expensive and less obtrusive than ever before. FSS terminal antennas in the Ku-band that once were several meters in diameter have been reduced in size to less than one meter without compromising performance.

MSS terminal antennas that once were as large as one meter in diameter, and had to be permanently mounted on ships or planes, are now as small and as portable as a laptop computer, and in some cases, are handheld devices. These advances have been driven, in large part, by the developments in satellite technology described above, as well as by improved performance of earth terminals themselves. For these reasons, it is now possible to deliver Internet access, video, data, and other services directly to users, who, but for the ability to use a small,

inexpensive, and unobtrusive antenna, would not have access to a competitive telecommunications offering.

Many of these technological advances have occurred because the Commission had the foresight to set aside certain frequency bands for use by satellite networks, introduce blanket licensing, and establish technical criteria having sufficient flexibility to enable satellite networks to evolve as technology advances. For example, technical criteria locking satellite networks into the multiple-meter diameter FSS antennas of yesterday would not have allowed the use of today's 0.74m Ku band earth terminal antennas by individuals and small businesses. Similarly, technical criteria keyed to the G/T performance of FSS spacecraft antennas ten years ago would not have facilitated the use of today's small earth terminal antennas.

The "price" associated with the technologies that yield such great efficiencies in satellite network operations is that satellite system networks are increasingly more sensitive to interference other sources. For example, higher-gain satellite receive antennas are more susceptible to receiving signals from unwanted sources, and higher-order modulation schemes are more sensitive to interference due to their higher carrier-to-noise ratio requirements. Otherwise the benefits to consumers of small antennas could be lost.

Likewise, there are some simple "laws of physics" that need to be taken into account in connection with any possible changes in spectrum policy. An inescapable fact about satellite receive antennas is that they need to be sensitive enough to receive low-level signals from outer space. This characteristic, coupled with the ability to tune a receiver over the wide range of frequencies employed by most satellite networks, renders earth terminal receivers susceptible to interference from nearby, high-powered transmitters. In this regard, SIA strongly endorses the

Task Force's recognition that the Commission, in its spectrum policy deliberations, should take into account the potential for harm from incompatible systems.[7]

IV Efficiency of Satellite Systems

The SIA supports the Task Force's general goal of promoting efficient spectrum use. The SIA also supports the conclusion reached by the Task Force that, "it is neither possible nor appropriate to select a single, objective metric for comparing spectrum efficiency across different radio services[8]."

The Commission authorizes a wide variety of satellite services. Generally, each of them has a different frequency band and bandwidth, technical characteristics and constraints, as does the same service in different frequency bands (e.g., the FSS at C-band is different in character and use than the FSS at Ka-band). They may be narrowband or wideband, one-way or two-way, data or voice, fixed or mobile. User terminals range from handheld, laptop or suitcase size to small dish (~1/2m) and VSAT, up to large dish (up to 12m and above). The wide variety of satellite services makes it difficult to compare the spectrum efficiency of these very different satellite applications and services.

Nor would it be appropriate to compare spectrum efficiency of a satellite service with a terrestrial counterpart (if one exists). There are important components of the public benefit of satellite services, for example, their ubiquity and capacity to provide communications to widely separated populations that do not extend to terrestrial services. In many thinly populated or very remote areas, there are no alternatives to satellite services and the availability of those satellite

[7] Report at 22.

[8] Section D

services is critical to the Commission mandate to promote service to all of the people of the U.S. However, without success in the densely populated areas, satellite systems may not be economically viable.

As mentioned earlier, satellite system operators are already have incentives to use spectrum efficiently. There are limitations on the number of orbital slots as well as relatively few globally harmonized satellite frequencies available for any satellite service, and those frequencies are regulated not only by the Commission, but also by treaty-based provisions in the ITU International Radio Regulations. Within those constraints, and given the high cost and long lead-time of satellite systems, operators go to great efforts to maximize the efficiency of their systems. As a practical matter, the Commission staff would not want to, and probably could not, given its resource constraints, engage in meaningful evaluation of satellite system efficiency measures. The SIA supports the Task Force conclusions that competitive and economic forces perform this function best and we would submit that this has long been true for satellite services.

V. THE COMMISSION MUST BE CAUTIOUS IN PROMOTING THE PROLIFERATION OF UNLICENSED DEVICES.

Unlicensed devices are portrayed prominently in the Task Force Report as a means to increase access to and usage of spectrum. (*Report*, at § VIII(A).) Also, the Task Force includes unlicensed devices as radio equipment that would contribute to the "interference temperature" established for certain bands to protect licensed services. (*Report*, at § VI(B).)

SIA agrees with the Task Force Report in recognizing the value of unlicensed devices in expanding the usability of spectrum and the breadth of consumer devices. However, satellite

services have experienced severe interference problems with unlicensed devices,[9] and, therefore, SIA recommends that the Commission proceed cautiously in promoting the proliferation of unlicensed devices.

If the Commission wants to rely on unlicensed devices as a means to increase spectrum usage, it must require their proponents to demonstrate how power restrictions will be maintained under all distribution scenarios. Should an unlicensed device become popular with the general public, its use can expand broadly both in sheer numbers and geographically. The aggregation of interference from many devices can result in unexpectedly high levels of interference, and, given the numbers and lack of location information, make it difficult or impractical to shut down the devices in order to eliminate the interference. Again, the SIA speaks from recent experience.

The Task Force Report's discussion of unlicensed devices' contribution to "interference temperature" raises real concerns. The recommendation to quantify and fix the "interference temperature" of specific bands could have the impermissible effect of establishing a protection right for unlicensed devices.

Section 301 of the Communications Act of 1934, as amended, requires that "[n]o person shall use or operate any apparatus for the transmission of energy or communications or signals by radio . . . except under and in accordance with this Act and *with a license* in that behalf granted under the provisions of this Act."[10] The Commission exempts low power radio transmitters from the licensing requirement of Section 301 when their proponents can demonstrate that operation of the devices will result in little or no potential for interference to

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[9] *See*, *e.g.*, *Review of Part 15 and Other Parts of the Commission's Rules*, First Report and Order, 17 FCC Rcd 14063 (2002) (requiring radar detectors to comply with Part 15 radiated emissions limits to protect VSATs).

[10] 47 U.S.C. § 301 (emphasis supplied).

other services and equipment and with the proviso that they cease operation if actual interference occurs.[11]

> The fixed maxima of radiation for the various [unlicensed] devices are the limits of radiation at which they can generally be expected to operate without becoming devices which by their interference potentialities affect interstate and foreign commerce. The additional requirement that they do not cause interference is in recognition of the fact that even at these extremely low radiation limits they will in some special circumstances cause interference and thus their continued unlicensed operation would be illegal under Section 301.[12]

Operation at low power and at sufferance with respect to licensed services is thus required by the Communications Act.

However, by approving an "interference temperature" that includes operation of unlicensed devices, the Commission would essentially establish a right of unlicensed devices to "cause interference" to a certain extent. Moreover, once an interference temperature is established, there may be no opportunity for introduction of other radiators in the band (licensed or unlicensed), or for an existing licensed service to change the conditions under which it operates.

Such an indirect preference would give unlicensed devices more rights than the existing policy of operation "at sufferance" suggests. Indeed, giving any rights to cause interference or preclude operation of other devices, even in this indirect way, appears contrary to Section 301 of the Act. Section 301 mandates that unlicensed devices should be required to adapt to

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[11] *See* 47 C.F.R. § 15.5(b).

[12] *Amendment of Part 15 of the Commission's Rules Governing Restricted Radiation Devices Concerning Low Power Communication Devices*, 13 RR 1546e, 1546h (1957).

interference, not control it. Depending upon how the Task Force's recommendation would be implemented, it could fundamentally alter the Commission's regulatory regime for unlicensed devices and contradict long-standing Communications Act requirements. Accordingly, SIA urges the Commission to consider carefully any recommendation that might sanction, directly or indirectly, interference from unlicensed devices.

Extreme caution is warranted in any Commission consideration of a "set aside" of spectrum for unlicensed devices in bands that are used by satellite services. These bands are already heavily encumbered and are subject to extensive sharing between multiple satellite services (*e.g.*, between GSO and NGSO systems and between fixed satellite and mobile satellite systems), between satellite services and licensed terrestrial services (*e.g.*, between fixed satellite systems and terrestrial microwave systems in C-band and extended Ku-band, and between DBS systems and MVDDS systems in the 12.2-12.7 GHz band), and between satellite services and unlicensed terrestrial services (*e.g.*, between fixed satellite systems and unlicensed Part 15 and ultra wideband devices). [13]

If unlicensed uses are permitted in satellite bands without adequate regulatory consideration, a community of users may develop that will make it difficult for the Commission to enforce policies that are required to protect satellite systems, service providers and the consumers of their services. It is essential that satellite operators and service-providers who have invested billions of dollars in the deployment of satellite systems and consumer equipment and rely on them for numerous services, including critical infrastructure and national security

[13] Some of these sharing arrangements remain subject to reconsideration or review based on claims that they cause harmful interference to satellite services.

services, receive adequate interference protection. History demonstrates that in this arena, an ounce of prevention is worth a ton of cure.

For example, when the Commission adopted standards for Part 15 unintentional radiators, it arguably exempted receivers tuning to frequencies above 960 MHz from the Part 15 emission limits.[14] The radar detection industry took advantage of these circumstances by producing devices emitting at levels that caused extensive interference to VSATs and other satellite systems operating in the Ku-band. After numerous cases of interference were brought to its attention, the Commission initiated a rulemaking proceeding to examine this issue and revised its rules on a prospective basis to address this interference issue.[15] Although the Commission acted responsibly and with as much speed as one could reasonably expect consistent with the requirements of the Administrative Procedure Act, its actions could not undo the damage that had already occurred, and there remains, in operation, a large installed base of existing radar detectors that can interfere with satellite operations. To avoid comparable problems in the future, the Commission should not authorize additional operations on an unlicensed basis in bands used by satellite systems unless there is conclusive evidence, including valid test results, demonstrating that satellite services will be adequately protected. In fact, the FCC should establish a mechanism by which it can retroactively impose new interference rules on existing units in the market if it discovers that interference from those units is causing harm to legitimate spectrum users.

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[14] *See* 47 C.F.R. §§ 15.101(b); 15.109.

[15] Review of Part 15 and other Parts of the Commission's Rules, *First Report and Order*, FCC 02-211, (July 19, 2002).

VI. Increased terrestrial power in rural areas

The Task Force Report posits that "spectrum in rural areas is typically the least congested,"[16] and notes that "certain parties" advocate "higher permissible power standards for rural areas."[17] The Report then recommends that the Commission consider using "licensing areas that distinguish between rural and urban areas."[18] SIA opposes any change in the rules that would permit higher terrestrial power in frequency bands that are adjacent to or shared with satellite service providers. Any such change could have a particularly burdensome impact on the many businesses and individuals in rural areas who rely on satellite-delivered services as their only means of service. In fact, increasing the terrestrial power in bands shared with satellite services would expand the size of 'exclusion zones' for such services and hinder a source of 'platform competition,' which is an espoused FCC objective.

Increased terrestrial power will cause additional interference for satellite services in shared bands, whether permitted in either the uplink or downlink frequencies.

In the uplink bands, all satellites would receive higher power terrestrial interference as terrestrial systems operate in a large range of azimuth and elevation angles. In the downlink bands, the very weak signals received at satellite terminals already necessitate highly sensitive receivers. Increased terrestrial interference would, as mentioned above, enlarge satellite service 'exclusion zones'. Further, band sharing in conjunction with increased terrestrial power could restrict the development of more efficient, smaller satellite terminals that could be even more sensitive to terrestrial interference.

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[16] *Report* at page 59.

[17] Id.

[18] Id. at 60.

Both of these impacts would negatively affect the provision of fixed satellite services to rural areas. As the Commission knows well, satellites are uniquely suited to extend service to rural and remote customers who otherwise would be un-served or underserved by terrestrial networks. Because of their broad geographic coverage, satellite systems can extend service to these areas on a cost basis that is distance-insensitive. In many rural areas, satellite services are the most attractive, and sometimes only, option available to those seeking multi-channel video, broadband internet, advanced data, and essential business telecommunications services.

Allowing high-power terrestrial services in rural or remote areas in shared bands would restrict the ability of satellite operators to provide service in those areas, and therefore could harm the very businesses and consumers who have limited or no alternatives for their telecommunications needs.

Another concern of the satellite industry is that any attempt to define rural (versus suburban and urban) areas for purposes of allowing higher-power operations poses serious logistical, managerial and definitional problems. For instance, defining a whole county as rural could be erroneous because many counties that are classified as rural have urban components. Bay County, Michigan, for example, "is predominately rural but has an urban center (Bay City) near its southern end.[19]" Accordingly classifying an entire county as rural and allowing high-power operations in that county would cause harmful interference in nearby urban centers. Second, any "rural" classification of a given service area would need to be periodically revisited to account for future growth in that area. But once the higher power genie came out of the bottle, it would be difficult or impossible to stuff it back in, no matter how urban an area had become.

[19] See http://medc.michigan.org/miinfo/places/BayCounty/.

The logistical and definitional problems alone encountered in this proposal mitigate against its adoption.

In short, SIA opposes any attempt to allow 'rural' high-power terrestrial operations by separate terrestrial system operators in bands shared with or adjacent to satellite bands because it would greatly constrain the ability to provide flexible and innovative satellite services in those same areas. The proposal would artificially shift the balance of inter-modal competition toward terrestrial services and away from competing satellite services. The importance and ubiquity of satellite services to rural and remote users make it essential that the Commission refrain from making any change of the terms under which satellite systems share spectrum with terrestrial networks.

VII International Regulatory

Although the Task Force Report notes that international coordination, particularly under auspices of the International Telecommunication Union, places constraints on satellite services[20], there is otherwise no recognition of the significant impact of the international regulatory environment on whether and how U.S. licensees offer satellite services. Specifically, the Report does not clearly articulate how evolving spectrum policies will shape the unique circumstances of satellite services, and how future satellite licenses must straddle domestic and international regulatory regimes. Any Commission deliberations on spectrum policy must give informed

[20] "…[S] pectrum used for satellite services typically requires extensive international and global coordination under the International Telecommunication Union's Radio Regulations, inherently limiting a licensee's flexibility." Report at 42.

consideration to the impact that sweeping U.S. regulatory changes will have on services, like satellites, that cannot operate independently of the international regulatory environment.

The Task Force's failure to take these factors into account in any systematic way reveals a potentially harmful disconnect between the Commission's spectrum management role and its expert agency role in the international regulatory environment. For example, the Report describes regional and international spectrum harmonization as "sometimes appropriate"[21] or at best a "significant advantage" in implementing ubiquitous services and in achieving economies of scale.[22]

The certainty and consistency achieved through regional and global spectrum harmonization is not, however, merely a "significant advantage" in developing spectrum policy, as the Report suggests. Spectrum harmonization is but one of many regulatory policies that can either magnify or greatly mitigate the inherent technical and economic constraints placed on satellite systems, which must conform to domestic, international, and often multiple foreign regulatory regimes. At the same time, the goal of spectrum harmonization need not trump the Commission's authority to afford incumbent licensees the ability to innovate and increase utilization of their licensed spectrum.

SIA urges the Commission to more formally and systematically incorporate consideration of international regulatory processes in its development of spectrum management policies. The U.S. government as a whole, with support from the private sector, has made significant efforts at

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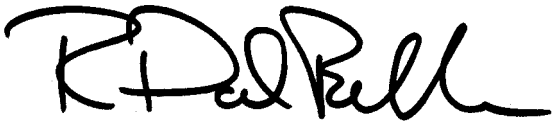
[21] One of the major findings of the Report was that "[d]edication of spectrum in conformity with international harmonization considerations is *sometimes appropriate* to foster internationally ubiquitous services and economies of scale. Report at 6 (emphasis added).

[22] "[B]ecause regional and world wide harmonization of band use can have *significant advantages* both in terms of truly ubiquitous services and economies of scale, in developing domestic spectrum policies and allocations, the Commission should consider the potential impact on international objectives, among other objectives." Report at 42.

shaping policy through careful consensus-building in international regulatory organizations, and these efforts have benefited U.S. licensees in the deployment of their systems globally. SIA urges the Commission to consider the international regulatory process in its development of spectrum management policies. SIA believes that the public interest is best served when the Commission carefully considers and reflects the inter-relatedness of domestic and international spectrum policies.

Respectfully submitted,

SATELLITE INDUSTRY ASSOCIATION

By: 

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