BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
FWCC Request for Declaratory Ruling on	)	
Partial-Band Licensing of Earth	)	IB Docket No. 00-203
Stations in the Fixed-Satellite Service	)	RM-9649
That Share Terrestrial Spectrum	)	
	)	
FWCC Petition for Rulemaking to Set	)	
Loading Standards for Earth Stations	)	
In the Fixed-Satellite Service that	)	
Share Terrestrial Spectrum	)	
	)	
Onsat Petition for Declaratory Order that	)	
Blanket Licensing Pursuant to Rule 25.115 (c)	)	SAT-PDR-19990910-00091
is Available for Very Small Aperture	)	
Terminal Satellite Network Operations at C-	)	
Band	)	
	)	
Onsat Petition for Waiver of Rule 25.212(d)	)	
to the Extent Necessary to Permit Routine	)	
Licensing of 3.7 Meter Transmit and Receive	)	
Stations at C-Band	)	
	)	
Ex parte Letter Concerning Deployment of	)	
Geostationary Orbit FSS Earth Stations in the	)	
Shared Portion of the Ka-band	)	

To: The Commission

COMMENTS OF VIRTUAL GEOSATELLITE, LLC

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SUMMARY

In these Comments, Virtual Geosatellite, LLC ("Virtual Geo") responds to the Commission's proposals to address supposed failings in the Commission's longstanding mechanisms for coordinating fixed-satellite service ("FSS") earth stations and fixed service systems. Virtual Geo also comments upon the Commission's proposal to initiate blanket licensing of certain FSS terminals at C-band.

The Commission's interservice coordination proposals were inspired by a request for declaratory ruling and associated petition for rule making that were filed in 1999 by a fixed service industry association called the Fixed Wireless Communications Coalition ("FWCC"). As Virtual Geo explains in its Comments, the Commission's proposals suffer from a pair of fundamental defects. First, they are based on completely unsubstantiated claims that a problem exists in the first instance. The FWCC and the Commission point to nothing more than the fact that the Commission's current rules accord different treatment to the FSS and fixed service as the basis for imposing stringent new "efficiency" obligations on the FSS. Efficiency on the part of the FSS is necessitated both by Commission rules and the inherent economics of satellite operation; the flexibility required in the FSS ground segment should not be confused by the FWCC (and certainly not by the Commission) with inefficiency. No problem has been shown to exist.

Second, rules proposed by the Commission would add unnecessary and onerous regulatory burdens to emerging broadband FSS providers. These burdens would make it more difficult for FSS systems to compete in the emerging markets for broadband customers, and they would occupy the precious technical and staff resources of the Commission as irreconcilable coordination disputes are presented to the Commission for adjudication. Thus, the proposed solution to the "problem" is grossly inequitable to the FSS.

In addition to these fundamental defects, the Commission erroneously fails to take into account that there are FSS innovations (including the use of new orbital architectures such as the Virtual Geostationary Satellite Orbit ("VGSO") type of NGSO FSS system proposed by Virtual Geo) that achieve sharing between the FSS and the fixed service without the need for Draconian measures. Moreover, and to the extent that the Commission is rationalizing the admitted intrusiveness of its regulatory proposals on the FSS by emphasizing that the FSS users of the spectrum have obtained their rights "free of charge," it may be making a stand precluded by the Communications Act, and is advancing the dubious premise that spectrum purchased at auction is used more efficiently than spectrum assigned through traditional assignment mechanisms.

If the Commission believes that the concerns that underlie its *NPRM* are valid, it should inquire into the need for regulation and the form that any necessary regulations should take, taking due account of the motives of the proponents on whose behalf its proposals were made, the requirements and capabilities of the FSS, and the fact that accommodations for FSS and fixed service use of co-primary bands are being worked out in a number of bands. In so doing, however, the Commission must recognize and create an exception for any FSS systems – such as the VGSO-type NGSO FSS systems like the one proposed by Virtual Geo – that are already capable of sharing spectrum with fixed service systems. At this point, however, the Commission has no alternative but to decline to adopt its FWCC-based proposals.

With regard to C-band, Virtual Geo does not object to the Commission's proposals regarding the establishment of "CSAT" rules that address the situation presented in the Notice of Proposed Rule Making. The Commission should expressly recognize, however, that there may well be additional situations (perhaps involving certain classes of NGSO FSS systems) that may also make the demonstration someday that they too should be considered eligible for blanket licensing of smaller C-band terminals under the new CSAT rule.

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To: The Commission

COMMENTS OF VIRTUAL GEOSATELLITE, LLC

Virtual Geosatellite, LLC ("VirtualGeo"), by its attorneys and pursuant to Section 1.415 of the Commission's Rules, 47 C.F.R. § 1.415, hereby comments on the Commission's Notice of Proposed Rule Making in IB Docket No. 00-203.[1]

[1] *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service that Share Terrestrial Spectrum*, FCC 00-369 (released October 24, 2000) ("*NPRM*").

I. INTRODUCTION

As Virtual Geo explains in these comments, the Commission's proposals concerning the coordination between fixed-satellite service ("FSS") earth stations and fixed service systems that operate in the C-band (4/6 GHz) and Ku-band (12/14 GHz) frequencies suffer from a pair of fundamental defects. First of all, the Commission proposals are based on a set of unsubstantiated claims that have been advanced by a fixed service industry group with members that are now or soon will be in competition with affected FSS systems for customers for broadband services. Second, the proposed rules impose unnecessary and onerous regulatory burdens on emerging broadband FSS providers – burdens that will mire the Commission in the minutiae of post-licensing interservice coordination disputes for years and significantly impact already-strained Commission resources. To compound these defects, the Commission's *NPRM* fails to take account of the fact that there are FSS innovations (including the use of new orbital architectures such as the one proposed by Virtual Geo to the Commission) that encourage co-frequency sharing by FSS and fixed service systems even in situations where operators in both services intend to provide service to ubiquitously-deployed users. All of these factors will have the effect of further chilling investment in satellite-delivered solutions to the nation's burgeoning demand for broadband capacity.

Insofar as the Commission is proposing "specific rules … to address the concerns of the Fixed Service community[]" at the same time that it "seek[s] comment on the extent of the FS and FSS sharing problem[,]"[2] it seems to have placed the cart well ahead of the horse. To the extent that the Commission is rationalizing the admitted intrusiveness of its regulatory proposals on the FSS by emphasizing that the FSS users of the spectrum have obtained their rights "free of

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[2] *NPRM*, FCC 00-369, slip op. at ¶¶ 29, 30.

charge,"[3] it may be making a stand precluded by the Communications Act, and is advancing the dubious premise that spectrum purchased at auction is used more efficiently than spectrum assigned through traditional assignment mechanisms.[4]

In short, Virtual Geo believes that the so-called FSS efficiency requirements the Commission has proposed are unsubstantiated, overly intrusive, unnecessary for at least some types of FSS systems in the C- and Ku-bands, and quite possibly are in contravention of the Communications Act of 1934. If the Commission believes that the concerns that underlie its *NPRM* are valid, it should take the time to conduct an inquiry into the need for regulation and the form that any necessary regulations should take, taking due account of the motives of the proponents on whose behalf its proposals were made, the requirements and capabilities of the FSS, and the fact that accommodations for FSS and fixed service use of co-primary bands are being worked out in a number of bands (including the segmentation/sharing arrangements in the Ku-band at 19/29 GHz and the U.S.-inspired arrangements at V-band (37.5-42.5 GHz) that were adopted internationally at the 2000 World Radiocommunication Conference in Istanbul. In so doing, however, the Commission must recognize and create an exception for any FSS systems – such as the NGSO FSS system proposed by Virtual Geo – that are already capable of sharing spectrum with fixed service systems.

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3 *Id.* at ¶ 61.

4 *Id.*

II. DISCUSSION

A. Statement Of Interest

Virtual Geo is an applicant for an NGSO FSS system that will operate in the C-band (4/6 GHz) and Ku-band (12/14 GHz) frequencies that are the principal subjects of the Commission proposals that are derived from the petition for rule making and request for declaratory ruling that were tendered by the Fixed Wireless Communications Coalition ("FWCC") – a fixed-service industry group.[5] Virtual Geo has proposed the use of a particular type of NGSO orbit architecture, which it calls the "virtual geostationary satellite orbit" or "VGSO," that entails the use of satellites in highly elliptical orbits (i.e., with apogees of about 27,000 kilometers and perigees of roughly 800 kilometers) flying in identical repeating ground tracks that enable the provision of stationary coverage over areas on the earth.[6]

In spectrum where NGSO systems are obliged to operate using VGSO architecture, there is extraordinary sharing potential. VGSO satellites, which are operational only when widely separated from satellites operating over the equator in geostationary orbit, are almost completely benign to co-frequency geostationary satellites.[7] They also permit an extraordinary amount of

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[5] *See* Application of Virtual Geosatellite, LLC, File No. SAT-LOA-19990108-00007 (filed January 8, 1999) ("Virtual Geo Application").

[6] With as few as five satellites in VGSO orbits, full coverage of either the northern hemisphere or the southern hemispmere can be achieved; global coverage is achieved with as few as ten satellites in VGSO orbits, while a 15-satellite constellation will enable global coverage with some satellite diversity and redundancy. Virtual Geo has proposed the use of VGSO orbit architecture as a regulatory policy for NGSO FSS satellites in the Commission's ongoing rulemaking proceeding in ET Docket No. 98-206, where portions of spectrum in Ku-band were recently allocated or designated for use by NGSO FSS satellites and where a future notice of proposed rule making will soon be issued to address intra-NGSO FSS sharing. *See Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range,* First Report and Order and Further Notice of Proposed Rule Making, FCC 00-418 (released December 8, 2000) ("*First R&O in ET Docket No. 98-206*").

[7] VGSO satellites produce a clear-sky $\Delta T/T$ degradation factor of a paltry 0.15% at a GSO earth station (a 6.0% $\Delta T/T$ degradation increase is typically required even to trigger coordination between two geostationary satellites). The clear-sky $\Delta T/T$ degradation produced by VGSO into a GSO satellite receiver is only 0.82%, while

co-frequency sharing among similar NGSO systems – specifically, in spectrum used by NGSO FSS systems that operate exclusively in VGSO orbits (while sharing with other services), it is possible to have 168 active VGSO satellites at any one time. This means that there could be 168 regional/national satellite operators or 56 hemispheric systems or 28 full global VGSO systems in any set of paired bands.[8] The use of VGSO architecture also permits extraordinary sharing between VGSO-type NGSO FSS systems and fixed service systems, allowing co-frequency operation between the two services even where each would use ubiquitously-deployed user terminals.[9]

Virtual Geo's approach to spectrum utilization is premised upon the maintenance of large angular separations (on the order of greater than 45 degrees in the continental United States) between operational VGSO satellites and geostationary satellites in the FSS or the broadcasting-satellite service ("BSS"). VGSO satellites are dormant when near the horizon. This approach has a substantial impact on sharing between FSS satellites in VGSO systems and the fixed service. Because VGSO constellations will use GSO-type directive, narrow-beam Earth station antennas in any bands they share with the fixed service, there is on the order of 23 dB of off-axis antenna attenuation toward the fixed service – attenuation that dramatically increases coordination flexibility between earth stations operating with VGSO satellites and the fixed

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the degradation in rain increases to a still-small 1.7%. *See* Virtual Geo *Ex Parte* presentation in ET Docket No. 98-206, dated December 15, 2000, at 23-24 ("Virtual Geo *Ex Parte*").

8 Virtual Geo *Ex Parte*, at 18.

9 *Id.* at 25-26.

service.[10] In other words, with VGSO-type FSS systems, the sharing "concerns" that motivated the Draconian proposals set forth in the *NPRM* simply do not apply.

Virtual Geo's sister company, Ellipso, Inc., is a member of the Satellite Industry Association ("SIA"), which is today filing comments in the instant proceeding as part of a multi-association group called the Satellite Industry Coalition (the "Satellite Coalition") and has participated in the development of the positions taken there. Virtual Geo fully supports the arguments regarding the Commission's response to the FWCC proposals that are advanced in the Satellite Coalition's filing, and hereby incorporates them by reference into these Comments. It writes separately here to add emphasis to certain points from Virtual Geo's unique, VGSO-based perspective on fixed service/FSS sharing, and to expose the flaws in the Commission's decision to paint the always-intricate picture of interservice sharing between the fixed service and the FSS with such broad strokes.

B. The Commission's FWCC-Based Proposals Are Unsubstantiated In Fact Or Policy, Overly Burdensome Both To The Commission And The Satellite Industry, And Overbroad In Scope; This Aspect Of The *NPRM* Should Be Rejected.

1. The "Concerns" Addressed In The *NPRM* Have Not Been Shown To Exist.

Virtual Geo believes that there is no present basis for the issuance of the proposals contained in the *NPRM*. In response to a filing by a fixed service trade association[11] – a filing that was duly and thoughtfully responded to by potentially affected members of the satellite industry – the Commission proposes to overturn over three decades of policies and practice on sharing between the fixed service and the FSS. The Commission incongruously accepts the

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[10] *Id.* at 27. The VGSO design minimizes interference even in the case where there is an Earth-grazing VGSO satellite transmitting to a region on the opposite side of the world, as satellite radiation to the Earth's limbs is reduced through satellite antenna steering and/or pattern shaping.

[11] *See NPRM*, FCC 00-369, slip op. at ¶ 2; FWCC Request for Declaratory Ruling and Petition for Rule Making (filed May 5, 1999).

"concerns" expressed by the FWCC as to the alleged inequitable treatment that the fixed service community receives in contrast to the FSS, while simultaneously asking for comment on the extent of the problem it is making admittedly stringent proposals to solve.

The satellite industry and the fixed service industry have co-existed in certain bands on a co-primary basis for years. Fundamental differences between the two services – both in terms of operations and in terms of process by which operators in each service proceed from the design table to actual operation – have complicated this process from the outset. In recent years, the efforts of both services to evolve to user-oriented, ubiquitously-deployed operations has complicated the process further. These differences are duly reflected in the rules applicable to each service, and for the most part are based on an appropriate mix of experience in the field and the characteristics of the subject service.

The fact that the FSS is different from the fixed service is well established. Yet, the fact that the two services are different seems to provide the principal basis for both the FWCC proposals and the slightly moderated versions thereof that are advanced in the *NPRM*.[12] Satellite interests set the record straight on why flexibility in assignments is essential for earth stations, and the Satellite Industry Coalition comments being filed today provide further amplification of these positions. None of this is new, and all is duly reflected in more than 30 years of Commission decisions promulgating the rules and policies that regulate the satellite industry. Suffice it to say that with huge upfront investments that require satellite systems to place expensive turn-key systems into full operation (as opposed to the case-by-case

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[12] *See NPRM*, FCC 00-369, slip op. at 4 n.9 (reciting FWCC allegation that fixed service is disadvantaged because the Commission licenses earth stations for the entire allocated band and with no loading requirements while point-to-point terrestrial operations are limited to frequencies actually needed and are subject to stringent spectrum efficiency requirements).

deployments possible with point-to-point fixed service systems and the phased rollout deployments possible with multipoint systems), satellite operators have every incentive to ensure that their systems are as lean and spectrum efficient as possible.

If, on the basis of informed comments provided by entities with real world experience in coordinating fixed service and FSS earth stations at C-band and Ku-band frequencies, it turns out that there are sharing problems, and those problems are substantial enough to merit a Commission response through regulation, then and only then should the Commission make a proposal for how to solve the sharing problems. For now, where neither the *NPRM* nor the underlying petitions contain even a scintilla of evidence to support the existence of a real problem, much less the Draconian measures proposed to address the "problem," there is absolutely no basis for taking any of the actions the Commission proposes.

2. For VGSO-Type NGSO FSS Systems, There Is No Sharing Problem, And Thus There Is No Need For The Commission's Proposed Regulations.

The Commission claims that its proposed coordination procedures are intended to increase efficient and equitable use of the C-band and Ku-band frequencies shared on a co-frequency basis by the FSS and the fixed service.[13] This procedure would ostensibly be invoked whenever an FSS earth station licensee denies a coordination request from an fixed service applicant – without regard to the cause for such denials.

The Commission's proposal is, among other things, overbroad. It fails to take account of the fact that certain types of FSS systems (such as NGSO FSS systems using the VGSO architecture championed by Virtual Geo) are compatible with the fixed service, and are, by their nature, using the subject frequency bands in an extremely efficient manner. While Virtual Geo anticipates that, upon further inquiry, the record will show that there is no problem that requires

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[13] *Id.*, FCC 00-369, slip op. at ¶ 53.

regulatory intervention to correct, it urges the Commission to take note of the fact that VGSO systems and FS systems are compatible in a way that obviates the need for application of the type of scheme proposed in the first place.

3. The Commission's Proposals Would Be Extremely And Unreasonably Burdensome To FSS Systems.

The Commission believes that its proposals "are the most effective and targeted means of addressing the concern of the FS community regarding access to spectrum at the time of coordination, without imposing unnecessary regulatory constraints on either service."[14] Virtual Geo must respectfully disagree with the Commission's conclusion.

For the reasons stated in the Satellite Industry Coalition's Comments in response to the *NPRM*, there is no question but that the Commission's proposed regulations regarding demonstration of earth station "use" are impractical and unreasonably burdensome. Particularly troublesome is the ease with which the Commission proposes to increase exponentially the complexity of earth station operation, and the fact that the Commission's regulatory oversight role (both in terms of dispute resolution and interpretation) will impose a further drain on already strained personnel and technical resources.

The Commission should not be advancing proposals that reduce the flexibility of earth station operators to provide service in the absence of a compelling showing of need and a comprehensive balancing of the equities involved. Nor should the Commission be promoting a regime whereby mere applicants in the fixed service, many of whom will be in competition for broadband customers with FSS systems, have the ability and incentive to make requests of FSS earth station operators that will require repeated responses by the earth station operators and

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[14] *Id.*, FCC 00-369, slip op. at ¶ 44.

leave them exposed to the permanent loss of rights to their licensed spectrum. Disputes are inevitable, and the Commission will be required, time and again, to adjudicate these disputes.

Also troubling to Virtual Geo is the realization that the Commission is prepared, on the basis of a single request for coordination from a fixed service applicant, to permanently preclude an earth station from using spectrum that was included in its initial authorization.[15] Under the Commission's proposals, if an earth station is not "using" all of its authorized spectrum at the time a fixed service applicant makes a coordination request, it forever loses its right to that spectrum, even if the fixed service applicant never becomes a licensee or otherwise puts the frequencies into use. This is grossly inequitable.

Particularly problematic for Virtual Geo is the Commission's proposal to require an earth station licensee to provide to each subsequent fixed service licensee any accommodations it has made to a prior requester of coordination – without regard to circumstances, such as terrain or building shielding considerations.[16] This proposal will have the effect in practice of making it more difficult for even the first fixed service applicant to coordinate successfully, as the FSS earth station licensee will believe it has to hold something back to give to the next fixed service applicant that comes down the pike. In other words, the concept is not well-conceived, and would promote inefficiency in the long run.

4. The Commission Is Unfairly And Impermissibly Punishing FSS Systems For Having Spectrum Assigned Other Than By Auctions.

Virtual Geo objects strenuously to the Commission's determination that it is appropriate to impose "intrusive" efficiency requirements on the FSS, in satisfaction of the Commission's spectrum management objectives, because FSS users have obtained their access to the spectrum

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15 *See NPRM*, FCC 00-369, slip op. at ¶ 78.

16 *Id.*

through traditional assignment mechanisms rather than by auction.[17] As Virtual Geo noted above, there are efficiency obligations for satellite systems in the Commission's rules. More important, however, is the practical reality of satellite system economics. For a satellite system to become operational, a tremendous up front investment in space and ground segment facilities is required – ranging from the hundreds of millions of dollars for the most simple single-satellite geostationary FSS systems to the billions of dollars for NGSO FSS systems that provide global service. As satellite systems are both bandwidth and power limited, there is every incentive to ensure that the technical facilities are both designed to be as efficient as the technological state of the art permits, and as adaptable as possible to the changing requirements of the actual and anticipated user populations.

The fact that FSS spectrum is not assigned through auction thus has nothing to do with how efficiently that spectrum is used. Moreover, there remains a very real concern that if the United States were to auction spectrum for use by U.S.-licensed global and international systems, the U.S. licensees would face auctions in each of the countries they sought to serve around the world – an outcome that would greatly complicate the establishment of satellite systems and inhibit their ability to compete.[18]

The fixed service, on the other hand, has historically not been similarly incentivized to use spectrum efficiently. The assumption implicit in auctions is that the purchasing licensees will have a heightened incentive to use their frequencies efficiently. This assumption, however, has not been fully borne out through practical experience. Even where fixed service spectrum is

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[17] *See NPRM*, FCC 00-369, slip op. at ¶ 61.

[18] The legitimacy of this concern is bolstered by the inclusion in last year's amendments to the Communications Satellite Act of 1962 of a prohibition on the use of competitive bidding to assign orbital locations or spectrum that is used for the provision of international or global satellite communications services. *See* 47 U.S.C. § 647 (2000).

assigned through auction, the Commission permits fixed service licensees of vast geographic areas to be considered to have substantially implemented their authorizations when only a handful of links have been placed into service.[19]

While auctions of fixed service spectrum raise the up front costs of entering service, they still do not provide anywhere near the incentive to use spectrum efficiently that the practical reality of establishing a turn-key system imposes *de facto* on satellite system operators. These real world considerations mean more than any efficiency regulations ever could, and the asymmetry cited by the Commission in the *NPRM*, to the extent that a comparison of efficiency obligations is valid in the first instance, is at best inapposite.

Virtual Geo also believes that, by relying on the difference in assignment mechanisms between the fixed service and the FSS as a rationale for the imposition of admittedly intrusive regulatory burdens on the FSS, the Commission may be treading perilously close to policy determination that runs afoul of the Communications Act of 1934, as amended. Section 309(j) of the Communications Act sets forth the Commission's competitive bidding authority. The statute allows or obligates the Commission to assign certain licenses within a service by competitive bidding, but does not extend authority to the Commission to use competitive bidding to make

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[19] *See Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service*, 12 FCC Rcd 10785, 10843-44 (¶ 113) (1997). There, setting a very lenient build-out standard that has been relied upon in numerous subsequent fixed service rule making proceedings (including many where the spectrum was to be assigned through competitive bidding), the Commission stated that:

> [F]or a WCS licensee that chooses to offer fixed, point-to-point services, the construction of four permanent links per one million people in its licensed service area at the ten-year renewal mark would constitute substantial service. In the alternative, for a WCS licensee that chooses to offer mobile services, a demonstration of coverage to 20 percent of the population of its licensed service area at the ten-year mark would constitute substantial service.

The Commission went on to establish additional caveats that further watered down this relaxed standard that the Commission acknowledged to be the most liberal construction requirement it had adopted to date. *Id. See also id.*at 843 (¶ 112).

allocation decisions or for the management of spectrum previously allocated. Indeed, the Commission's general authority to use competitive bidding is clearly applicable only to scenarios involving mutually exclusive applicants for *initial* licenses and construction permits.[20] The statute provides that the use of competitive bidding may not alter existing spectrum allocation criteria and procedures.[21]

When the Commission proposes using the criterion of whether spectrum was assigned by competitive bidding or obtained "free of charge" in the furtherance of its spectrum management objectives, it may well be exceeding its authority under the Act. This is especially so here, where the proposed regulations would permanently take spectrum assigned today to FSS licensees and reassign it to fixed service applicants.

The Commission's proposal in this regard also contravenes the intent of Congress, as recently expressed in the provisions of the Open-Market Reorganization for the Betterment of International Telecommunications Act of 2000 (the "ORBIT Act").[22] The ORBIT Act was adopted in furtherance of the stated national objective of promoting a fully competitive global market for satellite communication services for the benefit of consumers and providers of satellite services and equipment.[23] The ORBIT Act specifically denies to the Commission authority to assign orbital locations or spectrum used in the provision of global or international satellite communication services by competitive bidding.[24]

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20 *See* 47 U.S.C. § 309(j)(1).

21 *Id.* at § 309(j)(6)(A).

22 *See* Public Law 106-180, 114 Stat. 48 (adopted March 17, 2000), *codified at* 47 U.S.C. §§ 761, et seq.

23 *See* Public Lat 106-180, at § 2.

24 *See* 47 U.S.C. § 765f.

There is clearly a national priority placed on the promotion of a competitive global marketplace for satellite communications services. The Commission's proposals, to the extent that they clearly inure to the benefit of the fixed service at the expense of satellite services, are incompatible with this policy. This incompatibility is only exascerbated by the fact that the Commission's stated reason for favoring the fixed service is that the fixed service acquires its licenses by competitive bidding (as contrasted with satellite licenses that are obtained free of charge). It is difficult to understand how a proposal that would punish satellite systems by taking away spectrum simply because it was not assigned by auction could be found consistent with a recently-enacted statute that precludes the Commission from assigning satellite spectrum by auction in the first instance.

5. Conclusion

On the basis of the foregoing discussion, Virtual Geo calls upon the Commission not to implement the regulatory changes it has proposed in the *NPRM*. The Commission has asked for comments on whether there is a sharing problem between the fixed service and FSS earth stations in C-band and Ku-band. The Commission must determine: (i) whether there is a true and verifiable sharing problem; and, if so, (ii) whether there is a need for regulatory intervention to rectify the problem(s) identified. If both inquiries are answered in the affirmative based on a comprehensive record that takes full account of all relevant considerations (including the different sharing attributes of specific sub-classes of FSS systems), then and only then should the Commission proceed to propose tailored, reasonable, and equitable regulations. The prerequisites have not been met to date.

C. Virtual Geo Supports The Commission's "CSAT" Proposals, But Urges The Commission To Recognize That Other Types Of FSS Systems, Particularly VGSO-Type NGSO FSS Systems At C-Band, May Be Appropriate For CSAT Regulation In The Future.

Virtual Geo supports the Commission's proposals regarding the establishment of regulations to enable the licensing of very small aperture terminal satellite earth station networks at C-band under a single authorization and with prior coordination.[25] The rules it proposes are appropriate in light of the proposals on which they are based.

In these Comments, Virtual Geo urges the Commission to recognize that the potential universe of very small aperture terminal earth station networks at C-band that are capable of being established under a single authorization is not necessarily limited to geostationary FSS networks that would use no more than 20 MHz of C-band spectrum at three of fewer geostationary satellite orbital locations. As explained above, VGSO-type NGSO FSS systems are capable of operating on a fully compatible basis with terrestrial systems, even where ubiquitously-deployed Earth terminals are envisioned, and this would conceivably be so at C-band.[26]

Virtual Geo is not asking the Commission to alter its proposed rules at this time to make accommodations for prospective VGSO-type "CSAT" applications. It merely is urging the Commission to indicate in its forthcoming Report and Order in this proceeding that, upon proper demonstration, additional types of FSS applications may become eligible for CSAT treatment in the future. In this regard, and in response to the Commission's inquiry,[27] Virtual Geo believes that it would be premature for the Commission to propose to limit the licensing of all CSAT

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25 *See NPRM*, FCC 00-369, slip op. at ¶¶ 81-97 and Appendix C.

26 Virtual Geo states that this would "conceivably" be so because there are no present proposals by NGSO FSS systems to employ small earth terminals at C-band. Virtual Geo's pending application proposes to employ gateway earth stations at C-band. This portion of Virtual Geo's hybrid C/Ku-band application, however, has yet to be accepted for filing, and no cut-off has yet been established for additional NGSO FSS applications at C-band.

27 *See NPRM*, FCC 00-369, slip op. at ¶ 93.

networks to a particular identified portion of the C-band or to set aside any discrete portion of C-band spectrum for CSAT use.

III. CONCLUSION

For all of the reasons set forth above, and in the Comments being filed this day by the Satellite Industry Coalition, Virtual Geo urges the Commission to decline to adopt the proposals it has advanced in response to the "concerns" raised by the FWCC. Virtual Geo also urges the Commission, in acting favorably on its CSAT proposals, to leave open the possibility that additional types of FSS systems, including possibly VGSO-type NGSO FSS systems, may make demonstrations that permit extension of the CSAT regime beyond the current proposal.

Respectfully submitted,

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