- emergency services
- messaging
- transaction business services

These categories are then further divided based on coverage, length of outages (ability to provide near real-time services) and the particular industry being served. Paraphrasing the *Guidelines* language quoted above, and using one of the markets identified in Table 1 "Markets and Supplies" which appears in Appendix A for example, near real-time[18] (or outages less than five minutes) nationwide ubiquitous truck dispatch and monitoring services is a relevant market because a hypothetical monoplist (either a Little LEO or another satellite or even ground-based system) that was the only present and future supplier of a near real-time service with nationwide, ubiquitous coverage could raise the price of such services by at least a small but significant amount (e.g., 5-10%[19]) above the competitive level without having so many consumers of that service shift to other products.[20] This conjecture is supported by the fact that the current monopoly of QUALCOMM's OmniTRACS services incorporates equipment and service costs significantly above that of Little LEO provider of substitutable services (i.e., $3,000 for subscriber equipment and $80 per month).

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18 Defined as service with outages less than five minutes.

19 In general, the *Guidelines* define a "small but significant and nontransitory" increase in price as "a price increase of five percent lasting for the foreseeable future." The analysis described here posits a ten percent price increase to ensure a conservative delineation of the relevant markets: if a hypothetical monopolist of a given service could profitably impose a ten percent price increase, then, *a fortiori*, it could impose a five percent price increase. *Guidelines* §1.11.

20 The relevant markets may even be smaller than this if the hypothetical monopolist likely would discriminate in prices charged to different groups of buyers, distinguished, for example, by their uses or locations. Such potential price discrimination is not unlikely between buyer groups within many of the markets identified above, so that a more detailed analysis could well delineate different relevant markets corresponding to each such buyer group. Buyer groups can be defined based on their niche application in addition to timeliness and coverage requirements.

In general, near real-time services tend to be separate markets because in most cases the value enhancement achieved by the ability to have near real-time communications dwarfs the service cost imposed for the capability. This added value can be represented in examples that involve safety of human life as well as those that incorporate high value assets. As a specific example consider the following: An automobile is driving at night on a country road. It loses control sliding into a telephone pole, deploying the airbag and rendering the driver unconscious. The auto is equipped with a Little LEO terminal that sends an alarm upon deployment of the airbag indicating both that the auto has had an accident as well as the location of the vehicle. This information is forwarded to a local emergency response service. The driver of this car purchased the Little LEO capability as an option for under $500 with an annual service charge of $25. it is unlikely that this buyer would switch to a product that may entail life endangering delays in communication of 30 minutes or more if presented with an increase in the service price of 10% (i.e., an increase in the annual service charge of $2.50).

While factual determinations at this early stage in the life of this industry are necessarily subjective, we can identify a large number of distinct markets that are potentially markets as defined by the *Guidelines* and which could be served by a second round licensee if it receives the necessary spectrum from the FCC.

Of these markets, 32% cannot be served by any first round Little LEO system.[21] These markets are characterized by a high valuation on timeliness of transmission and broad (global or nationwide) geographic coverage. The only alternative non-Little LEO potential supplier in these

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21 Although Orbcomm and GE Starsys may have access today to sufficient spectrum to implement near real-time systems, the current technical design and system implementation plans of these two satellite systems do prevent the offering of near real-time services.

markets would be a Big LEO System with costs significantly higher than those of Leo One USA. In these markets, a system similar to that proposed by Leo One USA will either be providing an entirely new service or will enable a large reduction in price (and/or increase in quality) to consumers. It is in these markets that the gain to consumers will be the most certain (and perhaps account for the largest increase in consumer surplus) and, since these will also be the most profitable markets to enter, it is to these markets that Leo One USA can be expected to first allocate its available capacity.

In another 17% of markets, one or more incumbent Little LEO systems would be the low-cost provider(s). In the remaining 44% of markets identified, Little LEO systems would be likely to face varying degrees of competition from multiple suppliers of several types of other systems offering data services, notably cellular, broadband PCS and SMR, as well as terrestrial data system suppliers such as Cellnet and CDPD. In these markets, new entrants can be expected to look for "niche" sales, where some characteristic of a Little LEO service appeals to customers with particular attributes. Entry of second round licensees into these markets can thus be generally expected to be the lowest priority for Leo One USA's use of available capacity, as well as affecting prices the least and generating the lowest benefit to consumers.

Once a relevant market is defined, the next task is to determine which firms are participants in that market and then to estimate market concentration. Under the *Guidelines*, participants include not only firms that are (or would be) selling that product in that geographic configuration, but also any other firm that would be likely to enter rapidly in response to a "small but significant and nontransitory" price increase, without incurring significant sunk costs of entry or exit (i.e., firms capable of "hit and run" entry). Leo One USA has identified 21 classifications of firms that could

potentially compete in the identified markets.[22] These firms include geostationary satellite systems, Big LEOs and an assortment of terrestrial-based data communication service providers.

Of the markets identified in this economic analysis, one third of the total markets will not be served by any service provider, including Orbcomm, Starsys or VITA. These markets require near real-time communications and global or nationwide geographic coverage.[23] A Little Leo system is the only cost-effective supplier of these services.

3. Competitive Analysis

As discussed more fully in Appendix A, licensing of new, second round NVNG MSS systems would have a significant, procompetitive impact on the first two groups of markets. A new NVNG MSS system, such as the Leo One USA system, would be expected to use its capacity to provide a new service in many of the markets that will not be served by first round licensees and to increase competition significantly in others. The result will be significant benefits for consumers, which would be lost if the spectrum necessary to enable second round licensees to compete is not allocated to new entrants capable of providing a full range of services similar to those proposed by Leo One USA.[24]

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22 The only potential alternative supplier for these markets may be a Big LEO system which would result in significantly higher costs for the consumer than would be the case with an NVNG MSS system.

23 The ability to provide near real-time service depends on two factors. First, the service operator must have access to a significant number of channels to support the costs of the satellite system's infrastructure necessary for the provision of near real-time services. Second, the system operator must use an architecture that can provide near real-time services.

24 The same anticompetitive impact would result from allowing first round licensees to bid on newly available spectrum in the event the Commission auctions NVNG MSS spectrum.

In the markets that cannot be served by the current NVNG MSS licensees, the introduction of a second round licensee with a near-real-time system would have a significant procompetitive impact. A provider such as Leo One USA would either provide an entirely new service or would allow a large reduction in price (and/or increase in quality) to consumers. It is in these markets that the gain to consumers would be the most significant (accounting for the largest gain in consumer surplus) and to which a new entrant would be expected to allocate capacity first.

In the markets where the first round licensees would be the low-cost alternative, the entry of new systems similar to the one proposed by Leo One USA would result in a significant decrease in concentration and could be expected to lead to significant price decreases and, thus to benefits to consumers. Estimates of the amount of gain to consumers in these markets would depend on the oligopoly model assumed and the decrease in concentration, which in turn is highly sensitive to the various licensing alternatives available to the Commission.

As the Commission recognizes, market concentration is a significant determinant of whether a firm, or a group of firms acting collectively, could successfully exercise market power, to the detriment of consumers. Without the addition of the second round licensees, the relevant NVNG MSS markets will be very highly concentrated. Even under the most competitive market structure involving only first round licensees -- i.e., in a possible scenario in which GE Starsys constructs and launches its systems and VITA is able to compete effectively with for-profit systems -- concentration will greatly exceed the threshold identifying a "highly concentrated" market using the Herfindahl-Hirschman Index ("HHI").[25] Under this structure, the HHI would be at least 6239 in the relevant

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[25] "Market concentration is a function of the number of firms in a market and their respective market shares. As an aid to the interpretation of market data, the Agency will use the Herfindahl-Hirschman (continued...)

markets. If the Commission were to allocate the remaining unassigned NVNG MSS spectrum to Orbcomm, the HHI in these markets would rise to at least 6558 (an increase of 5%). In contrast, if the spectrum is allocated to permit licensing of two new NVNG MSS systems that have sufficient spectrum to compete effectively with the first round licensees, the HHI would fall significantly to at least 2784 (a decrease of 55%).

In the alternative, a possibly more realistic, competitive scenario assumes VITA limits its operations to not-for-profit entities and GE Starsys fails to launch its system.[26] In that case, the HHI in these markets would remain 10,000 (monopoly) if all additional capacity were allocated to Orbcomm but would fall to 3340 (a decline of 67%) if two additional licensees were given sufficient spectrum to compete. While the effect on prices of changes in concentration depends on a number of factors, the most widely used oligopoly model in industrial organization (the Cournot model) projects that percentage price changes would (because of the very high share of fixed costs in this industry) almost equal the percentage changes in the HHI.

Because any new entrant, such as Leo One USA, can be expected to allocate spectrum into its most profitable use, it is not surprising that Leo One USA revenues are expected to come disproportionately from markets where first round NVNG MSS licensees (1) are not going to

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25 (...continued)
Index ("HHI") of market concentration. The HHI is calculated by summing the squares of the individual market share of all the participants. [T]he HHI reflects both the distribution of the market shares of [all relevant market participants]. It also gives proportionately greater weight to the market shares of the larger firms, in accord with their relative importance in the competitive interactions. . . . The Agency divides the spectrum of market concentration as measured by the HHI into three regions that can be broadly characterized as unconcentrated (HHI below 1000), moderately concentrated (HHI between 1000 and 1800), and highly concentrated (HHI above 1800)."

Guidelines §1.5.

26 *See* Note 21 *supra*

provide service or (2) are projected to be the low-cost provider. Markets that will not be served by the first round licensees account for one-third of the identified markets, but are expected to generate 60% of the new entrant's income. The markets where first round licensees would be low-cost providers account for 17% of the total markets, but are expected to generate 26% of the revenues for the new entrant, "niche" sales within competitive markets, which account for 44% of the number of potential markets, are expected to account for only 14% of new entrants' revenue.

These data, when combined with some simple but not unrealistic -- even conservative -- assumptions, are sufficient for us to derive a rough, "back of the envelope" estimate of the gain to consumers (the increase in consumer surplus) that would result from the entry of Leo One USA's proposed System A and System B. For example, assuming linear demand curves in all markets; all costs fixed (i.e., zero marginal cost); Cournot-type behavior in oligopoly markets; VITA competing in for-profit markets and GE Starsys successfully launching its sytem; the entry of Leo One USA and a second new entrant; only one new entrant entering into "new service" markets; and no effect at all on prices in "competitive-niche" markets from the System A or the System B supplier's entry into those markets, the estimated increase in consumer surplus in year five from new entry would be 50% of Leo One USA's anticipated year-five revenue of $295 million from new service markets and approximately 236% of Leo One USA's year-ten anticipated revenue of $126 million from "Other Little LEO" markets, plus 0% of Leo One USA's anticipated revenue of $67 million from "competitive niche" markets, for a total increase in consumer surplus of $444 million, or 91% of Leo One USA's anticipated total revenue. Thus, on average, for every dollar in revenue that Leo One USA receives, almost another dollar will be passed on to consumers in increased consumer surplus through lower prices.

As is demonstrated above and in more detail in Appendix A, there would be significant benefits for consumers if the Commission were to authorize two new, economically viable NVNG MSS systems capable of providing a full array of services. Specifically, consumers would have access to new, low-cost telecommunications services that will not be available from any first round licensee. Additionally, there would be a significant improvement in the competitive structure of markets that will be served by existing NVNG MSS licensees. All of this would translate into a tremendous increase in consumer surplus. For this reason, the Commission should exclude the existing licensees from being eligible to participate in the second NVNG MSS processing round.

B. The Commission and the Existing Licensees Have Previously Concluded That Additional Entry is a Fundamental Policy Goal for the NVNG MSS

A review of the record demonstrates that all of the Commission's previous analyses of NVNG MSS spectrum were predicated on the accommodation of *additional competitive entrants* as well as of the first round applicants. This fundamental policy goal is firmly rooted in the FCC's "open skies" policy adopted almost twenty-five years ago.[27] Starting with the Notice of Proposed Rulemaking in CC Docket 92-76, the Commission precisely articulated its pro-competitive policies for this service:

> A stated objective in this proceeding has been to establish regulations and policies that will allow multiple entrants into the NVNG MSS market, *to the maximum extent possible*.[28]

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27 *See Domestic Communications Satellite Facilities*, 22 FCC 2d (1970), 35 FCC 2d 844 (1972), *recon. in part*, 38 FCC 2d 665 (1972) ("*Domsat I, II* and *III*" respectively); *1980 Orbit Deployment Plan*, 84 FCC 2d 484 (1981); *Report and Order*, CC Docket No. 81-704, FCC 83-184 (released Aug. 16, 1983) ("*Two Degree Spacing Order*").

28 *See Notice of Proposed Rulemaking*, CC Docket 92-76, 8 FCC Rcd 6330, 6331 (1993), citing *Notice of Advisory Committee*, 57 Fed. Reg. 33163 (July 27, 1992) (emphasis added).

At each juncture in the regulatory process, the FCC and the first round applicants each reiterated their support for this policy objective. In the Below 1 GHz LEO Negotiated Rulemaking Committee analysis of spectrum sharing, all of the first round applicants concluded *additional applicants* could be accommodated.[29] This conclusion was made in response to the Commission's stated objective to promote multiple entry. Each of the first round applicants continued to emphasize the importance of the Commission's procompetitive policies in their comments in CC Docket 92-76. For example, Orbcomm in its comments stated:

> Two basic themes should drive the service rules that are ultimately adopted by the Commission. First, multiple entry ought to be encouraged, because the resulting competition will minimize the need for regulatory oversight and ensure that customers can obtain service at the lowest price and the highest quality.[30]

Orbcomm's reply comments continued this theme:

> In the context of the negotiated rulemaking, the three applicants submitted a sharing proposal for the limited spectrum available; it was not an attempt to freeze out future applicants because, as was made clear in the Negotiated Rulemaking Proceeding, and as the Final Report of the Advisory Committee concluded, additional entrants may be reasonably accommodated in the spectrum that was allocated by the Commission.[31]

VITA explicitly agreed with this conclusion when it stated:

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29 *See Below 1 GHz Leo Negotiated Rulemaking Committee Report* at 7-9.

30 Comments of Orbcomm in CC Docket No. 92-76, April 26, 1993 at 4.

31 Reply Comments of Orbcomm in CC Docket No. 92-76, May 26, 1993 at 3.

> The proposed rules will allow all three current applicants to implement their systems and as all commenting parties agree, leave additional spectrum for future systems.[32]

GE Starsys also recognized that additional entry is a fundamental FCC policy goal for the NVNG MSS:

> Starsys is not out to abet the duopolization of the NVNG MSS market, and the Commission certainly would not accept the role of dupe in such a scheme.
>
> The rules . . . , subject to minor modifications suggested by Starsys and some others, provide sufficient opportunities for future entry into the frequencies that were recently allocated for use by NVNG MSS systems. . . . The proposals in the NPRM strike an appropriate balance between the need to allow the operators in a new satellite service sufficient flexibility to develop service configurations that will meet the needs of user markets that are to develop, and the Commission's desire to provide an opportunity for new entry by future applicants.[33]

As the above statements reveal, all the first round applicants believed that accommodation of additional entrants was a fundamental precept underlying the Commission's policies for the NVNG MSS.

Leo One USA focused attention on this specific issue of additional entry in CC Docket 92-76 when it requested the Commission impose constraints on the first round applicants' use of spectrum in order to ensure that future entrants could be accommodated.[34] As the *Report and Order* in the

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32 Reply Comments of VITA in CC Docket No. 92-76, May 26, 1993 at 1.

33 Supplemental Comments of Starsys in CC Docket No. 92-76, June 25, 1993 at 2-3.

34 Leo One USA had not been formed at the time the comments were due in FCC Docket 92-76. Consequently, comments were submitted by dbX Corporation ("dbX"), which is also wholly-owned by Leo One USA's sole shareholder David A. Bayer.

proceeding clarifies, the Commission rejected this request as unnecessary because the first round applicants assured the Commission that opportunity for additional entry would exist:

> We would be more likely to entertain the notion of imposing our own limits on a licensee's spectrum usage and power levels if we had sufficient information regarding the ultimate commercial and technical development of the NVNG MSS, *or* if the first round applicants proposed to use all of the available spectrum. However, we are not prescient and *the applicants do not propose to occupy the entire NVNG MSS spectrum resource.*[35]

The Commission went on to state "system capacity may have to be decreased over time as U.S. authorized NVNG MSS systems coordinate their operations with those of neighboring jurisdictions."[36] It is important to note that faced with coordination problems, the Commission did not propose to reduce or eliminate the opportunity for additional entry, but rather to decrease the spectrum available to U.S. authorized systems.[37]

Orbcomm, VITA and GE Starsys, through their second round applications, now want to reject the Commission's fundamental NVNG MSS policy of encouraging new competitive systems in favor of their own parochial interests. Their presently pending second round applications run contrary to the Commission's stated policies and, if granted, would call into question the basis for the Commission's previous licensing decisions in this proceeding. The Commission must reject such arguments and proceed in a manner consistent with the basic policy objective for the NVNG MSS, articulated as early as 1992, to license multiple competitive entrants to the extent possible. This objective is supported by the Commission, all the existing licensees and all the pending applicants.

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35 *See* Report and Order in CC Docket No. 92-76, 8 FCC Rcd 8450, 8455 (1993).

36 *Id.*

37 *See* Public Notice DA 94-1011, released September 16, 1994.

Support for this objective is the only way the public can be assured of having access to competitive NVNG MSS services and obtaining service at the lowest price and highest quality.

C. The Existing Licensees Should be Declared Ineligible to Obtain More Spectrum in the Second NVNG MSS Processing Round

Based on the above analyses, the Commission should only award licenses in the second NVNG MSS processing round to *new* entrants. Because of the extremely limited amount of spectrum available, if competition and additional entry are to be realized, the existing licensees cannot be eligible to obtain additional spectrum at this time. If the Commission grants the pending applications of the existing licensees or those with an interest in existing licensees, none of the new second round applicants can be accommodated. This will merely fortify a non-competitive market structure for the NVNG MSS and severely limit the public's ability to reap the benefits of competition.

IV. ELIGIBILITY TO PARTICIPATE IN SECOND NVNG MSS PROCESSING ROUND

A. Definition of New Entrant

In the Notice the Commission proposes to define a new entrant "as a pending applicant who is not a Little LEO licensee or an affiliate of a Little LEO licensee."[38] It proposes to define an affiliate as an individual or entity which: (1) directly or indirectly controls or influences a licensee; (2) is directly or indirectly controlled or influenced by a licensee; or (3) is directly or indirectly controlled or influenced by a third party or parties that also has the power to control or influence a licensee.[39] Leo One USA supports this proposal. As is discussed above, the existing licensees have

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38 *Notice* at ¶ 13.

39 *Id.*

the ability to exert undue market power. If one of these licensees has a pecuniary interest in a new licensee or the ability to control or influence the new licensee, it would further inhibit competition by allowing the existing licensee to perpetuate its market power to the detriment of the public. The licensee would be in a position to manipulate prices and the availability of services.

In order to evaluate an existing licensee's ability to control or influence a new licensee, the Commission describes several policies. First, it proposes to attribute ownership to the holder of any interest of five percent in an existing licensee. In addition, the Commission proposes to adopt the following six attribution rules to identify entities that could influence or control the licensee:

- attribute any interest of ten percent or more held by an institutional investor or investment company, rather than a five percent interest;
- employ a multiplier for determining attribution of interests held through intervening entities;
- provide for attribution of interests held in trust;
- attribute the positional interests of officers and directors;
- attribute limited partner interests based not only upon equity but also upon percentages of distributions of profits and losses; and
- provide for attribution based upon certain management, joint marketing, and joint operating agreements.

A review of Commission precedent reveals that applicants can be extraordinarily creative in circumventing rules on attribution and ownership. As a general matter, entities with a financial stake in a company's success can influence a company's business decisions. Given this background and the fact that the proposed attribution rules are consistent with Commission precedent, Leo One USA believes that the proposed attribution rules are entirely reasonable. Additionally, Leo One USA believes that the Commission should attribute debt, unexercised convertible interests and insulated

partnership interests to their holders. Finally, the Commission should be extremely careful to ensure that *any* party that has the "ability to control" or the "ability to influence" be deemed to have an interest. The Commission has a long history of legal precedent as to what is "de jure" and "de facto" control.[40] The Commission should use its existing case law in making determinations as to whether a party has "control."

B. Application of These Attribution Rules Should Result in Dismissal of the Pending Applications of Orbcomm, GE Starsys, VITA, GE Americom and FACS

The Commission's application of these attribution rules should lead to dismissal of the pending second round applications of Orbcomm, GE Starsys and VITA because these companies already hold NVNG MSS licenses; any continued eligibility would be in direct contradiction to the proposed rules. Additionally, the pending second round application of GE Americom should be dismissed due to GE Americom's ownership of an 80% interest in GE Starsys. This ownership interest violates the attribution rules proposed by the Commission. Finally, the application of FACS should be dismissed because its agreement with VITA is the type of management, joint marketing or joint operating agreement envisioned by the proposed attribution rules and because of FACS' ability to control and influence the operations of VITA. As was described in Leo One USA's February 23, 1996 Petition to Deny the FACS/VITA arrangement, FACS will assume de facto control over VITA requiring that its second round application be dismissed.[41]

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40 *See InterMountain Microwave*, 24 Rad. Reg. (P&F) 983 (1963).

41 *See* Petitions to Deny of Leo One USA Corporation and Satellife, Inc. on Application of Volunteers in Technical Assistance, CSS-91-007(3), 30-DSS-AMEND-94 and 40-SAI-P/LA-96 (Feb. 23, 1996).

C. The Commission Should Review any Future Arrangements Between Licensees to Determine Their Competitive Impact on NVNG MSS Markets

To ensure that the NVNG MSS market is competitive, the Commission should prohibit the transfer of a second round license to a first round licensee and aggressively enforce construction milestones for all licensees. If second round spectrum could be reallocated through the market, the Commission's decision in this rulemaking would have no effect on the final market structure.[42] If, as discussed below, an auction by the Commission of the spectrum would lead to its being acquired directly by the incumbent monopolist or duopolists, then it will also be the case that, absent significant private transaction costs to reallocate that spectrum through the market, the incumbent monopolist or duopolists will rapidly acquire that spectrum through a post-allocation market transaction. In other words, if the Commission simply gives spectrum away with no restrictions on what the grantees do with that spectrum, it should be expected that a number of firms or individuals will attempt to induce the Commission to grant them licenses to use spectrum which the licensee would then turn around and sell to the highest bidder, who would likely be the incumbent monopolist.

Restrictions on post-allocation resale to incumbents are thus essential to inducing actual entry and the resulting benefits to consumers. Those restrictions, however, must go beyond the normal restrictions under the antitrust laws. It is not enough, for example, for the Commission to prohibit the transfer of a second round license to a first round licensee if such a transfer would violate the antitrust laws. Given the size of the fixed costs involved in a Little LEO entry, and the risks

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[42] *See* Appendix A, § XI. This could be regarded as a partial version of the Coase theorem (1960), which asserts that the optimal allocation of resources can always be achieved through market forces, irrespective of legal liability assignment, if information is perfect and transactions are costless.

involved, it would hardly be surprising if one or more -- or even all -- second round licensees could make a convincing case that they were not, or were no longer, actual potential entrants. Such a showing would be particularly easy if the amount or quality of the spectrum allocated to that licensee were insufficient for entry by that licensee to be profitable. The sale of second round licensees' capacity to the incumbent monopolist would then be acceptable under the *Guidelines*, since standard antitrust analysis would have to take the Commission's initial allocation as a *fait accompli*. Knowing this to be the case, such a limited restriction on post-allocation market transfer would not inhibit the attempt by potential licensees to acquire spectrum, of any quantity or in any configuration, however inefficient, which they could then resell to the incumbent monopolist.[43]

The mere possibility of post-allocation resale can thus corrupt any initial mechanism for distributing spectrum, whether through an auction or through direct assignment. Since the Commission cannot require that every licensee commit to full-scale entry regardless of future conditions or events, it is thus critical that any post-allocation resales, transfers or transactions between first and second round licensees be banned. Furthermore, the simple holding of unused spectrum by licensees that do not implement their proposed systems imposes real social costs, including higher costs to consumers. Thus, it is important that licenses have a "use it or lose it" provision with a fairly tight time frame, under which unused spectrum reverts to the Commission.[44]

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43 In the worst case, potential licensees could knowingly request that the FCC issue them spectrum that itself could not support a commercially viable operation, in the hopes of selling the spectrum to an incumbent monopolist.

44 While such a provision should clearly apply to new licensees, application of "use it or lose it" provisions to suppliers who have already entered is undesirable, except possibly to an incumbent monopolist or dominant supplier. While such provisions may inhibit "warehousing" by a monopolist or by a firm or firms with market power, it may also induce inefficient premature use and block the efficient expansion path over time.

This means that the Commission must aggressively enforce the construction and launch milestones for all Little LEO licensees.

V. THE REMAINING NVNG MSS SPECTRUM SHOULD BE ALLOCATED TO ENHANCE COMPETITION

Leo One USA encourages the Commission to assign the remaining NVNG MSS spectrum in a manner that will enhance the introduction of competition from second round licensees. This goal can be fulfilled, however, only through a careful structuring of the remaining frequency resources for this service. The Commission would not fulfill its responsibility to create a competitive market for the benefit of the public if it merely assumed that the more licenses it granted the more competitive the industry. It is not necessarily true that five licenses are better than four licenses. A close examination of the market opportunity associated with each license must be made before it can be determined how many and what type of licenses to issue. If the spectrum assigned is not efficiently organized, it could result in a less competitive market rather than a more competitive market even though more licenses are issued. Although Leo One USA generally supports the approach the Commission has pursued in the Notice, Leo One USA urges the Commission to modify its proposal, as is described in greater detail below, in order to maximize the competitive impact of licensing additional NVNG MSS systems. Specifically, under Leo One USA's proposed allocation, capacity would be more evenly distributed among licensee suppliers, resulting in lower concentration among suppliers, greater efficiency, and higher consumer surplus.

A. Second Round NVNG MSS Licensees Must Have the Technical Capability to Compete With First Round Licensees

The Commission should structure the channel assignments for new NVNG MSS licenses in a manner that will ensure the establishment of effective competition[45] among all NVNG MSS licensees. It is for this reason that Leo One USA proposes in these comments that the Commission amend its channel assignment plan to provide for two rather than three second round systems: Little LEO System A and Little LEO System B. This channel assignment plan will ensure the greatest number of robust and efficient competitors in the greatest number of NVNG MSS markets.

The situation in the NVNG MSS differs significantly from the Commission's experience in other satellite services. For instance, in the geostationary Fixed-Satellite Services, the Commission had the ability to assign the same spectrum to each licensee because orbit positions were considered fungible, and each player was placed essentially in an equal competitive position. In the Mobile Satellite Service, the Commission opted to create a monopoly consortium. In neither situation did the Commission determine the relative competitive position of service providers within a market. In the original Little LEO proceeding and in the Big LEO proceeding, the Commission adopted a frequency assignment scheme that was largely based on the work done in the Negotiated Rule Makings, thus eliminating the need for a rigorous competitive analysis. Unlike those proceedings, frequency decisions made here will have a significant influence on the competitive position of each market participant.

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45 The relative competitive positions of the participants in the Big and Little LEO services is a result of technical design decisions of the service providers and technical sharing agreements.

If the second round NVNG MSS systems have insufficient channel capacities and are incapable of serving all potential markets, the goal of establishing a competitive market will not be fully realized and the public will be deprived of access to potential new and low-cost telecommunication services.

An analysis of the existing licenses reveals three significant economic elements relating to the viability of the license. First, and most important is the channel capacity associated with the license. The fixed and marginal costs of operating a NVNG MSS system will not be affected by the number of channels available. Thus, the system with access to a significant number of channels will be in much stronger competitive position vis-a-vis a smaller capacity system. For example, suppose an applicant is awarded a license to implement a NVNG MSS system with the exact same coverage and service requirements of Orbcomm, but the new licensee is provided only 30% of the channel capacity of Orbcomm. Although these two 36 satellite systems would have the same fixed and marginal costs, Orbcomm would be in a position to recover its costs over a larger customer base. This will provide a significant competitive advantage to Orbcomm and eliminate much of the benefits to the public of competition. Likewise, suppose the new licensee were assigned spectrum that contained allocation restrictions preventing aeronautical and maritime transmissions, it would be at a significant competitive disadvantage vis-a-vis the first round licensees. Here, the benchmark for capacity is Orbcomm.

Second, in order to be competitive with Orbcomm, the new licensee must have the opportunity to offer near real-time services. The inability to offer capability equivalent to Orbcomm will allow Orbcomm to retain market power in a number of specific markets and may prevent some markets from being served altogether. In order to provide near real-time services, the NVNG MSS

operator must construct, launch and operate a significant number of satellites. Leo One USA is committed to a 48-satellite constellation so that it can meet this near real-time requirement. However, Leo One USA cannot economically justify the fixed costs of 48 satellites unless it is assigned a sufficient number of channels to recover those fixed costs. Consequently, channel capacity has a direct impact on system size and ability to offer near real-time services.

Third, a new NVNG MSS operator must allow its users to transmit on land, in the air, and on the seas. All existing licensees have this capability. The 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz bands do not contain any international or domestic allocation restrictions on where the user can be when it transmits to the satellite. However, the 149.9 - 150.05 MHz band is restricted to transmissions from land. Thus, an operator restricted to these uplink bands would be at a significant competitive disadvantage vis-a-vis the existing licensees.

Given the above, the consumer benefits of new NVNG MSS systems will be maximized only if sufficient channel capacity is provided to new licensees to support the construction of a real-time system and frequency is made available that will allow land, aeronautical, and maritime transmissions.

The Commission's responsibilities here are similar to those that existed three years ago when the Commission developed a market structure for Personal Communication Services ("PCS"). In the PCS proceeding the Commission concluded that it was important that each PCS licensee be provided sufficient spectrum to be competitive with existing services.[46] Although the Commission recognized that it would be most desirable to accommodate all interested parties, it recognized that

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[46] *Second Report and Order* in Gen. Docket No. 90-314, 8 FCC Rcd. 7700, 7715 (1993).

the lack of available spectrum necessarily would limit the number of service providers.[47] Here, there is not enough spectrum to provide all interested parties with licenses to operate competitive systems. The paucity of the spectrum available for the NVNG MSS requires limiting the number of service providers in order to ensure that new entrants have the ability to compete.

In the PCS proceeding the Commission further recognized that the number of channels assigned to each licensee would impact how the market develops. It therefore developed provisions that would provide each new entrant the opportunity to access sufficient spectrum so that it could offer a competitive service. It believed that this would ensure a robust and competitive market for PCS services. In support of this goal, the Commission also adopted rules that prevented any individual person or a single entity the ability to exert undue market power through partial ownership in multiple PCS licensees in a single service area.[48]

A much more difficult situation exists for the NVNG MSS than PCS because the Commission does not have sufficient spectrum to license multiple competitive NVNG MSS systems. Here, the Commission is faced with the responsibility of striking the appropriate balance between (1) providing sufficient spectrum for each licensee to compete effectively and (2) ensuring that no one person or entity is able to exert undue market power through aggregation of spectrum. As with PCS, this policy goal requires the Commission to license economically viable competitive systems. It is the only way to ensure the establishment of a competitive market environment that will benefit consumers by lowering prices, improving service and increasing the availability of innovative products.

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47 *Id.*

48 *Id.* at 778.

B. Limitations of the Commission's Proposed Channel Assignments

In the Notice the Commission proposes to award three new NVNG MSS licenses. Each of these licenses is assigned a specific number of channels. The following analysis evaluates the viability of each of the Notices' proposed license allocations: Little LEO System 1, System 2 and System 3. In summary this analysis indicates that the proposed approach does not make efficient use of the available spectrum and will not support economically viable competitors. Because Orbcomm represents the largest licensee, Orbcomm's 36 satellite system is used as the relative standard for comparing the capacities of the three spectrum allocations proposed by the Commission. Specifically, Orbcomm's authorized 36 satellite system consisting of four planes of eight satellites each inclined at 45° to the equator and two planes of two satellites each inclined at 70° is capable of supporting an average subscriber downlink capacity of 1,160 Mbits per day at 36° latitude. The following is a detailed review of the limitations for each of the Commission's proposed Little LEO systems.[49]

1. Little LEO System 1

The Commission proposes that this system use the 149.81 - 149.9 MHz band for uplink and the 400.5050 - 400.5517 MHz band for downlink. All of this spectrum must be time-shared with VITA, which is authorized to operate a one satellite system. At 36° latitude, the VITA satellites will be visible 5% of the time.

This system will have a total downlink capacity of 66 Mbits per day, which is 5.7% of the Orbcomm capacity, and a total uplink capacity of 97 Mbits per day, which is 8.4% of the Orbcomm

[49] *See* Appendix B for a more detailed analysis of system capacity.

capacity. Thus, Little LEO System 1 will be able to provide only 5.7% of Orbcomm's balanced capacity. Additionally, as a result of the time sharing requirements with VITA, this system will be unable to provide customers near real-time services. Given these limitations, this system will not be able to compete effectively with Orbcomm or provide near real-time services. In light of this situation, the public benefit from the introduction of this system would be negligible.

2. Little LEO System 2

The Commission proposes that this system use the 148.905 - 149.81 MHz band for uplinks and a number of segments of the 137 - 138 MHz band for downlinks. The uplink spectrum is shared with Orbcomm. The 137.333 - 137.367 MHz and 137.753 - 137.787 MHz segments are available for 100% duty-cycle utilization after the NOAA satellites become inoperable. Use of the 137.025 - 137.175 MHz and 137.825 - 138 MHz segments must be time-shared with NOAA. The total downlink capacity of this system is 1069 Mbits per day or 92% of the capacity of Orbcomm. The total uplink capacity of this system is 975 Mbits per day or 84% of the Orbcomm capacity. Thus, Little LEO System 2 provides 84% of Orbcomm's balanced capacity.

3. Little LEO System 3

The Commission proposes that this system use the 149.95 - 150.05 MHz band for uplinks, and the 400.150 - 400.505 MHz and 400.645 - 401 MHz band segments for downlinks. The downlink spectrum must be time-shared with DMSP. Each DMSP satellite is assigned one of the two DMSP sub-bands. Footprint overlap with a DMSP satellite requires that this system cease transmission in that sub-band. This sharing regime will prevent the provision of near real-time services as the system is currently configured.

The total downlink capacity of this system is 983 Mbits per day or 85% of Orbcomm's downlink capacity.[50] The total uplink capacity is 187 Mbits per day or 16% of Orbcomm's capacity. Thus, Little LEO System 3 will have only 16% of Orbcomm's balanced capacity. Additionally, the use of the 149.95-150.05 MHz is restricted to land-only transmissions (transmissions from air and sea are prohibited). As a result of the allocation limitations, minimal channel capacity and the inability to provide real-time services because of DMSP requirements, the introduction of Little LEO System 3 would not provide any public benefit. Given these restrictions there is no economic basis to support the introduction of this system and therefore the competitive benefits to the public of this system will be negligible.

C. The Commission Should Reconfigure its Channel Assignments in Order to Create New Competition in the Markets Served by NVNG MSS Systems

As discussed above, Little LEO System 1 is economically unviable, System 2 is non-optimal, and System 3 is economically unviable, cannot provide near real-time services, and is competitively handicapped by being prohibited in its allocation from serving maritime and aeronautical markets. This combination of licensing does not provide the maximum improvement in market structure for NVNG MSS services. In particular, System 1 and System 3 achieve negligible improvement. In order to better foster the Commission's underlying goal of competition, Leo One USA below proposes new Little LEO System A and Little LEO System B. The introduction of these two systems will allow the public to reap the benefits of new competitive NVNG MSS services.

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50 The uplink spectrum is allocated for land-mobile satellite service (LMSS), thus this system is precluded from providing service from airplanes and ships. The uplink spectrum is also shared with the radio-navigation satellite service (RNSS).

1. New Little LEO System A

Leo One USA proposes that System A use the combined downlink spectrum of Little LEO System 1 and Little LEO System 3. For the uplink it is proposed that the spectrum available for narrowband operation be used equally by System A and System B. Specifically for the downlink, it is proposed the 400.15 - 400.505 and 400.645-401 MHz bands will be time-shared with the DMSP satellites, and the 400.505-400.5517 MHz band will be time-shared with VITA. This sharing will be on a non-interference basis to the DMSP and VITA systems.

For the uplink, the following is proposed: (i) the 150.00-150.05 MHz band segment, which is allocated for LMSS (no maritime or aeronautical use), will be time-shared with the Russian Navigation Satellite System (RNSS) as well as with land mobile radios in most countries; (ii) the 149.81-149.855 MHz band segment will be time-shared with VITA; and (iii) the 148.905-149.81 MHz band will be dynamically shared with Orbcomm and System B. This sharing will all be accomplished using dynamic channel assignment techniques. As discussed in greater detail in Appendix F, the spectrum configuration for Little LEO System A will provide significant improvement in system availability, enabling the licensee to provide near real-time services.

This system will have a total downlink capacity of 1,049 Mbits per day or 90% of Orbcomm's capacity and a total uplink capacity of 1,135 Mbits per day or 98% of Orbcomm's capacity. Thus, it will be able to provide 90% of Orbcomm's capacity. This reconfigured System A will increase system availability to levels consistent with market requirements and provide a means to assure a downlink subscriber channel for near continuous availability. It will also allow the system operator to serve land, aeronautical and maritime requirements. With these parameters,