Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550- 3650 MHz Band	))))	GN Docket No. 12-354

To: The Commission

COMMENTS OF THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Telecommunications Industry Association (TIA) hereby submits supportive comments in response to the Commission's *Notice of Proposed Rulemaking* ("NPRM") in the above-referenced proceeding.[1] TIA is the leading trade association for the information and communications technology (ICT) industry, whose hundreds of member companies manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on the full range of public policy issues affecting the ICT industry and forges consensus on industry standards. For over 80 years, TIA has enhanced the business environment for broadband, mobile wireless, information technology, networks, cable, satellite, and unified communications. TIA is accredited by the American National Standards Institute (ANSI).

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[1] Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Notice of Proposed Rulemaking*, GN Docket No. 12-354 (rel. December 12, 2012) ("NPRM").

I. TIA SUPPORTS THE AVAILABILITY OF THE 3500-3650 MHZ FOR ADDITIONAL USES, BUT NOTES ITS LIMITATIONS

TIA strongly supports the FCC's initiatives to implement the recommendations of the National Broadband Plan calling for the availability of 300 MHz of spectrum by 2015 and a total of 500 MHz available by 2020. As the Commission appropriately notes: "Demand for wireless broadband capacity is growing much faster than the availability of new spectrum. While the Commission and the President have outlined a path for nearly doubling the amount of available spectrum for fixed and wireless broadband uses, some experts forecast a need for a thousand-fold increase in wireless capacity by 2020."[2]

The first question the Commission must confront is to determine what the best use of this spectrum is in helping to address the spectrum deficit previously identified by the Commission. As TIA has previously commented, sharing this band—primarily with Department of Defense and FSS incumbents--may be impractical in a mobile environment. [3] Further efforts aimed at quantifying and reducing the exclusion zones for many major US population centers (either geographically or by time sharing) should be undertaken collaboratively between interested parties if the Commission seeks to pursue a mobile use.[4] Regarding the 3650-3700 MHz band, TIA notes the potential for adverse impact on incumbent services, including grandfathered C-band FSS receive earth stations.

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[2] *See* NPRM 2 , *See, e.g.*, QUALCOMM, Rising to Meet the 1000X Mobile Data Challenge (October 29, 2012) (QUALCOMM 1000X Data Challenge Presentation), *available at* http://www.qualcomm.com/media/documents/rising-meet-1000xmobile-data-challenge; Nokia Siemens Networks, 2020: Beyond 4G Radio Evolution for the Gigabit Experience 3, (Nokia Siemens 4G White Paper), *available at* http://www.nokiasiemensnetworks.com/sites/default/files/document/nokia_siemens_networks_beyond_4g_white_paper_online_20082011_0.pdf.

[3] *See* TIA Comment Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum , ET Docket No. 10-123 April 22, 2011, p 8-10

[4] Ibid

The Commission should consider--but not mandate--whether the spectrum might be usefully put to work as part of small cell strategy in which mobile traffic could be offloaded onto denser deployments of small cells. For example, many mobile operators today have embraced a "heterogeneous network" or "hetnet" approach to their network architecture as a way of managing high demand growth without new CMRS spectrum. In addition, wired broadband access operators are also deploying small cell strategies at the edge of their networks, just as consumers and enterprises are bringing small cells to the edge of their wired broadband connections. This band, even encumbered, might be a helpful addition to the inventory of spectrum that could support such heterogeneous networks.

Exclusion zones covering large, densely populated areas will reduce the attractiveness of investments in this spectrum. Therefore TIA again urges the Commission to make public an exclusion zone analysis to support the theory that small cell deployments will greatly improve (reduce) the size of exclusion zones, or to determine that exclusion zones cannot be reduced. This undocumented theory seem to be the basis for the Commission's lead proposal, and it is unclear whether small cell diameters will improve spectrum utilization when strong interference sources such as shipborne radar are present and would overload mobile receivers regardless of cell size.

II. THE COMISSION SHOULD OBTAIN A COMPLETE COST/BENEFIT ANALYSIS RECORD

TIA notes that the Commission appropriately requests cost/benefits analysis for alternatives to its 3-Tier Proposal.[5] Yet no comparable cost/benefit analysis for the proposed 3-Tier approach exists with which to enable comparisons among alternatives. Substantive data is needed on both the General Access and Priority tiers, to quantify their expected utilization efficiency, adoption density, and the parties which would design, deploy, and operate these networks in some sustainable fashion.[6] Without such data, both tiers seem likely to follow the low usage and low adoption of other bands above 3GHz which are already allocated for uses similar to the proposed plan such as the 3650 MHz band.

Exclusive licensed, flexible-use spectrum bands have proven utilization efficiency, adoption density, and well-established parties to sustainably deploy them. The Commission seems to reject this alternative simply because of comments filed (by AT&T and CTIA) in a Public Notice nearly 2 years ago. Those comments were interpreted out of context and were directed toward specific NTIA analysis results which included mobility, as well as large exclusion zones covering major population centers.

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[5] *See* NPRM at 51

[6] For example, to create a policy environment that attracts capital for investment, the best approach has been to provide for firm guidance on the availability of spectrum. One issue with the tiered approach outlined in the Commission's proposal is that unlicensed use essentially uses spectrum that serves as the remainder, after primary and secondary licensees utilize spectrum. As a general matter, a contingent approach to spectrum management fails to provide the certainty to the vendor industry that a market will be available for product.

III. SPECTRUM SHARING POSES CHALLENGES, ESPECIALLY IN ASSURING A COMPETITIVE QUALITY OF SERVICE EXPERIENCE FOR USERS

In general, TIA notes that exclusive licensed spectrum models offer a superior user experience based on predictable service quality, compared to the proposed license-by-rule approach. The license-by-rule approach has characteristics which are like an unlicensed regime, with the associated unpredictability. We note that generally these types of services can only be considered a complement to licensed spectrum. For example, best efforts services are unable to support Commission service expectations, as envisioned by the National Broadband Plan.

Even exclusive-use secondary leasing arrangements, using the Commission's Secondary Market rules, give better service quality predictability compared to the proposed license-by-rule. Consequently the Commission should apply the Secondary Market rules to the 3550-3650 bands and permit the market to decide on the value of various leasing arrangements defined by those rules. Further, the Commission should clarify if changes need to be made to the incumbent's service classification (in particular, federal incumbents) in order for mobile broadband to be deployed under such leasing arrangements, and make such changes as required.

Well beyond the "worst-case exclusion zones" proposed by NTIA in their macrocell analysis, TIA notes that large geographic areas of the country remain available. These areas could all be exclusively licensed by geographic area as they would not have any encumbrances. This is a proven successful model. Unencumbered or encumbered geographic licenses might be made available by auction or by fee. Both models are useful, and the choice between them may depend upon the final rules for the band.

The Commission should clarify whether the current co-primary license classification definition accommodates mutually exclusive time-shared, geographically-shared, and/or frequency-shared use by co-primary licensees (e.g. when one licensee is a federal incumbent with a level of priority under certain circumstances, and the other licensee (license acquired via auction) is a commercial mobile operator with mutually exclusive use rights under certain circumstances). If co-primary would not be the appropriate classification under the present definition of co-primary, the Commission should either modify the definition accordingly, or state the classification (such as secondary) which it believes is appropriate for this shared, co-licensed, and auctioned regime. For example, a commercial licensee in this band could be secondary in a strict priority sense, relative to incumbent operations, but have all the interference protections from other (non-incumbent) operations which a co-primary licensee would possess.

As TIA has previously noted, policymakers should not divorce the operational, effective, and economic case from an evaluation of technical capabilities; the existence of a sharing technology should not, by itself, justify regulatory action, but should be one of multiple factors for each specific service and band.[7] In creating a successful sharing environment, the following combination of factors should be considered:

- An economic model, especially to encourage investment;
- Availability of spectrum for nationwide use;
- Limitations in significant markets, and the time, bandwidth, and geographic license boundary limitations under which the limitations exist;
- Sufficient value of the considered spectrum to warrant investment in further innovation;

[7] *See* TIA Comment Promoting More Efficient Use of Spectrum Through Dynamic Spectrum Use Technologies, ET Docket No. 10-237, Feb 28 2011 p 8

• Adjacency of spectrum to, or complementary with, existing bands/services. (For example, is the spectrum in contiguous in large blocks and is it suitable for mobility.)

• Limited marketplace viability to using shared spectrum in the delivery of service offered primarily over licensed spectrum if the quality of service is degraded.

IV. TIA SUPPORTS THE INVESTIGATION OF ALTERNATIVE ALLOCATION AND SPECTRUM MANAGEMENT SCHEMES

As previously noted, the presence of incumbent operations in this band, such as the Department of Defense and FSS incumbents, complicates the development of a framework or system to permit additional uses. To the extent that the commission does not use the exclusive licensed spectrum approach discussed above, alternative third party management schemes should be considered, which may effectively achieve a suitable equivalent to exclusive licensing.

TIA has no specific comment on the SAS system proposed by the Commission, since it lacks sufficient detail for comment. To the extent there is contention among devices, or potential interference from/to incumbent operations, some form of usage control may be efficient. For example, this might be accommodated by exclusively licensing the management rights to one or more "band managers." The band manager would determine the etiquettes to be used and establish prices to ration demand. The band manager would also be able to bargain with high power licensees for increased rights, *e.g.*, higher power limits, as a market alternative to administrative provisioning, at least for low-power uses that do not spread across a great many licensees. Depending on structure, this methodology can allow for evolution of spectrum use over time as technology evolves. The “band manager” concept

could take different forms, and would appear to fall within the current secondary market rules.

V. FLEXIBILITY NEEDED TO ALLOW THE USE OF 3.5 GHZ TO EVOLVE OVER TIME

TIA shares the Commission's interest in encouraging small cell technology -- outdoor femto cells, metro cells and pico cells, in addition to small cells that use Wi-Fi technology. Collectively these technologies present potential options for addressing wireless network capacity issues by shifting traffic away from mobile networks. Yet the bands and operational models in which small cell technologies are most likely to develop continue to be a work in progress, and should be left to the market to decide. If small cell technologies are appropriate under an exclusive licensed regime, market participants will deploy them. Indeed, it may be most appropriate to deploy a mix of small cell and macro cell technologies in a band like 3.5GHz, and that partitioning may be different for different regions or for different network operators. The Commission should not require small cells it should simply permit them.

In general, the FCC should permit long term evolution of the 3.5 GHz band and not depend solely on current technology assumptions, especially assumption about future technology, regarding potential use. The Commission must maintain its longstanding position in favor of technology neutrality, and must not create rules which inflexibly limit deployable technologies and/or various forms of sharing in the time, frequency, and spatial domains.

Multiple factors need to be considered, including impact on licensed users to continue to provide services to its customers. Flexible use permits market forces, rather than often archaic regulations, to determine how spectrum will be used. Thus, if there is demand for wireless broadband, spectrum subject to a flexible use regime can be easily repurposed for that use without the need for a lengthy, contentious rulemaking. Markets can efficiently allocate spectrum in response to emerging technology, and spectrum rights should be flexible and exclusive and all rights should be exhaustively assigned.

VI. CONCLUSION

For the foregoing reasons, we urge the Commission to adopt policies consistent with the above recommendations.

Respectfully submitted,

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