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

In the Matter of	)	
	)	
Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum	)	ET Docket No. 10-123
	)	
	)	
	)	

To: The Commission

COMMENTS OF

THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Telecommunications Industry Association (TIA) hereby submits comments to the Federal Communications Commission (Commission) in the above-captioned proceeding.[1] TIA commends the Commission for taking this critical step in its band repurposing efforts that are critical to the prosperity of the United States.

TIA represents the global information and communications technology (ICT) industry through standards development, advocacy, tradeshows, business opportunities, market intelligence and world-wide environmental regulatory analysis. 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).

[1] *Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum*, ET Docket No. 10-123, Notice of Inquiry (rel. March 8, 2011) (PN).

SUMMARY

TIA ardently supports the Commission's inquiry into the viability of repurposing the various bands recommended by NTIA in their Fast Track Analysis, as well as other bands, to make available additional spectrum for mobile broadband in the United States. In its support of the Administration, NTIA, and the Commission, TIA urges the consideration of a list of technical criteria that assigns value from a network design perspective.

First, the Commission should place a high value on allocations of wide, contiguous blocks of spectrum. Such allocations avoid the pitfalls of fragmentation and encourage the use of cutting edge, wide-bandwidth technologies as well as resource pooling.

Second, the Commission should support allocations that are adjacent to like services. This will reduce the potential for interference to and from adjacent allocated services and promote the benefits of wider, contiguous blocks which will also reduce deployment costs, speed standard development, and encourage the deployment of 4G technologies.

Third, the Commission should effect allocations that are globally harmonized with technical standards. Coupled with technology neutrality, the more an allocation is globally harmonized, the more investment certainty is provided, in turn reducing costs, allowing for more ease in frequency management on the borders, and increased global roaming. To this end, TIA supports the addition of mobile service allocations in the Radio Regulations to the World Radioconference 2012(WRC 2012) agenda.

Fourth, in reference to sharing possibilities, TIA urges the Commission to ensure that it does not employ "one-size-fits-all" policies that ignore the unique characteristics of varied bands by

comprehensively evaluating each band on a case-by-case basis, considering such factors as those in the economic, technological, operational, and regulatory categories.

TIA supports the repurposing of the 1675-1710 MHz for commercial wireless broadband use. Its adjacency to the AWS-1 band is encouraging, and likely to reduce interference concerns between the bands. TIA urges the Commission to limit the size of the exclusion zones in this band in order not to hamper the potential use, with a view for reallocation.

TIA also supports the Commission's examination of the 3500-3650 MHz, 4200-4220 MHz, and 4380-4400 MHz bands. Due to physical characteristics of frequencies above 3 GHz and the difficulty of broadband use in the 4200-4220 MHz, and 4380-4400 MHz bands until 2016 at the earliest, these bands are not an immediate fix to the spectrum crisis. In regard to the 3500-3650 MHz band, TIA again urges the Commission to base exclusion zones on detailed technical analyses to reduce or remove the zones as much as possible.

TIA fully supports the use of the 1755-1850 MHz band for mobile broadband, and encourages NTIA to complete its evaluation as soon as possible. TIA notes its recommendation that this band, which would be globally harmonized and potentially adjacent to like uses if allocated to mobile broadband, be cleared for exclusively for broadband use due to its low potential for sharing with the varied government uses currently in the band.

Finally, TIA urges further investigation into the possibility of maximizing the potential for use adjacency benefits by extending the AWS-1 band down to 1675 MHz, and up to the 1755-1780 MHz band, with appropriate spectrum pairing. This exclusive allocation will allow for wide and contiguous blocks of spectrum to be allocated, affording forward-looking technology, resource pooling, increased product access for consumers, lower deployment costs, and accelerated standard development.

DISCUSSION

I. TIA RECOMMENDS REVIEWING SUITABILITY OF SPECTRUM FOR BROADBAND THROUGH A NETWORK DESIGN BASED SET OF CRITERIA.

TIA supports the employment of the NTIA's "Fast Track" Analysis on which the Commission seeks comment.[2] In its efforts to work with both the FCC and NTIA to identify suitable spectrum for mobile broadband to alleviate the impeding mobile broadband spectrum crisis,[3] TIA supports further consideration of a list of technical criteria which takes into consideration spectrum characteristic needs based upon next generation broadband network design. This viewpoint should consider technical criteria of band location (high versus low band location), subscriber demographics, network topology (*e.g.*, cell densities, degree of utilization of offloading via femtocells and/or WiFi, etc.), and radio access technology (*e.g.*, EDGE, HSPA, HSPA+, LTE, etc.). Such an evaluation will ensure that key spectrum characteristics are considered in this critical process.

[2] An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands, U.S. Department of Commerce, Oct. 2010, *available at*http://www.ntia.doc.gov/reports/2010/FastTrackEvaluation_11152010.pdf(Fast Track Report).

[3]*See* Remarks of FCC Chairman Julius Genachowski, NAB Radio Show 2011 (Apr. 12, 2011) at 4 (noting that since it was predicted one year ago that mobile data traffic would increase 35 times over the next five years, 55 million tablets have been sold – each device placing a demand on spectrum 120 times that of a traditional feature phone).

a. Wide and Contiguous Bandwidth.

Wireless broadband services are best provided utilizing wide and contiguous spectrum. However, in the past, the Commission has allocated spectrum in 5 and 10 MHz blocks,[4] which raises the cost of product development by requiring separate efforts in each portion of the spectrum. This allocation scheme also results in non-technology neutral polices, leads to limited product availability for consumers, and increases the time-to-market period. In short, the net effect is to reduce innovation to the detriment of the consumer and limit quality of service.

For these reasons, TIA recommends that, at a minimum, 20 MHz blocks be allocated for wireless broadband, particularly in urban and suburban areas. Bands of this size or larger will encourage technologies that utilize wider bandwidth by accommodating more bits and allowing for resource pooling among users. Additionally, it will encourage the adoption and use of next generation technologies that require more capacity and will be demanded by consumers.

b. Adjacency to Like Services.

When two similar wireless broadband services are adjacent to each other, they experience the benefits of contiguous bands noted above. Furthermore, adjacency to like services reduces interference concerns to or from services allocated in adjacent bands. The allowance of wider bandwidth technologies can more effectively maximize potential uses, especially in areas where 20 MHz blocks are used. Further, there is a reduction in deployment costs for networks and equipment providers. Moreover, the standard development process is accelerated, as existing

[4] *See, e.g.*, 47 C.F.R. § 24.229 (identifying some Broadband PCS blocks of 5 MHz); *id.* § 27.5 (listing various frequency blocks in the WCS band of 5 and 10 MHz, in the AWS band of 5 and 10 MHz, and in the 700 MHz band of 5 MHz).

equipment can be modified rather than requiring new technology developments to support other bands; this acceleration speeds products to market. For these reasons, TIA urges the Commission to designate spectrum blocks to be allocated adjacent to like services, using similar duplex distances to maximize performance and efficiencies.

c. Globally Harmonized, Technology Neutral Allocations.

TIA further endorses the use of bands that are globally harmonized. In many cases, international studies are developed for specific bands, taking adjacent uses into account. This aids in regulatory compliance, allows for easier management of cross-border interference with U.S. neighbors, and encourages global roaming. Accordingly TIA supports proposals by the United States for the WRC 2012 to place on the next conference agenda (perhaps 2016) an agenda item to add mobile service allocations in the Radio Regulations. TIA is a long-time strong advocate for policies that promote technology neutrality, in which standards and products are developed by market-driven dynamics and open, transparent processes. As the United States moves forward in promoting the allocation of more mobile spectrum on a global basis, it should build upon the belief that technology neutral policies are critical in promoting competition and ensuring that consumers are empowered to choose technologies that best suit their needs.

d. Evaluation of Sharing in the Context of Delivery of Broadband Service.

In the Notice, the Commission requests information on effective sharing technologies to be used with broadband services.[5] As made clear in a recent filing on dynamic use of spectrum, TIA believes that regulatory focus is needed on meeting the spectrum demands of industry in the designated timeframe, and should not be reliant upon as-yet unproven technical capabilities for

[5] PN at 2.

near-term solutions, whether dynamic spectrum access (DSA) or other technologies and techniques.[6] On a case-by-case, multi-factor basis, sharing efforts are commendable and can in some cases be successful; however, maximum investment certainty is provided by licensed spectrum allocations, when the Commission avoids "one-size-fits-all" policies that do not take into account the unique services provided in various spectrum bands as well as the characteristics of different frequency bands. Commercial adoption of sharing models will be subject to a variety of economic, technological, operational and regulatory realities. Thus, comprehensive and rounded band plans will need to be developed.

[6] Comments of TIA, ET Docket No. 10-237 (filed Feb. 28, 2011) at 4-9.

II. REVIEW OF BANDS IDENTIFIED BY NTIA.

a. The 1695-1710 MHz Band.

The Commission seeks comment on future broadband operations in the 1695-1710 MHz portion of the band identified in NTIA's January 2011 letter.[7] TIA agrees that this band has traits that are encouraging to commercial uses. It is adjacent to the AWS-1 band, which could create opportunities for like uses as service providers and equipment manufacturers may be able to adapt existing AWS-1 equipment for use in this band. In addition, similar uses between adjacent bands will likely reduce interference between licensees. While this band may have limited benefits for wide bandwidth technologies and resource pooling possibilities, TIA supports its repurposing to addressing need for additional spectrum for broadband with the view that this spectrum should be paired with spectrum from 2075-2110 MHz. Additionally, the Commission should ensure that the maximum potential of this band is not hampered by over-expansive exclusion zones.

b. The 3500-3650 MHz, 4200-4220 MHz, and 4380-4400 MHz Bands.

The Commission seeks input on the 3500-3650 MHz band, allocated to radiolocation and aeronautical radionavigation services on a primary basis for Federal use and to the radiolocation service on a secondary basis for non-Federal use, using exclusion zones.[8] The frequency band is also allocated to the Fixed Satellite Service (FSS) in the space-to-Earth direction for non-Federal use and is limited to international inter-continental systems subject to case-by-case

[7] Letter from Associate Administrator, Office of Spectrum Management, NTIA, to Chief, Office of Engineering and Technology, FCC, dated Jan. 19, 2011, available at http://www.ntia.doc.gov/filings/2011/NTIA_FCC_Letter_115%20MHz_01192011.pdf.

[8] PN at 3.

electromagnetic compatibility analysis. Noting that frequencies below 3 GHz allow efficient transmission and reception by mobile, small user devices, making these frequencies ideal for mobile telecommunications uses,[9] TIA believes that sharing this band with FSS may make the use of the spectrum impractical in a mobile environment. Thus, further studies should be conducted relative to the non-Federal FSS operations to ensure that mobile broadband use in the band is practically viable. TIA suggests that further interference analyses should take into consideration adjacent blocks both below[10] as well as above the 3500-3650 MHz band – particularly, current and future FSS stations in the 3600-3650 MHz band.

The Commission also seeks comment on the use of the 4200-4220 MHz, and 4380-4400 MHz segments of the band used for radio altimeters on aircraft.[11] Any deployment of mobile applications in the band 4200-4220 MHz band, which is adjacent to the FSS (space-to-Earth) operations in the band 3700-4200 MHz band, should consider the potential of interference into satellite receivers, and would also need to be carefully reviewed. Furthermore, as the Commission notes, mobile broadband uses in the 4200-4220 MHz and 4380-4400 MHz band segments will not be possible until 2016 at the earliest due to required International Telecommunication Union and the International Civil Aviation Organization regulatory changes.[12]

---

[9] *See Federal Operations in the 1755-1850 MHz Band: The Potential for Accommodating Third Generation Mobile Systems*, Interim Report, U.S. Department of Commerce at 7 (rel. Nov. 15, 2000), *available at* http://www.ntia.doc.gov/osmhome/reports/imt2000/imt2000.pdf.

[10] *See* Fast Track Report at 2-6 ("…ground-based and airborne high-power radars in the lower adjacent band must be considered as they may pose an interference threat to deployment of wireless broadband systems in the 3500-3650 MHz band.")

[11] *Id.* at 4.

[12] PN at 4.

As a result, the 3500-3650 MHz band as well as the 4200-4220 MHz and 4380-4400 MHz band segments should not be viewed as useful in the near-term. Compounded with interference concerns, these bands are of lower interest and value to industry. Again, if the Commission goes forward with these bands TIA urges the Commission to ensure that exclusion zones are minimized.

c. The 1755-1850 MHz Band.

The Commission also seeks comment on broadband use in the 1755-1850 MHz band segment, and whether establishing exclusion zones around the satellite Earth stations to protect wireless broadband receivers would result in the most efficient use of this spectrum.[13] TIA urges NTIA to complete a full analysis of this band for potential repurposing as soon as possible in order to determine whether portions of this band can be repurposed for commercial use. TIA considers this band an ideal location for wireless broadband, and urges action as soon as possible. As NTIA notes, the band would be globally harmonized, and there is high industry interest due to its adjacency to 1710-1755 MHz band, and the industry desire of pairing with the 2155-2180 MHz band.[14]

If exclusion zones are used to protect Earth station uplink transmission to mobile receivers when the 1755-1850 MHz band is transitioned to broadband use, the Commission is encouraged to ensure that any exclusion zones used are based on a comprehensive technical analysis that will ensure the zones are minimal and minimized. This will ensure, as the band is transitioned to broadband use, that quality of service potential is maximized for consumers.

[13] *Id*.

[14] NTIA Fast Track at 2-3.

TIA submits that, because spectrum dedicated for wide area mobile broadband network use should remain free from sharing requirements,[15] the Commission can best ensure that the 1755-1850 MHz band reaches its potential for improved mobile broadband availability by clearing the band for exclusive licensed mobile broadband use. Due to technical sharing requirements (sharing rules may stipulate low power, duty cycles, strict out of band emission (OOBE) limits, limits to spectrum access during specific times, limits to using specific frequencies and/or at specific locations or other stipulations), broadband use in this band is not conducive to cohabitation with the other uses by "the Department of Defense (DOD), Federal law enforcement agencies, and other agencies for a variety of satellite, surveillance, aeronautical operations, fixed microwave and other operations"[16] currently in the band, which NTIA notes as having "intensified since analyses were performed in 2001;[17] for this same reason, pairing with AWS-1 is also critical to afford it the benefits of adjacency as noted above.

[15] *See* Middleton, Gareth, et al, *Inter-Operator Spectrum Sharing in a Broadband Cellular Network* (Aug. 2006), *available at*http://www.ece.rice.edu/~gbmidd/papers/ISSSTA06.pdf (noting that, even with a packet-based cellular sharing framework, the operating point is rarely achieved in wide area broadband networks).

[16] PN at 3.

[17] Fast Track Report at 2-3.

III. TIA URGES THE COMMISSION TO TAKE FURTHER ACTION TO FACILITATE THE REPURPOSEMENT OF SPECTRUM FOR WIRELESS BROADBAND USE

a. The Commission Should Extend the AWS-1 Band to Below 1675 MHz and Above 1755 MHz

The Commission can maximize the investment potential of a band by affording it larger contiguous block of spectrum, as well as adjacency to like services. TIA urges the Commission to increase the size of the AWS-1 allocations by extending 1695 to 1675 MHz and pairing with 2075-2110 MHz, and to add the 1755-1780 MHz paired with 2155-2180 MHz to the AWS-1 block. Making such allocations would afford the numerous benefits associated with large, contiguous spectrum blocks, globally harmonized and adjacent to like services. Availability of use of wider bandwidth technology, pooling of resources, shorter time-to-market, lower deployment costs, and accelerated standard development will make the business case for innovation and investment. While NTIA has been unable to complete its assessment of the 1755-1780 MHz band due to the amount of time it projects it will take to repurpose this band, TIA strongly endorses further investigation and planning into feasibility and enforcement mechanisms.

CONCLUSION

For the foregoing reasons, TIA urges the Commission to take into consideration its views in this proceeding.

Respectfully submitted,

TELECOMMUNICATIONS INDUSTRY ASSOCIATION

By: ___/s/_____

Danielle Coffey
Vice President,
Government Affairs

Patrick Sullivan
Director,
Technical and Government Affairs

TELECOMMUNICATIONS INDUSTRY ASSOCIATION
10 G Street N.E.
Suite 550
Washington, D.C. 20002
(202) 346-3240

April 22, 2011