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Fwd: Counter Comments on TRAI consultation paper regarding evaluation of spectrum

Sanjeev Banzal, Advisor TRAI <advmn@tra.gov.in>

Tue, Dec 29, 2015 at 9:28 AM

To: sbanzal@gmail.com, fa@tra.gov.in, ramesh.al.tra@gmail.com, soniatrai@gmail.com

----- Original Message -----

From: **Prakash Bajpai** <prakash.bajpai@tikona.in>

Date: Dec 23, 2015 4:55:27 PM

Subject: Counter Comments on TRAI consultation paper regarding evaluation of spectrum

To: "advmn@tra.gov.in" <advmn@tra.gov.in>

Cc: "tra.jams@gmail.com" <tra.jams@gmail.com>

Dear Sir,

We are pleased to attach a file containing the counter comments on the TRAI consultation paper. We hope you find the same in order.

Thank you,

Regards,

Prakash Bajpai

MD & CEO

Tikona Digital Networks Private Limited

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2 attachments



Comments on TRAI paper on spectrum 2015 Cover Note.docx

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Counter Comments on TRAI consultation 2015.docx

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COUNTER COMMENTS ON ISSUES FOR CONSULTATION

Q9. Should 2300 MHz and 2500 MHz bands be treated as same band for the purpose of imposing intra-band Spectrum Cap?

Ans. Yes,

Most telecom operators require adequate spectrum in expensive sub GHz band for achieving indoor RF coverage and a large contiguous spectrum in high frequency spectrum bands to build sufficient data capacity for outdoor mobility or fixed broadband coverage.

Putting each band specific cap is therefore sub-optimal and leads to wastage. Both 2300 MHz and 2500 MHz bands are suitable to build data capacity and should be treated as same band for the purpose of imposing intra-band Spectrum Cap. Both bands are meant for creating large data capacity and by treating them as same band, large contiguous band would be available for data. It has been observed that typically band size of 40 Mhz are made available across the world. A common band cap would create better and fast data capacity and would enable maintenance of world class quality of data services.

Q13. In the auction held in 2010, specific roll-out obligations were mandated for the successful bidders in 2300 MHz spectrum band. Same were made applicable to the licensee having spectrum in 2500 MHz band. Stakeholders are requested to suggest:

(a) Should the same roll-out obligations which were specified during the 2010 auctions for BWA spectrum be retained for the upcoming auctions in the 2300 MHz and 2500 MHz bands? Should both these bands be treated as same band for the purpose of roll-out obligations?

Ans: Yes, similar roll-out obligations should be retained for upcoming auctions in 2300 and 2500 Mhz bands. Since the existing operations in 2300 Mhz bands have already covered 50% rural SDCAs, it is being suggested that the new bidders should be required to cover the remaining rural SDCAs and the previously covered towns should be specifically excluded from the scope of roll-out obligations.

If for any reason above obligations are waived for new auction, suitable price adjustment may be carried out in determining the price of spectrum.

(b) In case existing service providers who are already operating their services in 2300 MHz band acquire additional block of spectrum in 2300 or 2500 MHz band, should there be any additional roll out obligation imposed on them?

Ans: Additional roll out obligations should be imposed on existing service providers if they acquire additional block of spectrum in 2300 or 2500 Mhz band, as explained in comments against Q13(a).

Q17. Whether the ISP category 'A' licensee should be permitted to acquire the spectrum in 2300 and 2500 MHz bands or the same eligibility criteria that has been made applicable for other bands viz. 800 MHz, 900 MHz, 1800 MHz and 2100 MHz band should be made applicable for 2300 MHz and 2500 MHz bands also?

Ans: Most respondents to the consultation paper are UASL or UL(AS) and therefore do not represent the interest of pure-play Internet or broadband service providers (ISPs).

Broadband policy enunciates the principle of delineation of spectrum & license. Therefore auctioned spectrum should and must remain available for all types of services depending upon the type of service license with the operator. Spectrum price and roll-out obligations etc should remain applicable in an identical manner. It is unjust and untenable to discriminate against ISPs who are contributing towards national cause of broadband proliferation. In order to enable the future proliferation of internet data services, ISP category A or UL(ISP) licensees should not be discriminated against at all and all spectrum auction policies should be identically applicable to all categories of Service Providers; else the very principle of de-lineation between license and spectrum would be defeated. The 2300 Mhz band and all other spectrum bands should be treated at par with all other bands and should be accessible to all types of service providers including ISPs and UL(ISP) without any discrimination with regard to eligibility criteria.

*Broadband Internet access including fixed broadband services is an effort of national priority and essential to the goals of **Digital India** propounded by Hon' PM. Such broadband services to homes, SMBs, private and Govt establishments and institutions like schools, colleges, health centers, CSCs etc; at affordable prices to the masses (@1/3rd cost of mobility data application) are the crucial need of the hour. India suffers from poor Home broadband penetration (only 18 million fixed broadband) due to lack of last mile infrastructure. If ISPs and UL(ISP) are not allowed to get wireless spectrum how Indian homes will ever get the basic internet access at affordable prices.*

It is ironical and a great anomaly to recognize primarily mobile telephony telcos (UASL) as access providers and ISPs are treated as non-access providers. Everyone knows that voice telephony need has been more or less resolved already and broadband connectivity to homes should be accorded much higher priority. It is strongly suggested to treat 'Internet service' as an 'Access Service' and therefore all ISPs and UL(ISP)s must be given access to all categories of spectrum to build truly world-class Internet and data service for home and outdoor applications.

In fact TRAI has done a gross injustice to ISPs who had won the spectrum in previous auction and who paid same amount of money upfront and also were subjected to same rural roll-out obligation. Despite above the spectrum trading rights have been denied to ISP and made available to Access Service Providers only, without assigning any rationale for such a blatant discrimination. Why?? What is the basis of such a legally untenable discrimination? Such a flawed recommendation can serve the interest of other Service operators' vested with interest of scuttling the competition. This anomaly must be removed by recommending equal treatment to all categories of Service Licensees. Only then the true spirit of delineation between spectrum and license would be effective in practice.

Q19. Can the prices revealed in the March 2015 auction for 800/900/1800/2100 MHz spectrum be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA? If yes, would it be appropriate to index it for the time gap (even if this is less than one year) between the auction held in March 2015 and the next round of auction and what rate should be adopted for indexation?

Ans: Yes, the price revealed in the most recent auction or market trade (spectrum trading transaction) should be taken as the forward benchmark and should be further indexed for time gap since the price discovery.

Due to rapid change in technology, competitive supply & demand situation, time indexing may not appropriate for price discovery of beyond 2 years. In cases of price discovery older than 2 years; respective bands should be estimated on the basis of technical efficiency factor with the closest band for which the prices were recently discovered via auction or market trade.

Q24. Should the value of May 2010 auction determined prices be used as one possible valuation for 2300 MHz spectrum in the next round of auction? If yes, then how? And, if not, then why not?

Ans: No,

The evaluation of spectrum should be determined by following critical factors:

- i. RF propagation and technical efficiency (see paragraph below)*
- ii. Use case of spectrum : For 2G/3G voice services or 4G data services*
- iii. Maturity and commercial access to higher generation 3G/4G technology (greater spectrum efficiency) based on global deployments in the particular spectrum band*
- iv. Availability of device eco-system in the spectrum band based on global deployments*
- v. Size of spectrum slot and its contiguity*
- vi. Supply of spectrum vs. likely Demand from industry*

Availability of Spectrum

Supreme Court in its judgement dated February 02, 2012 has stated that “Spectrum has been internationally accepted as a scarce, finite and renewable natural resource which is susceptible to degradation in case of inefficient utilisation. It has a high economic value in the light of the demand for it on account of the tremendous growth in the telecom sector”

Demand for Wireless Bandwidth

There is an accelerating technology shift to mobile broadband networks across the world. Mobile broadband connections (i.e. 3G and 4G technologies) accounted for just under 40% of total connections at the end of 2014, but by 2020 will increase to almost 70% of the total. This migration is being driven by greater availability and affordability of smartphones, more extensive and deeper network coverage, and in some cases by operator handset subsidies.

Cisco predicted in its oft-cited “Global Mobile Data Traffic Forecast Update” a compound annual growth rate of 61 percent through 2018 for global mobile data traffic.

The greatest impact of this technology migration is now taking place in the developing world. Mobile broadband already accounts for over three-quarters of connections in the developed world and, by 2020, the figure will reach 92%. In contrast, less than a third of connections are currently on higher speed networks in the developing world. However, this is projected to nearly reach two-thirds of connections by 2020. In absolute terms, the number of mobile broadband connections in developing markets will increase by 3.1 billion over the period.

India has become the third-largest smartphone market in the world. The number of smartphone users is expected to reach 369 million by 2018.

The number of smart devices and average data use per device are only expected to grow as people increasingly consume bandwidth-intensive content such as streaming video on the go and faster networks begin to rival speeds offered by wired internet service providers. Rapid expansion of cloud computing services—and the emergence of a robust “Internet of Things” will only accelerate this growth in demand. By 2020, connected wireless devices worldwide are estimated to nearly triple .

Exponential growth in demand for Wireless bandwidth would lead to Spectrum Crunch in high demand areas.

Propagation characteristics -Myth of Lower Band Spectrum :

The need for spectrum is due to capacity constraints rather than coverage constraints. The spectrum crunch does not exist in rural Areas across the world. It only exists in the densely populated urban areas. Rural areas are as well covered as it is profitably possible to cover with the industry's existing spectrum portfolio of 800 MHz to 2.1 GHz.

Where we have a problem is in the densely populated areas where the spectrum propagation characteristics of high-band spectrum are preferred because the focus is on expanding capacity, not coverage. In fact, the very properties that make low frequency spectrum so useful for covering large, flat, lightly populated areas become handicaps in the densely populated urban areas. The reason has everything to do with physics and network design.

There is no denying that lower frequencies are important and valuable. They absolutely reduce a company's cost to deploy since the low-band frequencies penetrate better and propagate further, dropping the number of sites a Operator has to deploy to provide good coverage, particularly in rural areas. But most data is consumed in denser population areas, where cell sites are more packed so operators don't need lower frequencies for propagation and can use higher frequencies that are actually better for capacity. For instance, higher frequencies permit denser antenna arrays, enabling higher spectral efficiency. In the future, the use of higher frequencies will allow more sophisticated antenna arrays, which will raise spectral efficiency, boost the capacity of each cell site, and allow for faster speeds. In Low Bands , design of efficient Antenna Arrays is restricted by use of expensive Antenna Space .

In the densely populated areas, carriers have to deploy more and smaller cell sites to handle exploding usage patterns. More cells sites means more opportunities for interference, especially as the cell sites are located in closer and closer proximity to each other due to limited locations for cell site deployment in urban markets. In this scenario, high-band frequencies are prized because they give the networks the depth of capacity the carriers need, yet create fewer interference issues than low band. Further, whether low band can cover more areas with fewer sites is irrelevant in the urban markets. It's all about capacity in densely populated areas . As a result, a 700 MHz network in Mumbai will look identical to a 2.3 GHz network in terms of how many sites it needs to achieve close to identical coverage & capacity needs , over a period of time .

The AWS-3 auction , conducted by FCC in the beginning of this year , confirms the capacity benefit of higher band spectrum , as this spectrum is the capacity play, a critical component for many carriers to bolster their networks.

According to former Clearwire CEO Erik Prusch, "2.5 GHz spectrum actually has an advantage over low-band spectrum in dense urban markets because it can carry much more data at higher rates," which is recognized as a key capability in dealing with increased traffic - Fierce Wireless 1/14/14

Profusion of Services in LTE (Primary use case of 2300 Mhz spectrum) year 2010 vs. year 2016

At time of 2010 auction the 4G data eco-system was in an incipient stage and hence most industry was still focused on mobility voice and 3G data services. In fact BWA spectrum in 2.3 GHz was dominantly used for Wimax technology and no 4G LTE deployment was done at the time of auction and therefore very poor availability of device eco-system.

Wireless operators throughout the world are getting ready to retire their older 2G voice networks and replace them with service that runs over the new 4G LTE networks they've built during the past couple of years.

AT&T is already launching its service in select cities, and T-Mobile is also making its service available wherever it currently offers 4G LTE. Verizon Wireless, which has the

largest 4G LTE network deployed, with more than 300 million people covered, is the latest US carrier to announce that its Voice over LTE service will be offered nationwide in the coming weeks.

TRAI has itself acknowledged in its CP that the same technology that is used in other bands can be used for 2300 MHz and 2500 MHz bands too because of the advances in technology and device ecosystem since the year 2010 when the spectrum in these bands was allocated first. Since the use of the technology no longer is limited to BWA .

While determining the value of 2300 MHz spectrum following facts should be considered based on dramatically changed scenario at present:

- a) 2300 MHz (band 40) has now emerged as one the most prolific band for deployment of 4G LTE-TDD to build high capacity data services.
- b) 2300 MHz offers the largest contiguous spectrum band and TDD allows for up to 15 MHz spectrum available for downlink data traffic.
- c) Wide range of device availability

Due to rapid change in technology, competitive supply & demand situation, time indexing may not appropriate for price discovery of beyond 2 years. In cases of price discovery older than 2 years respective bands should be estimated on the basis of technical efficiency factor with the closest band for which the prices were recently discovered. In case of 2300 MHz the reference bands may be 2100 MHz adjusted for technical efficiency. Also contiguity of size of spectrum and roll-out obligations may be considered besides RF efficiency.

Q25. Should the value of the 2300 MHz spectrum be derived on the basis of the value of any other spectrum band using the technical efficiency factor? If yes, please indicate the spectrum band and technical efficiency factor with 2300 MHz spectrum along with supporting documents.

Ans: Yes, it should be estimated on the basis of technical efficiency factor with the closest band for which the prices were recently discovered. In case of 2300 MHz the reference bands may be 2100 MHz adjusted for technical efficiency. Also contiguity of size of spectrum may be considered besides RF efficiency.

Q26. Should the valuation of the 2500 MHz spectrum be equal to the valuation arrived at for the 2300 MHz spectrum? If no, then why not? Please support your comments with supporting documents/ literature.

Ans: Yes, the valuation of 2500 Mhz spectrum should be determined identically as that of 2300 Mhz spectrum.

Q30. Should the realized prices in the recent March 2015 auction for 800/900/1800/2100 MHz spectrum bands be taken as the reserve price in respective spectrum bands for the forthcoming auction? If yes, would it be

appropriate to index it for the time gap (even if less than one year) between the auction held in March 2015 and the forthcoming auction? If yes, then at which rate the indexation should be done?

Ans: Yes, recent price discovery through auction or market trade should be the sole basis to keep the process objective, clean and without any subsequent disputes.