



Association of Unified Telecom Service Providers of India

AUSPI/12/2013/060

14th August, 2013

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New Delhi 110002.

**Subject: AUSPI's Response to TRAI's Consultation Paper No. 6/2013
on "Valuation and Reserve Price of Spectrum"**

Dear Sir,

Please find enclosed AUSPI's Response to the various issues raised by TRAI in its Consultation Paper on 'Valuation and Reserve Price of Spectrum'.

AUSPI requests the Authority to please take its views into consideration while coming out with the recommendations regarding valuation and reserve price of spectrum.

Thanking you,

Yours faithfully,

Ashok Sud
Secretary General

Mob: 9312941515

Encl: As above

Copy to:

1. **Dr. Rahul Khullar, Chiarman, TRAI**
2. **Shri R K Arnold, Member, TRAI**
3. **Smt. Vijayalakshmy K Gupta, Member, TRAI**
4. **Shri Rajeev Agrawal, Secretary, TRAI**



**AUSPI'S RESPONSE TO TRAI CONSULTATION PAPER NO. 6/2013
ON 'VALUATION AND RESERVE PRICE OF SPECTRUM'**

Q.1. *What method should be adopted for refarming of the 900 MHz band so that the TSPs whose licences are expiring in 2014 onwards get adequate spectrum in 900/1800 MHz band for continuity of services provided by them?*

TRAI's question seems to imply that continuity of services has to be guaranteed to licensees whose licenses are expiring in 2014. We submit that the license does not guarantee continuity of service beyond the validity period of the license. The interest of existing subscribers would be served even if the license did not continue beyond 2014 because they can migrate using MNP to other operators. This has been amply proved after 122 licenses quashed by the Supreme Court.

Refarming of spectrum in 900 MHz band in India is well debated, thoroughly analysed, duly considered by TRAI and **approved by Telecom Commission** and that too well in advance of the expiry of the current license period.

In the National Telecom Policy 2012 refarming is one of the policy points to make spectrum available for introduction of new technologies for telecom applications and hence entire 900 MHz spectrum band should be made available for new technologies. The press statement of 15th February 2012 by the Hon'ble Minister of Communications & IT endorses the necessity of 900 MHz band refarming.

We understand that the refarming of 900 MHz band has already been approved by the Telecom Commission and the Cabinet, the DoT in its letter dated 10th July, 2013 did not seek any recommendation from the Authority on the same and hence **the issue of refarming is not subject to any further deliberation by the Authority.**

AUSPI would like to reiterate its previous consistent views that refarming will be an important milestone in the development of the broadband services in India as 900 MHz spectrum band is cost effective and its rural penetration properties can be used more efficiently for the deployment of next generation wireless technology.

In view of the above, AUSPI suggests that 900 MHz should be fully refarmed and there should be no reservation at all. Also, no continuity support should be given, by reserving the scarce valuable resource, to the licensees whose licences are expiring in 2014.



Q.2. *In case spectrum is to be “reserved” for such TSPs, should it be restricted to licences expiring in 2014 (metros) or include licences expiring afterwards (LSAs other than metros)?*

There is no need of any spectrum reservation considering the expiry of licenses. Scarce resource such as spectrum should not be reserved and requires to be auctioned as soon as possible to ensure its most efficient utilization. In case of re-farming, entire 900 MHz band spectrum should be immediately auctioned as full re-farming of 900 MHz spectrum will not only ensure level playing field creating equality in the highly competitive environment, but will also help the Government in taking the Broadband services to the rural areas of the country at affordable rates.

Further, in case of 1800 MHz band, TRAI has rightly opined that in case spectrum in 1800 MHz is required to be reserved for re-farming of the 900 MHz spectrum available with such TSPs, it will have a direct bearing on the availability of spectrum in the 1800 MHz band for auction. Government should immediately auction the entire spectrum in 1800 MHz band made available after cancellation of 122 UASLs by the Hon’ble Supreme Court vide its Judgement dated 02nd February, 2012 which remain unsold in 2G auctions in November’2012 and March’2013. In addition, the Government may also decide to auction the spectrum already available with it in 1800 MHz band.

Reserving any spectrum may lead to artificial scarcity of spectrum for the auction and will not lead to determination of correct market value of the spectrum in these bands.

Any telecom service provider, irrespective of the date of expiry of its license period may participate and obtain the desired quantum of spectrum necessary for its operations, subject to the capping on the quantum of spectrum prescribed by the Government, through participation in auction.

We therefore recommend that the complete 900 MHz should be re-farmed and in the interest of level playing field, the Authority should ensure that any telecom service provider (irrespective of the date of expiry of its licenses) can participate and obtain the desired quantum of spectrum necessary for its operations. However, Renewal Licensees should be granted priority for retention of 2.5 MHz in 900 MHz as envisaged in the NIA dated 30th January 2013, provided they participate and submit the bid at the Clock Round Price.



Q.3. *Is any restriction required to be imposed on the eligibility for participation in the proposed auction?*

In order to ensure sufficient competition in the market for provision of affordable quality of service, there is a need that no artificial barriers/ restrictions are created to participate in the auction and hence we suggest that no restrictions are required to be imposed on the eligibility for participation in the proposed auction as long as the applicants undertake to comply with the requirements for obtaining Unified License. Any artificial restriction on eligibility for participation in the proposed auction would cause loss of revenue to the national exchequer.

The eligibility for participation in Auction of Spectrum should be same as specified in the NIAs dated 28.9.2012 and 30.1.2013. All UAS / CMTS licensees and new entrants should be allowed to participate in the proposed auction subject to eligibility criteria and conditions relating to spectrum caps.

Q.4. *Should India adopt E-GSM band, in view of the diminishing interest in the CDMA services? If yes,*

- a) How much spectrum in the 800 MHz band should be retained for CDMA technology?*
- b) What are the issues that need to be addressed in the process?*
- c) What process should be adopted for migration considering the various issues involved?*

At the outset, we do not agree that interest of the operators in the CDMA band is diminishing. If there was a lack of interest in the recent auction for CDMA spectrum, it was because of the yardstick being used by TRAI in fixing high reserve price for CDMA spectrum.

AUSPI strongly oppose the statement made by the Authority in classifying 800 MHz as E-GSM band in this consultation paper. The Authority's recommendations on this issue are not sought by the DoT vide its letter dated 10th July, 2013. This issue should not be the subject matter of this consultation process of TRAI on "Valuation and Reserve Price of Spectrum" for discussion.

In furtherance to the contention raised by the AUSPI above, we would like to bring to the notice of the Authority, the issues associated with 800 MHz band being used as an E-GSM band as follows. These are in addition to the number of technical and commercial issues already mentioned by the Authority in its consultation paper.



- (i) CDMA spectrum in 800 MHz band has been allocated to the licensees having validity as late as 2024, and therefore it would be contrary to the existing license agreements of the operators.
- (ii) CDMA service providers have already made huge investment in network using 800 MHz band and there is no such growth path/alternate band for CDMA 800 MHz spectrum as 1800 MHz band is available as expansion of GSM services in 900 MHz band.
- (iii) There is no precedent in the world where CDMA spectrum has been re-farmed for GSM services when about 75 million subscribers are already using CDMA based voice and data services.
- (iv) To our knowledge, CDMA 800 MHz band and GSM 800 MHz band do not co-exist internationally.

As rightly acknowledged by the Authority in its consultation paper, CDMA has a different ecosystem, with much lower ARPU and MoU for CDMA operators who do not have an advantage of economies of scale as in case of GSM operators. Dominant GSM operators are already holding excess spectrum, have scope to expand in 900 MHz as well as 1800 MHz and further growing in 2100 MHz as 3G technology. For the existing CDMA operators, there is limited availability of only 20 MHz spectrum in 800 MHz band.

The CDMA operators even today support around 75 million subscriber base and provide them most affordable telecom services. CDMA operators also provide high speed internet services in thousands of cities and towns in the country. The reach of CDMA based internet services is country wide and support significant number of internet subscribers. The discriminatory approach such as relocating CDMA operations and cull out EGSM band would be death knell for CDMA operations and wipe out the only credible challenger to GSM industry.

TRAI has proposed that CDMA spectrum allocated to BSNL/MTNL should also be withdrawn as they are not providing full mobile services and number of subscriber being supported are very few. However, the CDMA spectrum allocated to BSNL is being used to provide RDELs and it may not be a good option to withdraw source of connectivity to rural areas. Otherwise also the vacation of spectrum from BSNL and MTNL will take considerable long time and uncertainty about CDMA operations will prevail till then.

The EGSM band is also not technically feasible as there are 448 assignments in downlink (925-935 MHz) spectrum to different users for captive use. In addition 7 MHz is being used by defence in the downlink band. Thus TRAI proposal is neither feasible nor possible.



Internationally, 25 MHz in 800 MHz band i.e. 824-849 MHz paired with 869-894MHz, has been harmonised for CDMA services but in contrary, only 20 MHz CDMA spectrum is allocated in 824-844 MHz paired with 869-889 MHz in India. AUSPI has requested many times in the past for re-farming of additional 5 MHz spectrum (844-849/ 889-894 MHz) for CDMA services however, till date, it has not materialised.

In view of the above, we do not see any logic or reason that 880-890 MHz band being made available for GSM services.

Q.5. *Should roll out obligations for new/existing/renewal/quashed licenses be different? Please give justification in support of your answer.*

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Q.6. *Is there a need to prescribe additional roll-out obligations for a TSP who acquires spectrum in the auction even if it has already fulfilled the prescribed roll-out obligations earlier?*

The Roll out obligations as specified in clause 34.2 of CMTS/UASL license of existing licensees are as follows:

Quote:

"LICENSEE shall ensure that

- (i) Atleast 10% of the District Headquarters (DHQs) will be covered in the first year and 50% of the District Headquarters will be covered within three years of effective date of Licence.*
- (ii) The licensee shall also be permitted to cover any other town in a District in lieu of the District Headquarters.*
- (iii) Coverage of a DHQ/town would mean that at least 90% of the area bounded by the Municipal limits should get the required street as well as in-building coverage.*
- (iv) The District Headquarters shall be taken as on the effective date of Licence.*
- (v) The choice of District Headquarters/towns to be covered and further expansion beyond 50% District Headquarters/towns shall lie with the Licensee depending on their business decision.*
- (vi) There is no requirement of mandatory coverage of rural areas."*

Unquote

Any additional rollout obligations over and above the existing rollout obligations in the license are not warranted and are contrary to existing license conditions. The license is the binding contract between the licensor and the licensee and accordingly, a license should not be altered and should be honored in letter and spirit by both the parties to the agreement viz. Licensor and the Licensee. Any additional Roll out obligation imposed midway, would be counter to the existing conditions and would not conform to the valid license agreement/contract.



AUSPI recommend that rollout obligations should be completed by the operator only once using any technology. We also recommend that the spectrum, whether acquired by a new entrant or an existing licensee, should carry the same set of existing UASL roll-out obligations.

Q.9. *Would it be appropriate to use prices obtained in the auction of 3G spectrum as the basis for the valuation in 2013? In case the prices obtained in the auction of 3G spectrum are to be used as the basis, what qualifications would be necessary?*

Economic, technical and commercially estimated price required to be determined for valuation of the spectrum for the purposed auction in 2013. Spectrum is a vital input for providing wireless services and a scarce natural resource. During the last few years, the number and range of wireless applications has considerably increased, touching upon most areas of economic and social activities and the demand for spectrum has increased. Therefore, there is need for ensuring its optimal utilization and ensure appropriate pricing. Several factors influence the price of spectrum viz.

- Propagation characteristics
- Spectral efficiency
- Indoor coverage
- Quality of Services
- Technology ecosystem
- Utility of spectrum
- Demographics
- Demand projection

We do not agree for the adoption of the price obtained in the auction of 3G spectrum as the basis for the valuation in 2013 to be correct for all spectrum band. The GSM spectrum in 900, 1800 and 2100 are complimentary and therefore any correlation of earlier auction would be for 900 and 1800 MHz band. only and definitely 3G spectrum in any manner cannot be linked to 800 MHz band. In view of the above we believe it will be illogical to determine the demand and price for the valuation in 2013 based on 3G Auctions.

Q.10. *Should the value of spectrum for individual LSA be derived in a top-down manner starting with pan-India valuation or should valuation of spectrum for each LSA be done individually?*

Spectrum value is dependent on the revenue expectations from a service area based on the subscriber projections, likely adoption rate for mobile services, ARPU parameters, as well as the cost structure of the service area both in terms of network build-out and



operational costs. In India, as evident from the data presented in the consultation paper, while the service areas are a priori categorized based on their profitability or revenue potential, there are remarkable differences between the LSAs both in the revenue as well as cost parameters. Further, operators have the flexibility to bid for spectrum in the LSA of their choice.

Choice of LSA and the price of spectrum are driven by the business case for the LSA which is unique for each LSA (based on underlying revenue and cost assumptions) and hence, demands individual scrutiny. A bottom-up assessment yields more realistic values for the likely price of the spectrum as it factors the regional market characteristics and geographical differences of the LSAs. In terms of operational costs as well, a bottom-up assessment becomes important given the wide variations in telecom infrastructure availability in the LSAs, for example, power availability.

While the pan India price derived on a top-down manner may not differ significantly from the one arrived at through a bottom-up assessment, the latter approach provides a more realistic value for spectrum in individual LSAs. Hence, valuation of spectrum for each LSA should be done individually.

Q.11. *Is indexation of 2001 prices of 1800 MHz spectrum an appropriate method for valuing spectrum in 2013? If yes, what is the indexation factor that should be used?*

No Sir. The indexation of 2001 pricing cannot be taken as an appropriate method for valuing spectrum in 2013. Whatever price was allocated in the year 2001 is reflective of demand conditions and economic prospects at that point of time viz. about 12 years ago. The telecom sector as well as the economy has undergone major changes since then. In a world of rapid economic change, a decade is a very long time. Moreover, there have been significant advances in technology that have led to new ways of using spectrum and new services for which it can be used.

The telecom industry has undergone radical change from the voice-centric usage paradigm to the data-driven and value added services model. The growing economy has set higher benchmarks and desire for services that has driven the growth of the telecom sector and also opened up new areas of expansion. **These various developments clearly indicate that merely indexing the prices of 2001 is really not reflective of all the changes that have occurred in the intervening period and hence AUSPI recommends that the indexation of 2001 pricing cannot be taken as an appropriate method for valuing spectrum in 2013.**



Q.12. *Should the value of spectrum in the areas where spectrum was not sold in the latest auctions of November 2012 and March 2013 be estimated by correlating the sale prices achieved in similar LSAs with known relevant variables? Can multiple regression analysis be used for this purpose?*

No Sir. The areas where spectrum was not sold in the last auction in November 2012 & March 2013 may not have co-relation with the sale price in similar LSAs. Co-relation of sale price amongst others in similar LSA, does not capture the effect of -

- Technological changes,
- Market expectations,
- Unique characteristics of specific LSAs etc.

We do not agree to the view that the value of spectrum in the areas where spectrum was not sold in the latest auctions of November 2012 and March 2013 be estimated by correlating the sale prices achieved in similar LSAs with known relevant variables.

Q.13. *Should the value of spectrum be assessed on the basis of producer surplus on account of additional spectrum? Please support your response with justification. If you are in favour of this method, please furnish the calculation and relevant data along with results.*

The producer surplus approach hinges on the inverse relationship between the quantum of spectrum available with an operator and the costs incurred in servicing the subscriber base. As it assesses the network cost elements by factoring the spectral efficiency of the spectrum band under consideration, it provides the engineering value of the spectrum.

Engineering value may not always be a good indicator of the prices eventually discovered through auctions as evident from the Swedish experience of 800 MHz and 2.6 GHz auctions held in 2011 and 2008, respectively. In both these auctions, the value discovered through auctions was a fraction of the engineering value estimated for the spectrum. The deviation between the engineering value and auction prices ranged from a factor of 1.5 to as high as a factor of 10¹.

Further, engineering value may not be an appropriate representation of the full economics of cellular business. Mobile business valuation depends on a host of parameters including existing and potential tele-density, mobile subscriber base, competitive intensity, voice & data revenue, capital expenditure on network and other elements, operating expenses including non-network related expenses such

¹ Bengt G Mölleryd and Jan Markendahl, 22nd European Regional ITS Conference Budapest, 18-21 September, 2011



as personnel and marketing, etc. A player looking to enter the cellular business would evaluate all these parameters together to estimate the price it can pay for the spectrum. While the producer surplus approach offers close assessment of the network requirements and costs thereof, it overlooks the revenue potential of the market under consideration, as well as the non-network costs of running a wireless business. Hence, it provides only a limited view of the business dynamics and consequent price an operator would be willing to pay for spectrum.

AUSPI is of the view that the value of spectrum should not be assessed on the basis of producer surplus on account of additional spectrum as it provides only a limited view of the business dynamics and consequently it will not reflect the correct price an operator would be willing to pay for the spectrum.

Q.14. Should the value of spectrum in the 1800 MHz band be derived by estimating a production function on the assumption that spectrum and BTS are substitutable resources? Please support your response with justification. If you are in favour of this method, please furnish the calculation and relevant data along with results.

The Cobb-Douglas function seeks to identify the relationship between the inputs to provide mobile services and the output of the same. The inputs viz., amount of spectrum available with an operator and the number of access nodes required, are assumed to be substitutes over a given range of output (mobile traffic or Minutes of Usage). The method estimates the coefficients of the production function and applies these along with the price of BTS to calculate the price of spectrum. As per the method description provided by the authority, the equation seems to ignore the future expectations of BTS prices which include the escalating network operating expenses associated with a cell site. This limits the application of the production function in estimating the spectrum price over a twenty year period.

Further, the spectrum value calculated based on the production function is based on the relationship between network inputs, and is indicative of the engineering value of spectrum. While the production function looks at the input substitutability relation and seeks to value spectrum using the cost of base stations, it overlooks the impact of revenues and other costs in providing mobile services. As such, it provides only a limited view of the spectrum price. In practice, the commercial value of spectrum would be dependent on the revenue expectations of operator and a desired return on investment after considering all costs involved in providing mobile services.

AUSPI therefore recommends that the value of the spectrum in 1800 MHz band cannot be derived by estimating a production function on the assumption that spectrum and BTS are substitutable resource.



Q.15. *Apart from the approaches discussed in the foregoing section, is there any alternate approach for valuation of spectrum that you would suggest? Please support your answer with detailed data and methodology.*

The Discounted Profit (DP) approach that seeks to calculate the maximum price an operator would be willing to pay for spectrum after factoring for all the costs and a targeted return, is a more comprehensive approach for valuing spectrum. Revenue and cost parameters are estimated for a pragmatic, average operator, having a fair share of the market. The price of spectrum is computed after evaluating the economic, engineering and commercial aspects in offering cellular services in the country with a given quantum of spectrum in a particular frequency band.

The DP method provides the commercial value of the spectrum and is used by players participating in spectrum auctions to estimate their bid price. Notably, this method takes into account the revenue potential and non-network costs of running a cellular business for arriving at the spectrum price thereby, providing a holistic view of the spectrum value.

AUSPI recommends that the Authority should also come out with a clear road map of how much spectrum will be auctioned in future, in what all years and in what all bands as the UL will be valid for a 20 year period. This clear road map will benefit the Government and the operators. This road map will also help operators to mitigate their risks accordingly.

Q.16. *Should the premium to be paid for the 900 MHz and liberalised 800 MHz spectrum be based on the additional CAPEX and OPEX that would be incurred on a shift from these bands to the 1800 MHz band?*

800 MHz cannot be compared with respect to 1800 MHz as there is no practical compatibility over the technologies that can be offered today on the two bands. CDMA equipment have been deployed in 800 MHz which cannot be shifted to 1800 MHz and therefore price of 800 MHz spectrum is not linked to the 1800 MHz spectrum band.

The Ecosystem for 800 MHz is poor and its value is much lower compared to the 1800 MHz spectrum band. Even the Government is conscious of this fact that for this reason reserve price for 800 MHz is lower compared to 1800 MHz band. Thus the issue for consultation should have been the discount that is applicable for 800 MHz and not the premium for 800 MHz over 1800 MHz spectrum band.

However, we agree that using valuation of the 1800 MHz band, the value of the 900 MHz may be derived based on the additional capex and opex that would be incurred for shifting from 900 MHz to 1800 MHz.



Being a sub 1 GHz frequency band, 900 MHz has inherent advantages over 1800 MHz due to its better propagation characteristics and consequent advantage in terms of lesser base station requirement for coverage. This results in economic benefits in both network capital as well as operating costs.

Incumbent GSM operators have themselves declared that they will require an additional investment of Rs. 115000 crores on account of re-farming of 900 MHz spectrum and migrating to 1800 MHz. This shows that the intrinsic value of 900 MHz spectrum is much higher compared to 1800 MHz and same should be accounted while deciding the premium to be paid for 900 MHz spectrum over the 1800 MHz spectrum band.

AUSPI recommends that value of spectrum in 900 MHz band be at least two times the value of spectrum in 1800 MHz band.

Q.18.

- a) *Should annual spectrum usage charges be a percentage of AGR or is there a need to adopt some other method for levying spectrum usage charges? If another method is suggested, all details may be furnished.*
- b) *In case annual spectrum usage charges are levied as a percentage of AGR, should annual spectrum charges escalate with the amount of spectrum holding, as at present, or should a fixed percentage of AGR be applicable?*
- c) *If your response favours a flat percentage of AGR, what should that percentage be?*

The Spectrum Usage Charge (SUC) is paid for the use of spectrum and the amount of this SUC has also been varying from time to time. The latest revision for SUC was made by the DoT on 25th February, 2010 which has been reproduced by TRAI at Table 3.12 of the Consultation Paper.

We have already submitted in past that any recommendation on flat rate of SUC is incorrect, illogical and would lead to huge financial loss to the Government, estimated to the tune of about Rs. 63,000 Crores over a period of 20 years in respect of few incumbent GSM Operators..

We understand that the current system of slab-wise spectrum usage charge percentage akin very much to the income tax rate slab methodology is being used for the following reasons-

- o As the amount of spectrum holding increases due to increased trunking efficiency, the benefit derived from the spectrum also are higher as with larger chunks of spectrum, there will be larger SUC percentage.



- o Graded system also creates a barrier to an operator holding / hoarding excessively large amount of spectrum that it does not really need.

As the variable/ graded SUC provides level playing field to all operators - existing as well as new, AUSPI's submission is as follows:

- (i) **Annual Spectrum Usage Charge should be levied as the percentage of AGR.**
- (ii) **SUC should escalate (slab-wise) with the amount of spectrum holdings.**
- (iii) **Since the revenue earned from the spectrum obtained administratively and through auction in different bands cannot be segregated, the cumulative amount of 900&1800 MHz spectrum allocated administratively and through auction should be counted for calculating the slab of the total spectrum holding by a service provider for levy of spectrum usage charges for GSM services. Similarly the cumulative amount of 800 MHz spectrum allocated administratively and through auction should be counted for calculating the slab of the total spectrum holding by a service provider for levying of spectrum charges for CDMA services.**
- (iv) **The TRAI in its recommendations on 'Auction of Spectrum' of 23rd April, 2012, had recommended flat rate of 1% (later revised to 3%) of AGR. The Telecom Commission, EGOM and Cabinet had considered TRAI recommendations of flat SUC and did not accept. SUC is already being paid at escalating for spectrum allocated through Auction. In view of it there seems to be no reasons for opening this issue again. SUC on escalating basis was also part of previous two auctions. At this stage it may not be correct to move to flat SUC rate as that would amount to giving benefit to winning bidders in previous auctions as they had factored graded SUC in their bids. Any move towards a flat SUC would be clearly seen as post auction benefits to selected operators at the cost of government revenues.**
- (v) **For an operator who has obtained spectrum only through auction the spectrum usage charge should be as per the charges defined on slab basis for an existing operator.**
