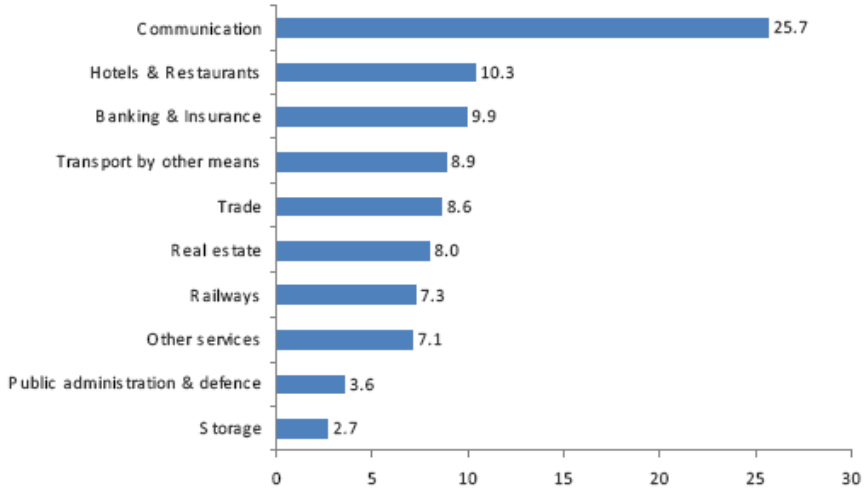
Response to Consultation Paper on Overall Spectrum Management and review of license terms and conditions

1 Executive Summary

This paper is Reliance Communications' response to the consultation paper no: 6/2009 issued by Telecom Regulatory Authority of India (TRAI).

1.1 **The Telecommunications sector is the most important of all service sectors – it probably contributes more to the GDP growth of the economy compared to any other sector**. Amongst all services, the telecom sector observed the highest growth during 2001-08.

Figure 2: Relative importance of service sector components (%age annual growth in GDP during 2001-08)



Source: NCAER Report on an Analysis of Impact of Communications on Indian Economy

1.2 Correspondingly, **the Government should not treat the sector as just a source of tax revenues but rather support it to further drive economic benefits and the nation's growth.** Like recent Government initiatives on development of other infrastructure in the country; telecom also needs a progressive policy regime in the country to continue its profitable growth and contribute to nation building. A review of total Government levies on the telecom sector in India will show that the telecom sector has amongst the highest tax structures in the world.

1.3 In the past, the sector has shown high growth despite a structure with high Government levies; however, unless the Government levy structure changes, growth is likely to suffer as industry revenues taper, profitability levels dip while at the same time even

greater investments are expected from the sector for 3G, 4G, LTE, rural growth, broadband penetration etc.

1.4 **The telecom sector is facing very challenging times today.** A number of operators in the mobile telecom industry are witnessing de-growth in revenues. This is happening despite the low level of rural penetration and low tele-density, especially in rural India and in 'C' circles. **Growth will be restored only if costs – operating and capital – are reduced.**

1.5 Lately, the financial profitability of operators has also started to suffer resulting in de-growth and de-rating of the complete telecom sector. While in recent months, stock markets as a whole have corrected and gone up by 60%, telecom sector is down by more than 30%. **This has severe impact on further investments in the sector especially considering the dismally poor broadband penetration in the country.**

1.6 **Of all cost drivers, network costs, which are predominantly driven by spectrum assigned to an operator, is the most important.** Spectrum regulation is a key policy area, spectrum being the lifeline for wireless communications. Therefore, we appreciate the Authority's initiative to organize an open discussion regarding future spectrum policy regime in the country and devise an orderly way to rectifying past anomalies.

1.7 A revised spectrum management policy is even more critical to new networks. Over the past 6-8 months, **new networks, especially those launched by dual technology operators, are largely responsible for the stupendous increase in growth witnessed in the last few months.** New networks have pioneered service packages that maximize customer benefits – e.g. per-second billing, no conditions plans, free minute usage per day, unlimited VAS etc. As a result, the new networks have accounted for nearly 50% share of net adds in this calendar year. However, the innovation and customer benefit cycle from new networks will suffer unless TRAI recommends and the Government accepts a regime that stops subsidizing incumbent networks at the cost of new networks.

1.8 In light of these development, Authority should look at all possible ways to reduce the cost of operations for the sector as whole:

a. **No artificial scarcity** of spectrum should be created in 2G spectrum bands as we see in 3G. **Government should allot all available 2G frequency to the operators as soon as possible.**

b. The sector today has operators falling into two classes. Incumbent networks usurp massive benefits from allocation greater than contracted 6.2MHz spectrum and access to the "gold standard" 900MHz band. On the other hand, new networks face a double blow – not only are they denied full 6.2MHz despite meeting all criteria but also have to incur up to 4x the costs as they have only 1800MHz spectrum. **In no sector and in no country does the regulatory regime favour stronger incumbents at the cost of new networks.**

c. **The Authority should actively encourage use of new spectral efficiency and optimization techniques.** No operator needs greater than maximum 2.4MHz spectrum in the 900MHz band or greater than 6.2MHz overall, especially outside the top two cities. Yet, many networks hoard spectrum, especially 900MHz spectrum, hoping to drive 1800MHz networks into sustained losses and finally force them to exit.

d. **Operators should be free to choose a technology of their choice within their contracted spectrum – across 800/900/1800 MHz spectrum bands.** Technology neutrality within contract spectrum will ensure that advantage of technological evolution can be exploited by operators to the benefit of customers and efficiency.

1.9 We would like to stress on the basic underlying principles for Reliance's approach while drafting detailed responses for various queries raised in the consultation paper:

a. **Authority/ DoT should allot all available spectrum in the various bands** to ensure quality of services for the operators and reduce the operating cost, which in turn will benefit the end consumers. This will ensure continued growth across all sections of the telecom sector and for all customer segments. The process followed by regulators in US and Europe offer possible options on how this can be achieved in a time-bound manner.

b. **Authority/DoT may consider reducing the USO fee component for telecom services** as the significant corpus of the USO Fund is lying unused. This will ensure that the sector remains financially sound so that operators can invest in key growth areas like broadband, rural networks, 3G, 4G etc. Operators have introduced a number of market innovations to make telecom services affordable. The Government can also contribute to the growth by reducing the direct and indirect regulatory charges.

c. **All operators who have met the various criteria required should be immediately allocated contracted spectrum up to 6.2MHz.** Inordinately delaying the assignment to 6.2MHz contravenes the licence conditions and sets a bad precedent about the Indian investment environment.

d. **There is no justification for allocation of spectrum beyond the contracted 6.2MHz of spectrum.** Spectrum beyond 6.2MHz is only required by operators hoarding spectrum or those using older generation and inefficient technology and that too in some Metro urban pockets. The need beyond 6.2MHz is even lesser for incumbent operators, whose minutes in urban areas are either flat or declining. The need is further reduced when operators have access to 3G spectrum.

e. While there is no justification for increasing the cap beyond 6.2MHz, if in the interim, spectrum to a maximum of 8MHz needs to be allocated as suggested by TRAI, the interim allocation should be subject to the subscriber linked criteria (SLC) of January 2008 with the incremental per MHz charge derived from the maximum of 3G auction discovered price OR entry fee charged to the fourth mobile entrant in 2001 and indexed by a multiple of 4x the AGR fee.

f. **Spectrum audit of all operators, especially those who have enjoyed benefits beyond legally contracted spectrum will show the degree of hoarding in both rural and urban areas.** This will also be a stimulus to operators to adopt the most efficient spectrum techniques, which in turn will reduce costs of operations thus benefiting all stakeholders – operators, customers and the Government.

g. **Operators with greater than contracted allocation of 6.2MHz have enjoyed benefits of super-normal profits for a large number of years, in clear contravention of licence conditions**. The Government has every right to take a just share of these profits by levying a one-time charge based on the years the benefit has accrued to the operators. Spectrum beyond 6.2MHz should be returned within 3 months; in the interim, a per MHz charge derived from the maximum of 3G auction discovered price OR entry fee charged to the fourth mobile entrant in 2001 and indexed by a multiple of 4x the AGR fee, should be applied. Such a move will not only boost Government revenues, it will also force operators to adopt the most efficient spectrum utilization techniques and reduce spectrum hoarding.

h. Spectrum cap as per licence conditions is 6.2MHz for GSM and 5MHz for CDMA. **The spectrum cap should continue to be applied differently for 800MHz (CDMA) and 900/1800MHz (GSM) bands and should not include spectrum obtained through auctions in 3G, EVDO and BWA bands.**

i. **Re-farming between 900MHz and 1800MHz should be commenced immediately.** No operator needs more than 2.4MHz of 900MHz spectrum for coverage, the remaining 3.8MHz spectrum is needed for capacity and can be easily serviced through 1800MHz band. 900MHz-1800MHz refarming will hurt no operator; yet the benefits of 900MHz will be available to all operators. This will significantly improve investor confidence in the sector with immediate benefits for rural growth, broadband, 3G, 4G etc.

j. **Requirement for spectrum is totally different for built-up metro areas and for rural areas.** This is true both for quantum of spectrum (MHz allocated) as well as the band of allocation (900MHz vs. 1800MHz). Correspondingly, spectrum can be allocated separately for urban and rural blocks. This will ease the spectrum shortage faced by some operators in the interim period till re-farming is complete and operators who have excess than contracted spectrum refund the excess.

k. **Offer individual players full choice to choose best options within the contracted licenced spectrum – across 800/900/1800MHz spectrum bands.** Technology neutrality is a best practice being adopted across key markets and should be adopted in India. However, the Government should ensure benefits across operators – e.g. benefits of WCDMA in 900MHz band should be available to all operators after re-farming.

l. **Spectrum sharing and trading helps increase efficient use of spectrum; however it should be allowed only with relevant safeguards.** Spectrum sharing and trading are practices being selectively adopted in many Western countries after important safeguards are met. In India, the obvious safeguards would include sharing/ trading only if roll-out conditions are met by both parties, if contracted spectrum limits are maintained and after 900MHz-1800MHz refarming is complete. In addition to these basic safeguards, the Government should constitute a committee to also look at further criteria in addition to taking a share of the benefits accruing to operators sharing or trading spectrum beyond the spectrum legally contracted as per licence conditions.

m. **A uniform licence fee should be applied on a slab based revenue structure and based either on AGR or GR of an operator.** Slab based structures are commonly applied by the Government in various industries on the premise that well established and larger companies should pay at a higher rate compared to new or smaller companies.

n. **Maintain a level playing field among the various new and incumbent telecom operators in the country.** India has seen exponential growth in the telecom

services in last few years. A lot of credit for this telecom revolution goes to innovation in the market place witnessed due to entry of new and dual technology operators at various past inflection points. In order to maintain the momentum and ensure continuation of the same, it is important that the regulatory regime ensures a level-playing field among all operators without any prejudice towards any individual or group of operators. While world-over policy regimes have been favorable for new entrants by either through a lower entry fee or a higher spectrum allocation, we should not be seen doing the opposite in the country. This will be detrimental for the industry and will kill competition and stifle innovation.

o. **Ensure consistency with other regulations and precedent while correcting anomalies of the past.** For example, TRAI had recently recommended that there be no cap on number of licencees – yet today, availability of spectrum is limited. To address this, a new class of UAS licencees can be created that is de-linked from spectrum. Another example of consistency is that the Authority/ DoT should ensure that new licencees get their contracted spectrum of 6.2 MHz to ensure level-playing field and build confidence and trust about continuity of Indian regulatory policies.

p. **M&A policy should be structured so that the market determines its optimum structure instead of it being led by regulatory policy.** While Authority/DoT need to ensure the framework for minimal level of competition required, it should also usher in pro- M&A policies and let market forces decide the optimal number of players**.**

q. **Requisite M&A conditions should be framed to ensure minimum levels of customer benefits and competition are not compromised.** The current thresholds for M&A were drafted when there were 3-5 operators per circle; these thresholds will need to be modified to reflect the current market situation.

r. **Reduce long-term and short-term uncertainty around regulatory policies.** Authority/DoT should ensure that new licencees get their contracted spectrum of 2x6.2 MHz to ensure level-playing field and build confidence and trust about continuity of regulatory policies. Also, to ensure continuity and build market confidence, current licencees should have first right of refusal for the renewal of licence/ spectrum.

1.10 In the ensuing sections of this response, we have explained in detail the need to change some aspects of the current spectrum management regime while ensuring the conformation to legally binding aspect of licensing. We have provided comprehensive

objective data support through international best practice and case studies. We have also presented our views on the specific questions raised in the consultation paper.

2 Spectrum requirement and availability

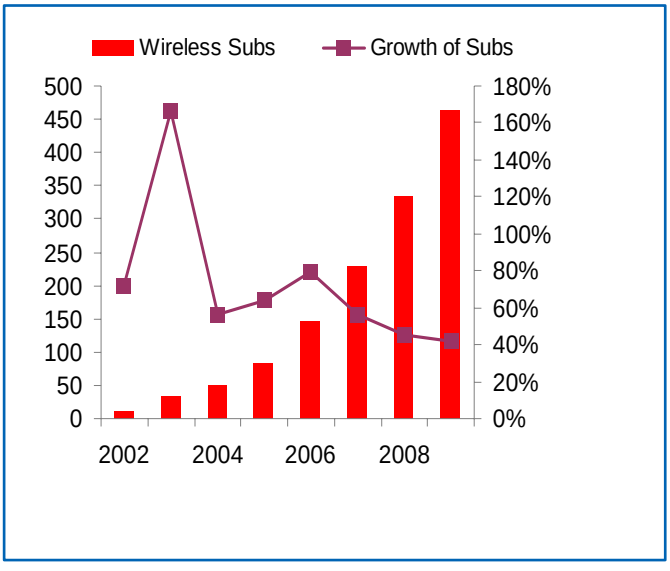
Growth of wireless segment – Even though SIM penetration grew at heady 35%, industry minutes are growing at less than 10% in 2009

2.1 Over the past decade, the telecom industry has experienced remarkable growth, especially in the wireless domain. Wireless subscribers in India have grown at a CAGR of ~77% between 1998 and 2008. India is today the 2nd largest wireless market in the world. Total subscribers as on September 2009 are 509 million.

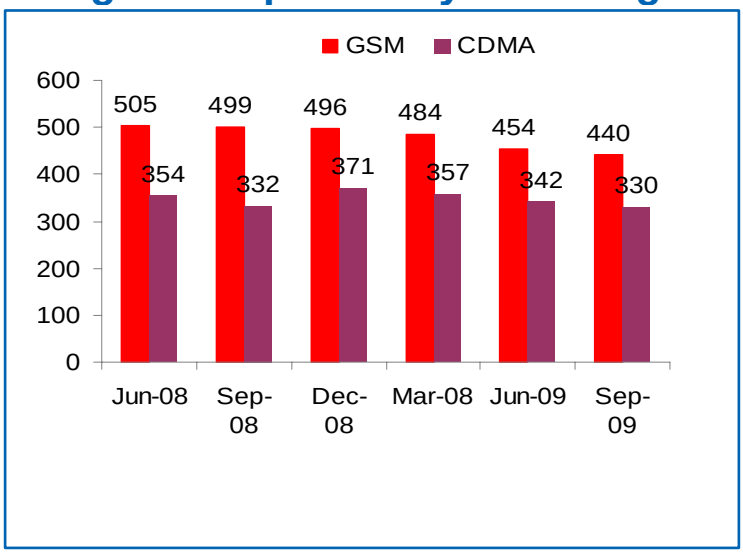
2.2 The Regulatory and policy changes that have been introduced by the Regulatory bodies and the Government has played a pivotal role in ensuring the sustained rapid growth the telecom sector has seen over the past decade. TRAI has successfully taken up policies which safeguard consumer interest and help improve competition in the market and in addition, promote further industry growth.

2.3 Although the past decade has been remarkable, a closer look at the numbers for growth of recent few months will point to a start of the decline in number of subscribers' additions and more significantly declining MOUs trend.

Slowing Growth of Indian



Being accompanied by declining MoUs



Source: Global Wireless Matrix, 2Q 08

And if we drive the total MoUs growth of the sector we will find that ***while we grew at just 4% in last quarter (June -09), we may actually have contracted in Sep-09.***

2.4 The two major contributors to this declining trend are relatively lower MOUs of incremental new subscribers and also the prevailing multi-SIM situation in the country. So the real subscribers in comparison to SIM penetration are much lower in the country.

2.5 If we combine these statistics with the other macro – level constraints such as:

a. Absolute poverty level in the country – According to the a 2005 World Bank estimate, 42% of India's falls below the international poverty line of $1.25 a day. Even though Government has taken commendable steps to reduce poverty levels in the country; it will be reasonable to assume that these people will remain outside the purview of telecom subscribers in next 5-7 years.

b. About 25% people in India are in the age group of 0-14 years and cannot be counted towards potential mobile subscribers.

, we will realize that we have an actual independent subscriber base of not more than 500 million in the country and beyond this the subscriber addition will be primarily due to multi-SIM phenomenon which does not result into any actual MOUs growth.

Even though an extrapolation of SIM growth suggest that we will have 700-750 million SIM by 2012; extrapolating growth of industry MoUs shows that we have hit a plateau as far as real growth of sector is concerned.

Spectrum requirement for voice usage

2.6 As witnessed in recent months, significant amount of recent growth is due to subscribers going for multiple SIMs to avail of various lucrative offers by new entrants. As this does not significantly increase the individual's on-air talk-time; multiple SIMs results into decline of MOUs as being observed from last few quarters.

2.7 Also, SIM penetration in Metro towns has already crossed 100%, there is very little headroom for further growth of voice services in these towns.

2.8 Recent technological advancements which promote spectral efficiency as promoted by TRAI and TEC reduce the spectrum requirement for a given subscriber base significantly. Available techniques like SAIC, AMR, 6 sector etc. significantly increase spectral efficiency. Spectrum being a scarce natural resource; it is mandatory that operators make optimal use of provided spectrum by exploiting these latest techniques.

2.9 Using existing subscribers projections to compute required spectrum will grossly over-project the requirements for operators with >6.2 MHz of spectrum.

a. Subscriber's projections are too optimistic and not grounded in realty. Even if we meet those projections; the real growth in industry MoUs is very-very low and points out that effectively we are growing at very low rate indicating very little requirement for more GSM spectrum for incumbent operators.

b. Use of latest technologies, will more then compensate for the little extra need and may even free-up the underutilized spectrum which has been allotted to incumbents.

c. In Metro areas, penetration has already reached 150% and MoUs (in billions / month) have been declining for all big incumbents. There is very little extra room for growth there and hence need for anymore spectrum.

d. Due to high churn, new operators are beginning to draw these customers on to their network, which is increasing their usage while at the same time reducing usage for the incumbents; hence a need to re-distribute spectrum from incumbents to new operators.

e. Also, incumbents operators are strongly placed to win limited slots offered in 3G spectrum which will again increase their voice capacity, reducing need for any further spectrum.

All these points out that, though new operators have been growing at a steady pace, most of growth in MoUs esp. in urban areas have come from corresponding reduction in network usage of incumbent operators. These trends indicate that we do not need more GSM spectrum as Industry, there is an urgent need to redistribute spectrum from incumbents to new operators.

Comments on issues raised in the Chapter:

1. Do you agree with the subscriber base projections? If not, please provide the reasons for disagreement and your projection estimates along with their basis?

(i) The subscriber projection given in the consultation paper far exceeds the subscriber projection given by the Government in the Revised Information Memorandum dated 23.10.2009 for auction of 3G and BWA spectrum. Whereas Government has projected a subscriber base of 700 million by the year 2012 against TRAI's projection of 888 million Since the Government subscriber projections have been benchmarked against subscriber projections by a number of other projections by security analysts, we tend to believe that the subscriber base in the consultation paper is over projected.

Source: Revised Information Memorandum for auction of 3G and BWA spectrum

(ii) Our observation regarding declining growth of subscribers resulting in much lower subscriber base than what is projected in the consultation paper is shared by many analysts in the their recent projections about Indian telecom sector.

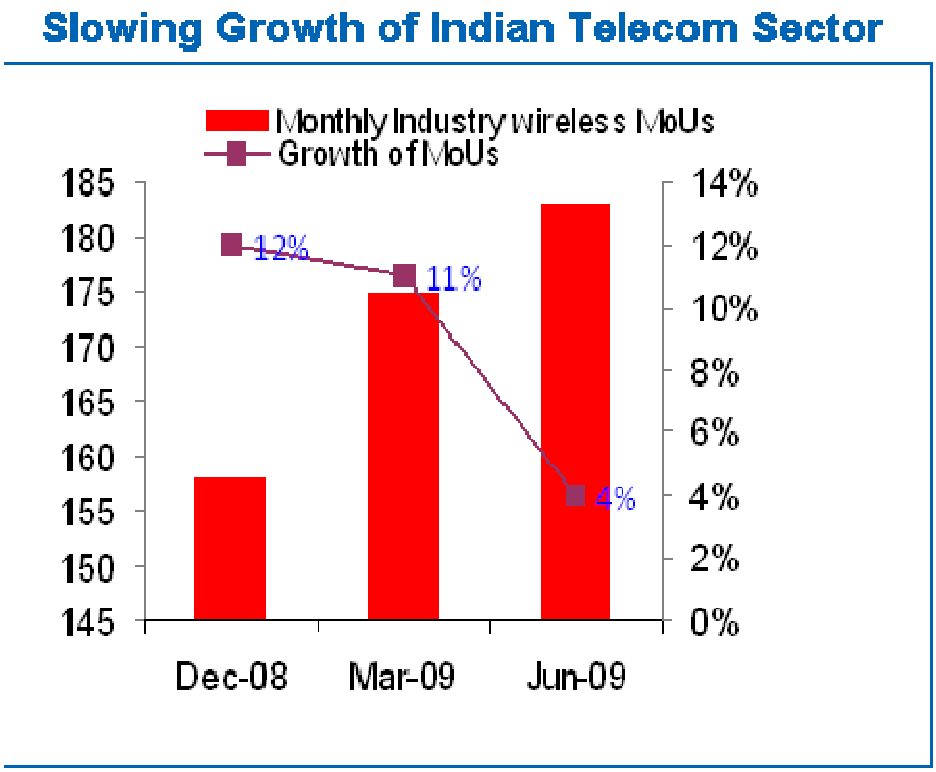
Fig 14 India wireless industry key operating metrics

	Mar'02	Mar'03	Mar'04	Mar'05	Mar'06	Mar'07	Mar'08E	Mar'09	Mar'10E	Mar'11E	Mar'12E	Mar'13E	Mar'14E	Mar'15E
India Wireless Subscribers	6.5	13.1	34.5	55.1	96.2	165.1	261.1	391.7	500.0	602.0	692.0	770.0	836.0	890.0
Growth (YoY)	*na*	*100.5%*	*164.4%*	*59.8%*	*74.4%*	*71.7%*	*58.1%*	*50.1%*	*27.6%*	*20.4%*	*15.0%*	*11.3%*	*8.6%*	*6.5%*
Wireless Penetration	0.6	1.2	3.2	5.1	8.7	14.8	23.1	33.7	43.2	51.3	58.2	64.0	68.7	72.3

Source: TRAI, Macquarie Research, June 2009

(iii) Declining growth trends**:** Despite significant improvement in overall economic condition in the country over past 6-12 months, the telecom subscriber base growth has started showing declining trends.

(iv) Multi-SIM scenario: Recent new launches have shown that despite the presence of 6-7 players in a service area, launch of a new service by a new operator results in sudden spurt in net additions. This happens despite no difference in reach of existing operators and new operators. The primary reason of such spurt is tendency of existing subscribers to acquire SIM of new operators to avail initial promotional schemes. Though, this increases the overall tele-density, it hardly results in new subscribers' esp. from lower social economic strata joining the wireless network in the country. A very clear outcome of this trend is significant reduction in MoUs in the country in the recent months.



Source: Trai, press releases

(v) Absolute poverty level in the country: By various estimates India has about 30-40% people living below poverty level (earning less than a dollar a day) which will continue to be outside direct subscriber base projections

(vi) Population Demographics: India is a country of young people. On an ongoing basis, about 25% of total population is under 14 years of age. Though some of those will be consuming some communication services; this coupled with elderly people will largely not constitute the primary subscriber base.

(vii) New growth areas: All metros have already achieved more than 100% tele-density. At present most subscriber additions are from non-urban areas. It is unlikely that the non-urban demand rate would match the demand of last few years which was primarily fuelled from urban areas

(viii) Econometric Models: The S-Curve or Gompertz curve referred in the consultation paper does not factor that the subscriber base is non-homogeneous. These curves require refinement for accurate projection of subscribers. Considering the initial demand was from urban area and subsequent demand is going to be from non-urban areas, the growth trend would be diminutive in the coming years.

(ix) ***In the above background, we are of the view that:***

a) ***there is an over projection of subscribers to an extent of 25% and suggest to use the Government projection of 700 million subscribers by year 2012;;***

b) ***With the multiple operators in the market, comparatively lower subscriber projections, the spectrum requirement by operators is much less than what is being perceived generally;***

c) ***The spectrum requirement for GSM services for urban and rural is not more than 2x6.2 MHz.***

2. Do you agree with the spectrum requirement projected in ¶ 1.7 to ¶1.12? Please give your assessment (service-area wise).

(i) With multiple operators, the spectrum requirement of service providers is not more than 2x6.2 MHz in urban and rural areas. It can be proved from the following model that even for the biggest urban city like Delhi requires maximum of 2x6.2 MHz . With 2x 6.2 MHz and 30% AMR gain with traffic per BTS supporting 52.23 Erlangs, **Delhi can support 2.78 Million subscribers.** The detailed With the use of advanced techniques like **SAIC, 6 sector , etc the capacity supported can be further increased by 75% to 4.2 Million .**

Morphology	Area (in %)	Area (in Km²)	Traffic Density (w.r.t. DU)	Intersite Distance (Km)	No. of Macro Sites	Resulting cell range (Km)	Subs density (Per Km²)	Traffic Density (per KM²)	Total Erlang	Subscribers in Mn
Dense Urban	2%	38	100%	0.400	273	0.27	9442	377.70	14258	0.36
Urban	10%	188	40%	0.632	545	0.42	3777	151.08	28463	0.71
Sub Urban	50%	942	12%	1.153	817	0.77	1133	45.32	42694	1.07
Rural	30%	565	12%	1.153	490	0.77	1133	45.32	25,617	0.64
UIA	8%	151	0.5%	5.649	5	3.77	47	1.89	285	0.01
Total	**100%**	**1884**			**2,131**				**111,318**	**2.7830**

(ii) It may also be noted that the 2G spectrum availability to telecom operators is only between 2x73.6 MHz to a maximum of 2x100MHz of spectrum. For the other bands there does not exist an eco-system which can simultaneously support the plain vanilla 2G services and the broadband service, since the other bands correlate to ISP services. Thus, the availability of 2G spectrum continues to be limited.

(iii) The Authority has covered the issues of re-farming to make available the requisite spectrum but the issue of harmonization has not been considered. It is possible to harmonise the 800 MHz spectrum bands to make available 15 carriers against present 14. The Authority in its recommendations dated 27.9.2006 on 3G and BWA services had noted need as under for harmonization of 800 MHz spectrum band:

"The Authority discussed this option with the technology developer (Qualcomm) and a vendor *Lucent). The Authority found that it was possible, by adjusting the inter-carrier and inter-operator guard bands, and ensuring harmonization of carrier allocations in the present Indian 800 MHz band, to increase the total number of carriers available in 800 MHz band from 14 to 15 without significant capacity degradation."*

(iv) ***In view of above we suggest that:***

a) Harmonize 800 MHz spectrum band to increase the number of carriers from existing 14 to 15 carriers as suggested by TRAI also earlier;

b) Re-farm 900 and 1800 MHz bands for equitable distribution of spectrum.

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3. How can the spectrum required for Telecommunication purposes and currently available with the Government agencies be re-farmed?

(i) We would like to congratulate the Authority on putting into its agenda the issue of re-farming the spectrum. As a matter of fact, the National Telecom Policy 1999 (NTP 99)

enshrined the principles of effective and optimal utilization of available spectrum. The relevant extract from the NTP policy is reproduced below:

"With the proliferation of new technologies and the growing demand for telecommunication service, the demand on spectrum has increased manifold. It is therefore, essential that spectrum be utilized efficiently, economically, rationally and optimally. There is a need for a transparent process of allocation of frequency spectrum for use by a service and making it available to various users under specific conditions."

(ii) It is essential that spectrum being a finite resource, should be utilized economically. For making use of available spectrum optimally and economically, the International practices are liberalizing the use of spectrum bands for deploying any type of technology. As enumerated in the consultation paper, permission to provide 3G in 900 MHz band has been permitted in many countries. This is another way of re-farming the spectrum which is in line with policy guidelines laid down in the NTP 1999 document as well as it is in line with global practices also.

(iii) In the current licensing and regulation department, there is a need to recognize the need for technology and service neutrality. The classification of service specific bands should be moved to a regime wherein any service can be provided under any of the bands so long as this is technically feasible. Service providers should be free to choose the technology to be deployed in the assigned spectrum bands. Of course, this deployment of any technology will have to take care of availability of eco system in those bands and most importantly level playing field.

(iv) Cellular Mobile services availability, affordability and innovations are deeply impacted by spectrum availability. New services like 3G, BWA offer higher data rates and lower latency than those available today. The ability of wireless technology to provide high data rates depends on the amount of spectrum that can be made available for commercial use.

(v) Based on the current limited commercial spectrum allocations, further evolution of new services like 3G and BWA and applications can be severely hampered. The Government is auctioning up to 4 blocks for 3G spectrum, 1 Block for EVDO and 2 blocks for BWA service. In Delhi only two 3G blocks are being auctioned. At present there are 12 to 14 operators operating in all circles and against it only few would be able to provide advanced 3G services. The limited availability of spectrum is likely to impact the competition and growth of the sector.

(vi) TRAI and the Government can play a very important role in the future growth of wireless services by improving the spectrum availability. An inventory of spectrum for commercial services need to be developed that are suitable for commercial use. Although NTP'99 provides for policy pertaining to the relocation of existing spectrum and compensation but so far no concerted effort in this regard is visible.

International Best Practice to Re-farm Spectrum

In USA, Commercial Spectrum Enforcement Act(CSEA) was passed in 1994 to create the Spectrum Relocation Fund (SRF). The SRF uses the proceeds from the commercial auction of relinquished spectrum to reimburse Government agencies required to vacate the spectrum. The CSEA and the SRF helped solve a recurrent spectrum management dilemma, the problem of clearing incumbents from a portion of the spectrum.

Spectrum transition issues in India have always bewildered efforts to bring new, improved uses of spectrum. By enhancing the efficiency of the spectrum relocation process number of national objectives including economic development and can be achieved. As of December 31, 2008, Using CSEA, approximately 47% percent of Government frequency assignments in identified commercial bands was relocated. In the long run the Government also requires similar mandate from the parliament for relocation of spectrum.

(vii) Availability of sufficient spectrum will help service providers as well as consumers. At present only limited 3G and BWA spectrum is being proposed to be auctioned which may distort the competition in the market as only few operators will have spectrum to offer advanced services and provide which is likely to provide edge to operators providing 2G and 3G services over the competitors.

(viii) We have already delayed the introduction of 3G and BWA services in the country. We have a very poor broadband penetration the country compared to our often compared neighbour China and this is also a significant pain-point for the Government and policy-makers in the country. Considering the limited penetration of wireline communication; we need wireless broadband to rapidly bridge the gap and make a progress towards achieving a respectable broadband penetration in the country. To meet this need, we urgently need to re-farm the spectrum in 700 MHz band so that we do not delay the introduction of new advanced technologies like LTE in the country.

(ix) We need as much of BWA spectrum that can be made available to achieve the broadband penetration desired. A clear availability and roadmap will facilitate in making right technological choice and amount of money which can be invested in the upcoming auction.

It is very much in consumer interest that an operator should be able to offer services profitably and recoup their investment in an appropriate time frame.

(x) Some of the spectrum required for telecom purposes is currently allocated to Government agencies & can be reformed by making alternate arrangements for these agencies. This approach is being followed for defence through BSNL presently. Since the government will benefit in terms of revenues accruing to the public exchequer later on, special budgets may be sanctioned first for getting the spectrum vacated. However, there is a need to monitor the progress and the government should act with purpose, since the commercial use of the re-farmed spectrum is going to provide revenues to the government exchequer in terms of one time spectrum charges and recurring spectrum usage charges.

(xi) It is therefore suggested that a spectrum relocation fund from auction proceeds should be created through an amendment of Indian Telegraph Act or Indian Wireless Act for relocation of commercial spectrum held by Government agencies. A spectrum relocation administrator on the lines of USO Fund administrator may also be created to coordinate for faster relocation of spectrum.

(xii) Till Government decides the formal arrangement for operation of relocation fund, spectrum in 700, 900, 1800, 2100 MHz bands be relocated in a time bound manner and the Government should specify target date by which spectrum can be released so that all operators can work towards it.

(xiii) Re-farming of the spectrum held by private operators is also equally important so that all service providers have equitable access to more efficient 900 MHz spectrum band.

(xiv) In view of the above, it is suggested that:

a) Since India is already lagging in the launch of advanced wireless services, it is requested that the spectrum relocation fund may be immediately implemented perhaps through the Ordinance route for relocation of incumbents and making available spectrum for commercial use.

b) Till government decides the formal arrangement for re-location, spectrum in 700, 900, 1800, 2100 MHz bands should be re-located in a fixed time frame and the target date may be specified by which spectrum can be released so that all operators can work towards it.

c) The Government also receives spectrum usage charges which may be used during the interregnum for relocation of incumbent systems from the commercially useful spectrum bands..

4. In view of the policy of technology and service neutrality licences, should any restriction be placed on these bands (800,900 and 1800 MHz) for providing a specific service and secondly, after the expiry of present licences, how will the spectrum in the 800/900 MHz band be assigned to the operators?

Technology Neutrality maximizes spectrum utilisation

(i) Application of rigid technology rule within specified spectrum bands genuinely poses an obstacle to the development of a competitive market and **may result in the underutilization of spectrum**. **Service providers should be given flexibility in determining the services to be provided and technology to be used for operation, so long as their operation falls within applicable technical guidelines; and that service providers have an obligation to protect other users from interference.**

(ii) Service providers are always in a better position to identify and allocate spectrum resources in most efficient way through the administrative and technical means. Given the flexibility to deploy any available technologies in the already allocated spectrum, would improve efficiencies and provide optimum utilization of resources. Therefore, service providers should be provided flexibility to provide mobile services on any technology to meet the changing demands of consumers.

(iii) ***In view of above it is suggested that within 800/900/1800 MHz spectrum bands, service providers may be allowed to use any technology.***

II. Improve industry profitability and increase sector appetite for even further investment in mobility and broadband

(iv) At present only incumbent operators have access to GSM spectrum in 900 MHz frequency band. 900MHz spectrum significantly reduces network capital investments as well as network operating costs by offering up to 4 times increased coverage compared to 1800MHz band and reducing the need for indoor coverage solutions.

(v) Quality of coverage in cellular system mainly is dependent on Broadcast control channel, which is reused among all the cells in the network. Conventionally 4 * 12 pattern is preferred and with advancement of technology and tools 3 * 9 can also be used to meet the requirement with tighter frequency reuse. 4 * 12 reuse pattern requires 2.4MHz of spectrum whereas 3* 9 requires 1.8MHz of spectrum. In order to maintain the level playing field among all the operators 900 MHz allocation to be restricted to 2.4 MHz and additional

frequency should be allocated in 1800 MHz to meet capacity requirements. Additional spectrum apart from 2.4 MHz in 900 MHz band to be harmonized and redistributed to the other operators who are having exclusive allocation only in 1800 MHz band.

(vi) Only incumbents have access to the 900 MHz spectrum band and therefore, the Government should initiate a re-farming process by which spectrum across 900MHz and 1800MHz bands are, to the extent feasible, uniformly distributed among the operating networks.

(vii) Re-farming of spectrum will significantly increase overall profitability of the sector, create a level playing field as well as drive growth and innovation as new entrants launch products they are unable to due to the disadvantages they face. Additionally, this will increase the investor's confidence within the telecom sector by projecting the Regulator as an impartial upholder of healthy competition in the market.

(viii) In order to preserve the competition, all operators offering GSM services should have equal access to 900 MHz spectrum else it can lead to a significant reduction in competition. Therefore 900 MHz spectrum allocated to the incumbents should be re-farmed.

(ix) In terms of UASL, as a first step; spectrum beyond 2x6.2 MHz in 900 MHz should be got surrendered from the operators who are having it. Spectrum charges beyond 2x6.2 MHz in 900 MHz spectrum band should be levied at twice the normal rate and doubled every three months till it is surrendered.

International Example of renewal of 2G GSM licenses using 900/1800 MHz spectrum bands

ARCEP, France

ARCEP, France issued a consultation paper on June 29, 2006 on UMTS to prepare the modalities for the reuse of frequencies 900 and 1800 MHz by existing users for 3G. This reuse was found necessary to extend the coverage of mobile networks of third generation beyond the current deployments conducted in the 2.1 GHz band. ARCEP decided that access to 900 MHz is particularly important, both for existing operators and for new entrants as no advantage can be granted to an incumbent to use existing 900 MHz band for 3G services.

ARCEP issued following guidelines on 7.7.2007 for re-use of 900 MHz band:

Reuse of the 900 MHz band in a configuration of four 3G operators

This case corresponds to the situation where the fourth 3G authorization is issued. In this situation, permissions to use frequencies of 900 MHz band of the three existing 2G operators will be changed as soon as possible. This change will be:

- on hand to allow all three 2G/3G operators using frequencies that are allocated in the 900 MHz band to its choice of 2G or 3G service;
- Secondly to provide **restitution** in the frequency band 900 MHz to the allocation of 5 MHz duplex 3G new entrant in the manner proposed in the public consultation and set out below. The 2G/3G operators retain then about 10 MHz duplex each.

The target schema for allocating frequency allocations in the 900 MHz band on the entire metropolitan area will be the following:

- The timetable for the return of spectrum by existing 2G operators will differ according to whether one is inside or outside the very dense areas, as defined in the specifications loads of the three existing 2G operators.
- In the case of a license is issued by spring 2008, the new entrant would have, for the operation of its 3G mobile network, from 5 MHz to 900 MHz duplex released by the end of 2009

Apart from the very dense areas, and in late 2012 in very dense areas. The reuse of the 1800 MHz band in the configuration of four operators will be studied later, in a schedule adapted to market demands.

OFCOM, UK

OFCOM has initated a consultation process to require the current holders viz. Vodafone and O2 (*Application of Spectrum Liberalisation and Trading to the Mobile Sector dated 13.2.2009*) of the 900 MHz spectrum to give up a proportion of the 900 MHz spectrum they currently hold to allow a third operator to have access to this particularly important spectrum. OFCOM is proposing to give Vodafone and O2 two years in which to clear and release this spectrum without causing significant disruption to the existing customers. OFCOM proposes to hold an auction for the released spectrum to be awarded as a single lot of 2 x 5MHz and Vodafone and O2 prohibited from acquiring the released spectrum through this auction.

(x) **Condition to return part of the spectrum in the 900 MHz band and its allocation to other service providers for equitable access to the spectrum in 900 MHz band to promote level playing field and competition should be made part of the license renewal.**

III. Proper Regulatory Framework for Technology Neutrality will preserve competition.

(xi) The spectrum liberalisation through adoption of flexible technology use carries the potential for substantial consumer benefits as service provider can offer new 3G or even 4G services and therefore should be encouraged. **However, unrestricted permission to use the allocated 2G spectrum to offer 3G services carries a significant risk of harming competition** as incumbents will substantially benefit from such permissions. The free use of 3G technology in the 900 MHz band by incumbents would not only provide them competitive advantage over other 2G operators but also over the other 3G operators who are going to obtain spectrum through auction at a much higher price.

(xii) In case incumbents are allowed today to offer 3G services in the current bands, it can even kill the proposed auction of 3G spectrum band as that flexi use would put incumbent in a hugely competitively advantageous position. Therefore, to maintain the level playing field between 3G systems it is essential that a proper regulatory framework may be put in place..

(xiii) **To maintain level playing field between two sets of 3G operators viz 3G operators who obtain spectrum from auction and incumbent 2G operators using existing bands for flexi use for more advanced technologies may be required to pay one time 3G spectrum charges discovered through auction of comparable spectrum bands. Since such operators would be using 2G spectrum for 3G services, they should not be eligible for any additional allocation of spectrum for 2G services.**

III Renewal of Spectrum Assignment in 800, 900 and 1800 MHz spectrum bands

(xiv) The wireless market in terms of technology, number of operators and consumer needs have significantly changed since issue of licenses in 1994. The licensees have made substantial investments to setup network and provide nationwide services and must be given first priority to refusal for renewal of spectrum.

(xv) A number of countries within Europe including France, Belgium, Finland and Estonia have allowed technologies other than GSM to be used in 900 MHz. A number of countries including Switzerland have consulted the issue as part of the national frequency plan or the

2G license renewal process. UK has consulted this process as part of the spectrum liberalisation and trading process.

(xvi) 900 MHz spectrum band is technically much more efficient than 1800 MHz spectrum band and therefore all service providers should have equitable access to 900 MHz spectrum band. It is proposed that separate spectrum caps be defined for 900 and 1800 MHz spectrum bands. Not more than 2.4 MHz spectrum should be allotted in 900 MHz spectrum band and balance in 1800 MHz spectrum band.

(xvii) As discussed above, France and UK have decided or contemplating to take back part of the 900 MHz spectrum band in lieu of permission to allow flexi use i.e. to deploy combination of 2G and 3G networks. As part of the renewal process, it may be ensured that:

- 900 MHz spectrum is equitably available for all 2G operators;
- Use of higher technologies like 3G or 4G may be permitted in 900 MHz band provided level playing field with regard to the payment for use of 3G services is established by mandatory payment of license fee equivalent to successful bids paid by operators for 2.1 GHz spectrum band.
- Operators deploying 3G systems in the allocated 2G spectrum, should not be eligible for any additional allocation of spectrum for 2G services.

(xiv) ***In view of above and in line with the international regulatory practice, we suggest that***

a) ***800, 900 and 1800 MHz spectrum bands should be technology neutral, however, regulatory framework for technology neutrality be put in place to protect level playing field and preserve competition;***

b) ***The regulatory framework for technology neutral usage should ensure level playing field between*** **3G operators who obtain spectrum from auction and incumbent 2G operators using existing spectrum bands for more advanced technologies**

c) ***900 and 1800 MHz bands should be re-farmed so that service providers have equitable access to 900 MHz spectrum band; No operators should have more than 2x2.4MHz spectrum in 900 MHz spectrum band***

d) ***Incumbents should have first right to refusal to the renewal of spectrum rights subject to the condition that 900 MHz is re-farmed so that equal quantity of this efficient spectrum is available to all operators.***

5. How and when should spectrum in 700 MHz band be allocated between competitive services?

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6. What is the impact of digital dividend on 3G and BWA?

(i) As per worldwide trend followed in US & Europe, 108 MHz of spectrum in 700 MHz band (i.e. 698 MHz – 806 MHz) band should be assigned to telecom services in India also. This spectrum is largely available in India, and as per the paper, only recently this spectrum has been earmarked for Doordarshan to operate digital transmitters in 4 metros. Going forward, in order to have global eco system, this band will be required for telecom services.

(ii) In the light of 3G spectrum which is being auctioned shortly, there is a need to have firm clarity on roadmap for availability of 3G spectrum in 900 MHz band. The clear roadmap and availability to 4G spectrum should also be provided now itself, since lot of foreign investors may interpret future availability of 4G spectrum as a positive move and may even boost up their participation in 3G auction. If a clarity on 4G spectrum is not provided now, there are chances that lot of controversy will be there, especially when worldwide commercial LTE network are going to be deployed in the first quarter of 2010 itself

(iii) An important property of an efficient mechanism for spectrum allocation is simultaneity i.e. all highly complementary and substitutable spectrum should be made available to the market at the same time. Simultaneous auction of 700 MHz and 3G spectrum band would have provided service providers with information about the prices of relevant complements and substitutes, and allow them to act on that information – to combine complementary spectrum into the most efficient packages and to choose among substitutable spectrum.

(iv) We agree with the Authority that LTE network in 700 MHz can be 70% cheaper to deploy than an LTE network in 2.1 GHz band. India has an advantage that significant part of the spectrum band is available for immediate allocation and therefore it would have been better in case 700 MHz bands were auctioned along with the 2.1 GHz spectrum band.

(v) Availability of spectrum in 700 MHz will greatly influence the optimal price operators will put on spectrum in 2.1 GHz and 2.3 GHz band.

a. Spectrum in 700 MHz will reduce the capital investment required by an operator by at-least one-fourth vis-à-vis spectrum investment in 2.1 GHz and 2.3 GHz which will spoil the business case for BWA in 2.3 GHz.

b. Also, as it will result in more number of operators, the market share of operators will come down; affecting their assessment of fair price for a spectrum slot in 2.3 GHz.

c. Due to above two reasons, availability of couple of extra slots in 700 MHz will reduce the attractiveness of BWA spectrum being auctioned by a very significant value (up to 50%) even by conservative estimates.

(vi) If complementary items like 2.1 GHz and 700 MHz are not offered for sale simultaneously, as being the present case, service providers will not know how much to bid for those items first put up for sale without knowing the likely prices of the complementary spectrum. Since very small amount of spectrum in 2.1 GHz band is put to sale, the market will not provide the correct value of spectrum. Further, bidder will also be running into very high risk of substitute spectrum being released in the near future and therefore would not be able to accurately assess the time available to recover their investment.

(vii) Therefore, the sequential and limited auction of spectrum in the 2.1 GHz spectrum band is not very efficient mechanism for allocation of spectrum. The government must at least specify date when there will be next round of auctioning in 2.1 GHz and 700 MHz spectrum bands.

(viii) In view of above, we are of belief that:

a) Service providers bidding for 2.1 GHz and 2.3 GHz spectrum bands would be subject to very high risk because of uncertainty relating to the auctioning of very closely substitutable spectrum;

b) *The government must* specify date on when will there be next round of auctioning in 2.1 GHz and 700 MHz spectrum bands.

Chapter 2
Licensing Issues

As proved above, the 2x6.2MHz of 2G spectrum is sufficient to roll-out operations in Metro and 'A' towns while spectrum requirements are even lower for sub-urban and rural areas provided latest techniques as highlighted in the paper are used to achieve maximum spectral efficiency. As spectrum is very limited resource, we urge the authority to strictly enforce the operators to deploy these techniques to ensure that optimal utilization of scarce natural resource and desist operators from resorting to hoarding of spectrum. Also, Government should immediately ensure an equitable distribution of spectrum across all the new and incumbent operators to ensure a level playing field and maintain the competitiveness of the market. This will in turn ensure the maximum benefits for the Indian consumers and they will be able to enjoy even lower and affordable pricing of telecom services in the country.

1. **Adequate Number of operators in each service areas**

a. **Maintain market competitiveness**: Reliance has, in the past, supported no cap on licensing policy of TRAI as we believed the market itself will discover the optimal players needed to provide a service. However due to limited availability of spectrum and operators number being large there is a need to provide a cap for limited period. While the Authority should ensure that there is no cartelization among the incumbents, no single operator wields too much market power and consumers get benefits of new technology and reduced prices; there is a need to ensure that telecom sector stays financially healthy and scale benefits are enjoyed by the operators.

b. **Spectrum Utilization / Assignment Policies**: As argued in the consultation paper, spectrum is a scarce invaluable resource and wastage of such resource should be strictly penalized. We still have to bring half of the country under telecom service consumers' category and from here onwards it will be even more important that Government policies facilitate this process. A significant contribution area for the Government would be equitable and just distribution of spectrum within the legal framework and ensuring that spectrum thus distributed is put to optimal desirable use by these operators. We need to draw framework guidelines to ensure that all the operators use all available latest techniques as highlighted in the paper to drive maximum from the allotted resource.

c. **Distribute spectrum wherever available without delay**: Today some of the new operators are awaiting assignment of spectrum up to 6.2 MHz in many circles where they have met the SLC criteria. As highlighted in the paper, running a GSM network with spectrum allocation of less than 6.2 MHz results in significantly higher opex and capex cost, reducing competitiveness of these operators. While Defence has been allotted spectrum in few towns and cities, such spectrum is not being utilized in rural and semi-urban areas where there is greater requirement for such spectrum. So we urge the Government to allow a phase-wise allocation where spectrum should be allotted in the SDCA where it is not utilized currently and subsequently for rest of the service areas as and when it becomes available.

3 M&A guidelines

a. **Ensure continuity**: Just months before the 3G spectrum auction, we should not project ourselves as market which changes its regulatory policies too often. As telecom investments are of long-term in nature, it is very critical that investor have a long-term clarity about the regulatory regime being espoused by the Government. Too much and too often changes in regulation reduce the appetite of investor to commit for long term funds. This uncertainty becomes a handicap for the operators who want to raise funds from the market. So, it is desirable that we shy away from frequent changes which destabilize the market.

b. **Remove entry / exit barriers:** Full potential of a sector can be achieved only once all regulatory barriers for both entry and exit are removed while ensuring enough regulations to discourage non-serious players benefiting from speculative manipulation. Therefore, we would like to suggest a continuation of current lock-in criteria for existing operators while facilitating those who wish to exit once they have fulfilled their regulatory commitments.

c. **Maintain market competitiveness:** We believe that in long run, the market itself will discover the optimal players needed to provide a service and will force weak / non-committed players to sell out and exit. While regulator should ensure that there is no cartelization among the incumbents, no single operator wield too much market power and consumers gets benefits of new technology and reduced prices; there is a need to ensure that the telecom sector stays financially healthy and scale benefits are enjoyed by the operators.

d. **Adopt pro-consumer approach:** India still has to go long way to ensure affordable communications services for majority of its population. Hence, all policies should keep consumer interest as central-point of its objectives. While allowing M&A, regulator should ensure that consumers' interests are not compromised.

Comments on issues raised in the Chapter 2:

7. Should the spectrum be delinked from the UAS Licence? Please provide the reasons for your response.

I. Is delinking of contractual allocation of Spectrum in the existing UAS license valid?

(i) Spectrum is a limited resource vital to the telecom service as it is a basic raw material for providing wireless voice and data services. Therefore it is important to allocate spectrum in a manner that ensures effective and efficient use of the same and at the same time promotes competition and benefits consumers. The UASL provides allocation of spectrum up to 2x6.2 MHz for TDMA systems and 2x5 MHz for CDMA based systems.

(ii) As per the DOT affidavit before the Hon'ble TDSAT in the matter of COAI Vs UOI in petition no 286/2007, the spectrum allocation up to 2x6.2 MHz for TDMA systems is a contractual obligation under the license. The relevant portion of the TDSAT Order dated 31.3.2009 is reproduced below:

"38. Refuting the argument that the Petitioners have a vested right, the learned counsel for the Union of India stated that the Petitioners had always received more spectrum than they were entitled to under the licence conditions and so the question of violation of contract, even if it existed, did not arise. According to him, although the licence of the Petitioners initially only provided up to 2x4.4 MHz, the Petitioners were given up to 6.2 MHz without even the licence being amended. According to the counsel, the licences which were amended in the year 2001 provided for grant of maximum of 6.2 MHz of spectrum to each of the licensees which is the only contracted quantity."

(iii) Even the Authority has noted in the consultation paper, that the license condition provides for assignment of spectrum up to 2x6.2 MHz in case of GSM and 5MHz in case of CDMA. Therefore, allocation of spectrum up to 2x6.2 MHz for TDMA based systems is a contractual obligation on the part of the Government.

(i) Will Delinking contractual spectrum in the existing UASL disturb the Level Playing Field?

(iv) Although the Government's contractual obligation is to provide only 2x6.2 MHz spectrum, many service providers have been allocated far in excess than this limit to incumbent operators as is evident from the following table.

A statement showing the available spectrum, recommended subscriber linked criteria and subscriber base (VLR) as on 31.12.2008 in four Metro cities

S. No.	SERVICE AREA	OPERATOR	Spectrum Allotted*
1.	Delhi	Bharti Airtel Ltd	10+10 MHz
		Vodafone Essar	10+10 MHz
		MTNL	12.4+12.4 MHz
		Idea Cellular Ltd	8+8 MHz
2.	Mumbai	BPL Mobile	10+10 MHz
		Vodafone Essar	10.2+10.2 MHz
		MTNL	12.4+12.4 MHz
		Bharti Airtel	9.2+9.2 MHz
3.	Kolkata	Bharti Airtel	8+8 MHz
		Vodafone Essar	9.8+9.8 MHz
		BSNL	10+10 MHz
		Reliable Internet Ltd	6.2+6.2 MHz
		Dishnet Wireless Ltd	2x4.4+2x4.4 MHz
4.	Chennai	Aircel Cellular	8.6+8.6 MHz
		Bharti Airtel	9.2+9.2 MHz
		BSNL	10+10 MHz
		Vodafone Essar	8 + 8 MHz

Source: TDSAT Judgment on permission to use Dual technology

(v) It is evident from the above table that incumbents have obtained spectrum far in excess of the guidelines and license conditions. In case, even contractual spectrum is delinked, the level playing field would be disturbed and principles of natural justice violated.

(vi) Allocation of additional spectrum to the incumbent GSM service providers against the licensing conditions and UASL guidelines without any criteria and without any extra payment has provided undue advantage to these service providers. This has also created an artificial scarcity of spectrum and entry barrier for new operators. The excess spectrum for GSM operators have helped them to save capital expenditure on installation of towers and other use of other spectrum efficiency enhancement techniques.

III Is De-linking upto 2x6.2 MHz Spectrum for TDMA systems from the existing UASL tenable under the law of *"Promissory Estoppels"* and *"Legitimate Expectation"?*

(vii) Licensing conditions and regularity in release of spectrum have resulted in *legitimate expectation* on part of service providers to receive spectrum upto 2x6.2 MHz for TDMA systems and 5 MHz for CDMA systems. The service providers have signed the UASL and entered into telecom business on the expectation that spectrum as promised shall be made available. The spectrum is basic raw material to provide voice and data services and therefore the license raises *'legitimate expectation'* to receive the allocation of contractual spectrum.

(viii) Government has through license agreement assured allocation of spectrum upto 2x6.2 MHz for TDMA based networks. The license contract cannot afterwards be allowed to revert to withdraw allocation of spectrum especially if it distorts the level playing field. The reversal of Government policy to withhold allocation spectrum in terms of licensing conditions must pass through the legal tests which have been provided in the doctrines of "level *playing field*", "Legitimate *expectancy*" and "Promissory *Estoppels*". We have submitted above that the delinking of contractual spectrum from the license would fail on all these three accounts.

III. Should new UASL with linked spectrum in 800, 900 and 1800 MHz spectrum bands be issued?

(ix) Due to enabling regulatory regime, there are around 12 to 14 mobile operators in the each geographical area. A total of 2x100 MHz spectrum is available in these bands. Many incumbent private operators and BSNL/MTNL have already been allocated spectrum up to 10 MHz in most service areas. The Government has contracted with most of these service

providers to allocate spectrum up to 2x6.2 MHz for TDMA based systems in 900 MHz and 1800 MHz spectrum bands.

(x) Although a policy for open competition is desirable and it should be left for the market to decide the optimum number of operators in the market but at the same time it will **also be against the natural justice to deny the contractual spectrum to a service provider after entering into an agreement with that operator.**

(xi) **Therefore, due to the limitation of availability of spectrum in the 800, 900 and 1800 MHz bands, it would not be desirable to issue new license with the linked spectrum in these bands without ensuring the all licensee will get contracted spectrum. In event of inability to allocate the contractual spectrum, the same licensing agreements will be '*frustrated*'.**

III. Delinking of Spectrum Bands other than 800, 900 and 1800 MHz bands from the license?

(xii) In India other commercial bands like 700 MHz, 2.1 GHz, 2.3 GHz, and 2.5 GHz have not been allocated to any service providers. These bands should be delinked from the license and allocated to service providers through a transparent allocation mechanism like auction.

(xiii) Future licences should do away from policy of bundled pricing for telecom licence and spectrum. We believe this will be beneficial for telecom sector and will also result in maximizing revenue potential for the Government. While we should continue with policy of unlimited telecom licences; we should discontinue bundling spectrum and leave spectrum and other enabling resources be driven by market forces.

Main benefits of such policy regime will be:

a. **Transparent licence regime:** Unbundling of future licence from spectrum will result into a transparent and market driven policy regime which will reduce the unnecessary frivolous litigations.

b. **In accordance with International Best Practice:** Internationally, regulators follow separate pricing and licencing regulation for allocation of telecom licence and spectrum. We should also follow these best practices.

c. **Maximize Government Revenues:** By un-bundling and separately assigning spectrum and telecom licence, a true price discovery of spectrum can happen which will ensure maximum revenue to the exchequer.

d. **Limited spectrum Availability:** With limited available spectrum, which should be given to already licenced players who have less than 2x6.2 MHz, we do not have spare 2G spectrum to allow for more players in 2G.

(xiv) Government in a way has already delinked allocation of spectrum for 3G and BWA services since operators would have to get this spectrum through the auction process.

(xv) In view of above it is viewed/suggested that:

a) Contractual spectrum in 800, 900 and 1800 MHz spectrum bands cannot be delinked from the existing UAS license;

b) All future UASL should be de-linked from spectrum due to non-availability of spectrum in the 800, 900 and 1800 MHz band.

c) Spectrum in bands other than 800, 900 and 1800 MHz band should be delinked with spectrum. However, not more than 2x5 MHz of spectrum be allocated to any one licensee in 2.1 GHz bands and 2x20 MHz for BWA spectrum in 2.3 GHz band at least for next three years and can be reviewed after that . No operators should be allowed to cross the cap even through indirect route by acquiring spectrum through M&A or spectrum trading.

8. In case it is decided not to delink spectrum from UAS license, then should there be a limit on minimum and maximum number of access service providers in a service area? If yes, what should be the number of operators?

(i) At any given time and location, the amount of usable spectrum is finite. Thus, any use of spectrum necessarily precludes or affects the number of operator that can be present in the

market. The Government already has contractual obligation to provide 2x6.2 MHz spectrum to operators in 900/1800 spectrum bands which has finite 2x100 MHz bandwidth. The allocable spectrum against the total bandwidth is only around 2x73.6 MHz.

(ii) Since there is not enough spectrum available in 800/900/1800 MHz spectrum bands for unrestricted entry of operators, new UASL with linked spectrum in these band should not be issued.

(iii) There are a number of other commercial spectrum bands like 2.1 GHz, 2.3 GHz, and 2.5 GHz and 700 MHz where deployment of evolved advanced 3G, 4G and BWA technologies is possible. Capping number of operators in the market will foreclose entry of new operators even in other spectrum bands.

(iv) Putting a cap on number of operators would harm the competition and not serve the public interest. Any cap on number of operators would also be against the NTP'99 objective to transform the telecommunication sector to a greater competitive environment providing equal opportunities for all players.

(v) In view of above it is suggested that:

a) There should not be any cap on number of access providers in the market;

b) No new license with linked spectrum in 800, 900 and 1800 MHz spectrum bands should be issued.

9. What should be the considerations to determine maximum spectrum per entity?

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10. Is there a need to put a limit on the maximum spectrum one licensee can hold? If yes, then what should be the limit? Should operators having more than the maximum limit, if determined, be assigned any more spectrum?

(i) The Government's policy of unrestricted entry of mobile operator has helped creation of near perfect competition in the market. Some operators have obtained 900/1800 MHz spectrum far in excess of the contracted spectrum even without payment of any charges. Despite spectrum cap in these bands, the spectrum aggregation has become a major issue. Due to legacy assignments in 800, 900 and 1800 MHz, the cap should be separately considered in these bands from other commercial spectrum bands. All future 3G / EVDO / BWA allocations should be outside the defined spectrum cap. Since one cannot combine GSM and CDMA spectrum, the spectrum cap should be defined separately for dual technology operators.

(ii) There can be following considerations for determining maximum spectrum / entitlement:

a. Allocation of spectrum band in 900/1800 MHz and satisfy the requirement of a Service Provider reasonably
b. Factoring in the growth in technological advancement
c. Factoring upcoming 3G/4G (i.e. future technology roadmap)

I. Spectrum Cap in 800, 900, 1800 MHz spectrum bands

(iii) As per the licensing conditions, the maximum spectrum that can be allocated in 800, 900, 1800 MHz spectrum bands to any licensee are 2x5 MHz for CDMA based systems and 2x6.2 MHz spectrum for TDMA based systems. The dual technology operators are running parallel networks and the spectrum caps for respective technologies are separately defined in the license.

As discussed above and proven using a model that even for the biggest urban city in India by using all available enhancement techniques, maximum 2x6.2 MHz spectrum is needed.

(iv) **The maximum allocable spectrum in 900 and 1800 MHz spectrum bands should be 2x6.2 MHz . In 800 MHz band, the maximum allocable spectrum should be2x5 MHz for CDMA which should not include any spectrum obtained from open auction for EVDO operations.**

(v) 900 MHz spectrum band is technically much more efficient than 1800 MHz spectrum band and therefore all service providers should have equitable access to 900 MHz spectrum band. It is proposed that separate spectrum caps of 2x2.4 MHz be defined for 900 MHz No operator should have more than 2.4 MHz in 900 MHz spectrum in any areas.

II. Spectrum Cap in Commercial Spectrum Bands **other than** 800 MHz, 900 MHz and 1800 MHz

The spectrum caps are specified to check spectrum aggregation, lower entry barrier for new operators and ensure enough competition in the market. In the 2.1 GHz spectrum band, the government is auctioning maximum of 4 blocks in a service area besides one reserved for BSNL/MTNL. It has been discussed below that atleast 5 operators are desirable in the market to make sure that that the markets enough competitive.

In order to maintain competition in the market and keeping in view that limited spectrum is available for auction, it is suggested that no operator should be allowed to obtain more than 2x5 MHz spectrum in 2.1 GHz band for initial 3 years.

(vi) In view of above, it is suggested that:

a) No operator should be allowed more than 2x5 MHz in 800 MHz for CDMA systems and 2x6.2 MHz for TDMA systems in 900/1800 MHz spectrum bands;

b) No service provider should have more than 2x2.4MHz spectrum in 900 MHz spectrum band.

c) The spectrum obtained in 800 MHz spectrum band through auction for EVDO service should not be part of upper limit for 800 MHz spectrum band;

d) Spectrum in bands other than 800, 900 and 1800 MHz band should be delinked from UAS licence. However, not more than 2x5 MHz of spectrum be allocated to any one licensee in 2.1 GHZ bands and 2x20 MHz for BWA spectrum in 2.3 GHz band at least for next three years and can be reviewed after that . No operators should be allowed to cross the cap even through indirect route by acquiring spectrum through M&A or spectrum trading.

11. If an existing licensee has more spectrum than the specified limit, then how should this spectrum treated? Should such spectrum be taken back or should it be subjected to higher charging regime?

(i) As mentioned above, allocation of additional spectrum to the incumbent GSM service providers against the licensing conditions and UASL guidelines without any criteria and without any extra payment is not legally correct and against the principle of level playing field. Allocation of spectrum in excess of contractual limit has provided undue advantage to incumbent cellular service providers. The hoarding of spectrum by few established have helped them to save capital expenditure on installation of towers and other use of other spectrum efficiency enhancement techniques.

(ii) On one hand new operators are not allocated even the contracted spectrum, established operators have been allocated far in excess of the contractual limits. In order to meet the requirement of fairness and level playing field, the excess spectrum above the specified limits should be taken back from service providers.

(iii) In view of above it is suggested that:

a) ***The spectrum allocated above the contracted limit i.e 2x6.2 MHz should be withdrawn;***

b) ***The one time license fee should be payable for excess spectrum from the date of allocation of spectrum till it is withdrawal.***

12. In the event fresh licenses are to be granted, what should be the Entry fee for the license?

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13. In case it is decided that the spectrum is to be delinked from the license then what should be the entry fee for such a licence and should there be any roll out condition?

(i) As mentioned above, at any given time and location, the amount of usable spectrum is finite. Thus, any use of spectrum necessarily precludes or affects the number of operator that can be present in the market.

(ii) The Government already has contractual obligation to provide 2x6.2 MHz spectrum to existing UASL operators in 900/1800 MHz spectrum bands which has finite 2x100 MHz bandwidth. At present there are 12 to 14 access providers in all circles and the allocable spectrum with the Government is only around 2x73.6 MHz.

(iii) To sustain competition and to ensure level playing field, it is essential that the spectrum is allocated in an equitable manner. Since only limited spectrum is available, and a large contractual obligation to provide spectrum is pending allocation, fresh licenses with linked spectrum in 800 , 900 and 1800 MHz spectrum would *'frustrate'* the license agreement. Therefore, any new license with linked spectrum may be issued only after ensuring that the Government would able to meet the contractual obligation to provide spectrum up to 2x6.2 MHz and such licensees be issued at price determined during 3G spectrum auction.

(iv) The Authority in its recommendation for "Unified Service License" had determined entry fee for access without spectrum on the basis of entry fee paid by new Basic Service Operators entered in/after 2001. The following formula was suggested as entry fee:

$$\text{Entry Fee} = \frac{\text{Entry fee paid by BSOs (entered in/after 2001) of the circle X Total (all India) fixed subscribers (wireline + WLL(F))}}{\text{Total (all India) subscribers (fixed and mobile) of the New BSOs entered in/after 2001}}$$

(v) Using the above formula, the TRAI had recommended following entry fee in year 2004 for license without spectrum:

Circle	Fee (Rs crores)
A.P.	5.6
Gujarat	6.4
KTK	5.6
MH	12.58
T.N.	4.78
Haryana	1.6
Kerala	3.2
Punjab	3.2
Rajasthan	3.2
UP (E)	2.4
UP (W)	2.4

Circle	Fee (Rs crores)
W.B.	0.43
M.P.	3.2
J & K	0.32
Assam	0.8
Bihar	1.6
H.P.	0.32
N.E.	0.32
Orrisa	0.8
Delhi	8
Mumbai	5.82
Kolkata	3.57

(vi) The Authority had further recommended that the entry fee for license without spectrum should be Rs 30 lakhs only in 2010. Since Rs 30 lakhs is too low and may result in excessive fragmentation of market it is proposed that entry fee should be close to TRAI determination for 2004.

(vii) In view of above following it is suggested that

a) the following entry fee may be prescribed for licences without spectrum:

- ***Circle A and Metro*** ***Rs 10 Cr***
- ***Circle B*** ***Rs 5 Cr***
- ***Circle C*** ***Rs 1 Cr***

14. Is there a need to do spectrum audit? If it is found in the audit that an operator is not using the spectrum efficiently what is the suggested course of action? Can penalties be imposed?

(i) There is need to do spectrum audit to ensure the optimal utilization of scarce spectrum resources and discourage operators from hoarding the spectrum to stifle the competition.

(ii) However, regulator should prescribe a pre-defined criterion to ensure a fair implementation of the policy.

(iii) Also, we suggest that rural network should be audited on a priority basis to ensure that operators are making optimal use of all allotted spectrum.

(iv) Most of the service providers in India have very limited availability of spectrum. Against the contractual obligation of 2x5 MHz for CDMA systems and 2x6.2 MHz for TDMA based systems, many operators have not received even contractual assignment of spectrum. The issue of efficient utilization is esp. relevant when larger blocks of spectrum >6.2 MHz assigned.

(v) Strengthening of competition ensures that operators deploy latest technologies to enhance capacities and minimize costs.

(vi) In view of above it is suggested that:

a) There is a need to conduct spectrum efficiency audits.

15. Can spectrum be assigned based on metro, urban and rural areas separately? If yes, what issues do you foresee in this method?

(i) Spectrum Requirement for Urban and Rural India is widely different due to digital divide in population density and tele-density. Rural population density is 313 persons per Sq.km as per census 2001 data whereas Urban population density is 3675 persons per sq.km. Only 2.34 % of geographical area of India constitutes urban area. Also Teledensity of Urban India is over 80% where as rural India is 20%.

(ii) Since population density and tele-density is widely different, spectrum requirement for urban area will be higher than that of the rural. To support 313 persons per sq.km in rural area and with 20% tele-density in rural area even 1/1/1 BTS is good enough, which will be able to support over 200 subscribers at any point of time. Owing to wide inter-site distances

and vast geographical spread, 1.2 MHz to 1.8 MHz spectrum should be good enough for supporting rural India.

(iii) The excess allocation of spectrum is leading to spectrum warehousing. The government should adopt a policy of "Use it or loose it" to encourage efficient utilization of spectrum.

a) In view of above spectrum may be assigned based on urban and rural areas separately

16. since the amount of spectrum and the investment required for its utilisation in metro and large cities is higher than in rural areas, can asymmetric pricing of telecom services be a feasible proposition?

(i) Cost per subscriber is not only a function of investment but also number of users. Economies of scale cause service providers' average cost per subscriber to fall as scale is increased. **Since urban areas have much larger scale, the cost per unit is generally less than the cost per unit in rural areas.**

(ii) Further asymmetric pricing for mobile service in rural and urban areas is not possible as access to services is not confined to one particular geographical area. The tariffs are continuously falling and its benefit is available to both urban and rural subscribers. Regulated segmentation of market would serve little purpose.

(iii) The USO fund has been created to meet the affordability objectives for rural and remote areas. This fund should be aggressively utilised to increase rural penetration.

(iv) ***In view of above, we do not support asymmetric pricing of telecom services in rural and urban areas.***

M&A issues

17. Whether the existing licence conditions and guidelines related to M&A restrict consolidation in the telecom sector? If yes, what should be the alternative framework for M&A in the telecom sector?

&

18. Whether lock-in clause in UASL agreement is a barrier to consolidation in telecom sector? If yes, what modifications may be considered in the clause to facilitate consolidation?

&

19. Whether market share in terms of subscriber base/AGR should continue to regulate M&A activity in addition to the restriction on spectrum holding?

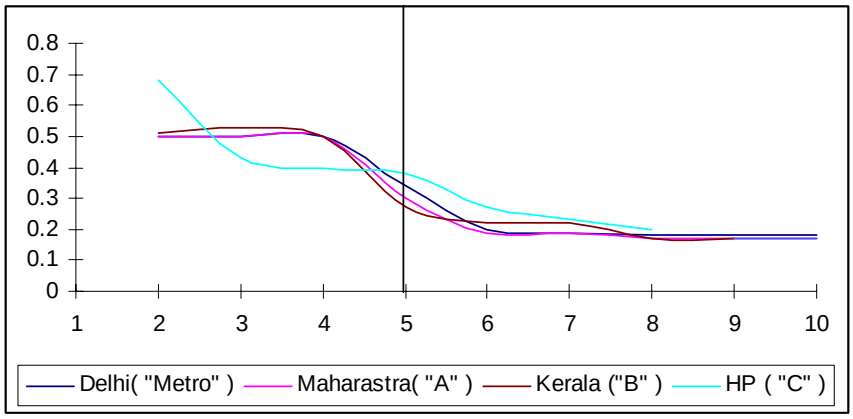
(i) Mergers have the potential to generate significant efficiencies by permitting better utilization of existing assets, enabling the merged entity to achieve lower cost of production. Mergers subject to certain conditions also enhance competition by permitting comparatively two ineffective competitors to become one effective competitor.

(ii) Although mergers are largely in the consumer interest but aggregation of market power through mergers may also considerably harm competition. **Mergers in such cases may** provide immediate benefit to the consumers through price cuts etc but in the longer term may **undermine competition**.

(iii) Presently, the total number of CMTS/UAS Licenses in a service area range from 12 to 14. Since large number of operators is present in the market, there is a need to review the M&A guidelines as operators will have comparatively smaller market share now when compared to the time when M&A guidelines were being framed. In renewed competitive setup, it must be ensured that merged **entity does not gain significant market power.**

(iv) The present M&A guidelines do not permit merges if combined entity has more than 40% market share in terms of subscribers and revenue. As per the TRAI's Telecommunication Interconnection (Reference Interconnect Offer) Regulation, 2002, a service provider deems to have significant market power if it holds a share of 30% of the market share. In line with the already laid down guidelines, merger may be permitted if merged entity has within 35% market share in terms subscribers and 25% in terms of Adjusted Gross Revenue.

(v) TRAI has given an analysis of HHI Vs number of operators for four service areas which is summarized in the following chart. It can be noted that HHI index falls sharply till there are 5 operators in the market and subsequently it flattens out. In view of this, it is proposed that there should be at-least 5 operators in the market.



Source: TRAI Consultation Paper dated 16.10.2009

(vi) Since issue of the existing M&A guidelines, no M&A activity has taken place. As such it appears that the guidelines are not very conducive for M&A. The relaxation is in particular required with regard to the condition to meet the subscriber criteria specified against the spectrum held by merged entity with in three months time. The merged entity may be allowed to have 2x12.4 MHz of spectrum after merger. Even spectrum more than 12.4 MHz may also be allowed to be retained if it satisfies the subscriber linked criteria. The spectrum charges may be levied for spectrum above 2x12.4 MHz spectrum only.

(vii) A lock-in clause in UASL was inserted to ensure participation by serious players which have clear commitment to the telecom sector. It is a fact that the spectrum is a limited resource and at present comes bundled with the UAS license and therefore prescribed condition on lock-in is important for balanced growth of sector. This clause has been inserted only to eliminate non-serious operators and as such has no significant impact on the M&A guidelines.

(viii) In view of above it is suggested that:

a) Mergers may be allowed in case market share of merged entity is not greater than 35%in terms of subscriber base and 25% in terms of Adjusted Gross Revenue.

b) No M&A activity may be allowed if the number of UAS/CMTS operators goes below five including one PSU.

c) The merged entity may be allowed to have 2x12.4 MHz for GSM and 2x10MHz for CDMA spectrum after merger which is the contracted spectrum of 2 merged entities. Operators with GSM spectrum more than 12.4 MHz may not be allowed and merged entity should surrender spectrum within 3 months of merger. However out of the cap of

2x12.4 MHz for the merged entity, not more than 2x6.2 MHz should be in 900 MHz spectrum band. If the existing spectrum of the merged entity in 900 MHz is less than 6.2 MHz but more than 2x2.4 MHz then no further spectrum allotment should be in 900 MHz band.

d) The present lock-in clause in UASL agreement is not a barrier to consolidation in telecom sector.

20. Whether there should be a transfer charge on spectrum upon merger and acquisition? If yes, whether such charges should be same in case of M&A/transfer/sharing of spectrum?

&

21. Whether the transfer charges should be one-time only for first such M&A or should they be levied each time an M&A takes place?

&

22. Whether transfer charges should be levied on the lesser or higher of the 2G spectrum holdings of the merging entities?

(i) There is no rationality to impose a transfer charges in case merger is between entities with contracted spectrum as the spectrum is obtained after payment of entry fee. There **should not** be any merger charges for companies who have only contracted spectrum up to 2x6.2 MHz.

(ii) In view of above it is suggested that:

a. There should not be any merger charges for companies who have only contracted spectrum upto 2x6.2 MHz.

b. ***Service providers who have been allotted spectrum beyond contracted limit should be asked to return the excess spectrum.***

23. Whether the spectrum held consequent upon M&A be subjected to a maximum limit?

(i) The merged entity may be allowed to have 2x12.4 MHz of GSM spectrum after merger which is the contracted spectrum of 2 merged entities. All excess spectrum more than 2x12.4 MHz should be surrendered within 3 months of merger, failing which spectrum charges should be doubled every quarter.

Spectrum Trading

24. Is spectrum trading required to encourage spectrum consolidation and improve spectrum utilization efficiency?

(i) We welcome the initiative taken by the TRAI to use alternative method to consolidate and improve spectrum utilization through creation of secondary markets. It is admitted fact that permission to service providers to lease and trade their underused or unused spectrum will promote spectrum efficiency and public interest. Spectrum trading has potential to improve spectrum efficiency as trading would put spectrum to its most valued use.

(ii) We support the spectrum trading. It is a step in a right direction. However it should be done in line with prevalent International practices.

(iii) Appropriate legal, regulatory, commercial and technical framework needs to be set up for spectrum trading.

(iv) The Spectrum trading to some extent will complement the primary spectrum assignment function of the Government but with the limited scope of trading, it cannot be taken as a substitute for primary allocation of spectrum by the Government.

It is therefore suggested that:

a) Spectrum trading may be allowed as it may encourage spectrum utilization efficiently;

b) Spectrum trading should not be considered substitute to the normal process of allocation of spectrum.

25. Who all should be permitted to trade the spectrum ?

&.

26. Should the original allottee who has failed to fulfill "Roll out obligations" be allowed to do spectrum trading?

(i) It is a fact that the spectrum is a limited resource and at present comes bundled with the UAS license. To ensure participation by serious players only with the commitment to the telecom sector, the Government has prescribed three year lock-in period and rollout condition. To have a consistent policy and to encourage only serious players in the market,

it is desirable that operators not meeting the roll-out obligations should not be allowed to participate in the spectrum trading.

(ii) The main objective of facilitating spectrum trading is to allow and encourage licensees to use spectrum efficiently. A service provider who does not meet the rollout obligations at the end of three years spectrum may be asked to return the spectrum and this surrendered spectrum be made available to a service providers waiting for initial allocation/additional allocation of spectrum.

(iii) In view of above it is recommended that:

a) All UASL, CMTS licensees except those who have not met the rollout obligation at the end of three years should be allowed to participate in the spectrum trading; and

b) Operators having more than 6.2 MHz should be asked to return spectrum and should not be allowed to participate in spectrum trading

c) Since not meeting rollout obligations means spectrum not being used, it is suggested that spectrum may be withdrawn from such service providers.

27. Should transfer charges be levied in case of spectrum trading?

&

28. What should be the parameters and methodology to determine first time spectrum transfer charges payable to Government for trading of the spectrum? How should these charges be determined year after year?

(i) Significant part of the additional spectrum beyond contractual limit has been allocated without any guidelines and even without any payment of additional license fee. Government should withdraw allocated excess spectrum.

(ii) Unless excess spectrum is withdrawn, operators should not be allowed to exploit excess allocated spectrum through spectrum trading.

(iii) Operators have paid entry fee for contractual spectrum up to 2x5 MHz for CDMA network and 2x6.2 MHz for GSM network and therefore trading within the contractual spectrum should not be charged spectrum transfer charges.

(iv) ***In view of above it is suggested that:***

a. No transfer charge should be levied for trading of contracted spectrum as operators have paid already paid entry fee for spectrum.

29. Should such capping be limited to 2G spectrum only or consider other bands of spectrum also? Give your suggestions with justification.

(i) The maximum spectrum that can be allocated in 800/900/1800 MHz spectrum bands to any licensee as per the license condition is 2x5 MHz for CDMA based systems and 2x6.2 MHz spectrum for TDMA based systems. It has been established above that even the biggest urban city requires a maximum of 2x6.2 MHz with the use of available advanced techniques. Therefore only a maximum of 2x6.2 MHz spectrum may be allocated to any service provider.

(ii) Only limited spectrum is available for offering 3G services in the 2.1 GHz spectrum band. Based on the current limited commercial spectrum allocations, further evolution of new services like 3G and BWA and applications can be severely hampered. The Government is auctioning up to 4 blocks of 2x5 MHz for 3G service and 1 Block of 2x1.25 MHz for EVDO service. In Delhi only two blocks are being auctioned. At present there are 12 to 14 operators are operating in all circles but only few would be able to provide advanced 3G services. The limited availability of spectrum is likely to impact the competition and growth of the sector.

(iii) **In order to maintain competition in the market and keeping in view that limited spectrum is available for auction, it is suggested that no operator should be allowed to obtain more than 2x5 MHz spectrum in 2.1 GHz band, at least for three years. The policy can be reviewed after three years when more spectrum for deployment of 3G systems is likely to be available in the market.**

In view of above, it is suggested that:

a) The DoT should provide a spectrum cap of 2x5 MHz for CDMA based systems and 2x6.2 MHz for GSM based systems;

b) ***Spectrum cap of 2x5 MHz may be prescribed for 2.1 GHz for a period of three years directly or indirectly through spectrum trading or M&A, so that no operator is able to***

aggregate the limited spectrum available. The policy can be reviewed after three years when more spectrum is these bands is likely to be available in these bands for commercial deployment.

30. Should size of minimum tradable block of spectrum be defined or left to the market forces?

(i) The minimum tradable block should be 1 MHz

31. Should the cost of spectrum trading be more than the spectrum assignment cost?

(i) Spectrum trading / sharing charges should be benchmarked based on price determined through 3G spectrum auction.

(ii) Fee structure prescribed should be uniform across trading / sharing to discourage people from using lower fee route to reduce regulatory cost

Spectrum sharing

32. Should Spectrum sharing be allowed? If yes, what should be the regulatory framework for allowing spectrum sharing among the service providers?

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33. What should be criteria to permit spectrum sharing?

(i) The Department of Telecom has permitted sharing of active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure is limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only.

(ii) The sharing of the allocated spectrum has been specifically excluded from the guidelines on infrastructure sharing. The DOT's decision to disallow spectrum sharing may have to be seen and examined with regard to its impact on competition.

(iii) The spectrum sharing has possibility of spectrum aggregation and may provide unfair advantage to the participant service providers. The Authority in the consultation paper has noted that larger amount of spectrum would enable an operator to realize lower costs.

(iv) It is possible for few service providers to pool together large amount of spectrum and run a single network that may provide substantial increase in capacities and thus competitive advantage to spectrum sharing service providers. The sharing has potential of cartelization and scuttling competition For example, three operators having a spectrum of 2x6.2 MHz each share their spectrum; then the total spectrum will be 18.6 MHz. Of this spectrum, they can easily provide 2G services in 8.6MHz of spectrum and can have 10 MHz of spectrum spare to provide 3G services. In case incumbent operators share the spectrum, they may have much more than 18.6 MHz of spectrum. In such cases, participating operators will have at their disposal more than 20 MHz of spectrum in each service area. By sharing the spectrum, the three operators can run network as just like one operator. One operator will become a facility based operator and the other two operators will behave as MVNO. Individually, under each operator if 6.2 MHz of spectrum is there, then that spectrum has the trunking efficiency to provide only 40 Erlang; however since the trunking efficiency increases exponentially with quantum spectrum, by combining the spectrum, their erlang carrying capacity will jump to 3-4 times of that of individual operator. And of course this all will be available by paying spectrum charges applicable on 6.2 MHz to an individual operator. In that scenario, it will be difficult to charge spectrum charges which are based on AGR. And the 3G spectrum auction prices will be impacted hugely. There will be a tremendous saving in Capex as well as Opex ; and it will become very difficult for others to sustain their economic viability in such a scenario. Rather than having such a situation, it would be far better if the consolidation in the sector is permitted through the merger and acquisition route.

(v) Spectrum sharing has no doubt the potential to generate significant efficiencies by permitting better utilization of existing spectrum, enabling service providers to achieve lower costs of production. The spectrum sharing is especially useful in case service provider has not received initial allocation of spectrum.

(vi) Spectrum sharing may be allowed provided the Government ensures that it would not result into distortion of market competitiveness. Only operators whose combine spectrum is below the prescribed limit for individual operator should be allowed to share the spectrum.

(vii) Spectrum sharing framework should ensure that Government revenues are protected and Spectrum guidelines do not encourage operators to enter into agreement which by-pass payment of regulatory fees to the Government.

(viii) Therefore it is proposed that sharing may be allowed if it can be ensured that the service providers sharing spectrum do not combined become significant market power.

In view of above it is suggested that:

a) ***Spectrum sharing may be allowed in case market share of spectrum sharing service providers is not greater than 35% in terms of subscriber base and 25% in terms of Adjusted Gross revenue.***

b) ***No spectrum sharing may be allowed if the number of UAS/CMTS operators reduces below five including one PSU.***

c) ***Sharing may be allowed only if combined spectrum is less than 2x12.4MHz for GSM but of which not more than 6.2 MHz is in 900 MHz band.***

34. Should spectrum sharing charges be regulated? If yes then what parameters should be considered to derive spectrum sharing charges? Should such charges be prescribed per MHz or for total allocated spectrum to the entity in LSA?

(i) Spectrum trading / sharing charges should be benchmarked based on price determined through 3G spectrum auction.

(ii) Charges should be uniform for trading / sharing / M&A activities

(iii) Charges should be applicable only for operators who have not paid one time charge for spectrum above 6.2 MHz. There should not be any charges for spectrum below 6.2 MHz.

35. Should there be any preconditions that rollout obligation be fulfilled by one or both service provider before allowing the sharing of spectrum?

(i) It is a fact that the spectrum is a limited resource and at present comes bundled with the UAS license. To ensure participation by serious players only with the commitment to the telecom sector, the Government has prescribed three year lock-in period and rollout obligations. To have a consistent policy and to encourage only serious players in the market, it is desirable that operators not meeting the roll-out obligations should not be allowed to participate in the spectrum sharing.

(ii) The main objective of facilitating spectrum sharing is to allow and encourage licensees to use spectrum efficiently. A service provider who does not meet the rollout obligations at the end of three may be discouraged to profit from spectrum trading/sharing and unutilized spectrum should be taken back.

36. In case of spectrum sharing, who will have the rollout obligations? Giver or receiver?

(i) **The rollout obligation is part of the license conditions and both operators would have respective rollout obligations. Spectrum sharing should not be used to dilute rollout obligations.**

Perpetuity of licences

37. Should there be a time limit on licence or should it be perpetual?

(i) All the licences should be made perpetual.

(ii) It will ensure continuity in the services and will maintain attractiveness of the spectrum.

38. What should be the validity period of assigned spectrum in case it is delinked from the licence? 20 years, as it exists, or any other period

&

39. What should be the validity period of spectrum if spectrum is allocated for a different technology under the same license midway during the life of the license?

(i) Pursuant to the announcement of dual technology policy by the DOT in October 2007, some service providers have been allotted alternate spectrum by payment of another entry fee. Thus they paid a second time entry fee, for getting spectrum under dual technology and the existing license were amended accordingly.

(ii) Since the entry fee for a service provides the validity of license for 20 years, the validity of dual technology path should also be uniformly valid for a period of 20 years. The validity of dual technology track could not be tied with the validity of the original license, since this will create a completely distorted situation as the original licenses have been issued at different intervals of time in different service areas and the validity of such licenses will be expiring at different intervals of time. Thus, it is not logical that the entry fee paid for dual technology operations at the same time for various service areas will lead to a situation that the validity of dual technology spectrum, though allotted at the same time, will expire at different intervals of time in different service areas.

(iii) The TRAI while recommending the use of dual technology had specified," vide para 4.27

"***Therefore the Authority recommends that licensee using the one technology may be permitted on request, the usage of alternative technology and thus allocation of dual spectrum. However such a licensee must pay the same amount of fee which has been paid by existing licensees using the alternative technology or which would be paid by a new license going to use that technology"***

(iv) It is evident from the TRAI recommendation that while determining the fee to be charged for spectrum allotment under dual technology policy, the TRAI had mentioned that the Entry fee would be equivalent to the amount being paid by the new license. Since in case of new licensee the entry fee entitles the usage of spectrum till 20 years, (i.e. the validity of license period), in order to have a level playing , the principle of natural justice demand that the validity period of dual technology track should also have been specified 20 years in the amended license document issued to dual technology service providers.

(v) In case the validity period of dual technology track is kept co-terminus with their original license dates, this would lead to a discrimination with respect to new operator who had taken the license at the same time and was given a validity period of twenty years In such case, in fact, this will result in the dual technology operator paying higher entry fee, as they will be getting the dual technology spectrum for lesser duration than the new licensee, whereas the TRAI recommendations clearly suggest that the dual technology track operator had to pay same Entry fee as being paid by a new licensee at that point of time.

(vi) Further in this case, the Entry fee will be variable for each of service provider and will be dependent upon the time when the licensee was assigned the license of a circle.

(vii) Further, it may be seen from the policy guidelines issued by DoT in respect of 3G / BWA spectrum that no new licenses are envisaged for 3G / BWA services and DoT proposes to issue amendments to the existing UAS licenses for operators getting 3G / BWA spectrum but the validity for 3G / BWA track has been kept at 20 years. In this case, the validity of 3G / BWA spectrum will not be co-terminus with the original validity of the UASL. Thus, in case the validity of dual technology track is not kept at 20 years, the treatment meted out to the dual technology operators vis-à-vis the proposed 3G / BWA service operators will also be discriminatory.

(viii) Further, the GSM operators have got their licenses extended initially from 10 years to 15 years and then to 20 years without the any payment dual technology operators who have obtained dual technology licenses, have paid the entry fee twice should be given the full validity of 20 years for the dual technology track.

(ix) In view of above, it is suggested that:

a) The validity of dual track of UAS licenses for which amendment in license for dual technology track has been issued, should be extended to 20 years from the date of amendment.

b) Alternatively, the excess amount of entry fee may be adjusted with interest against future license fee.

40. If the spectrum assignment is for a defined period, then for what period and at what price should the extension of assigned spectrum be done?

(i) At present the spectrum is bundled with licence. Since the license has been allotted for 20 years, the spectrum which comes with license is also valid for 20 years.

(ii) The spectrum assignment should be extended by 20 years at a time. The existing operator/ licensee should have the first right of refusal. The spectrum should be renewed at prices which do not have negative impact on market.

41. If the spectrum assignment is for a defined period, then after the expiry of the period should the same holder/licensee be given the first priority?

(i) License renewal approaches not only influence market entry but also competitiveness of market players. Renewal process has major implications on investors, lenders, consumers, and the development of the sector as a whole.

License Renewal in USA

The United States has adopted a "high renewal expectancy" standard for renewal of domestic public cellular radio telecommunications services. If the licensee meets certain standards in terms of using the spectrum for their intended purposes and complying with the rules and policies, they can file for renewal expectancy. The rationale behind such a regime is to guarantee a degree of regulatory discretion to allow the regulator to review the terms and conditions of the license, to reflect new technological developments in the general licensing policy, and to review the targets set in the original license. The renewal policy for 700 MHz spectrum band is given below:

"Nationwide License: . The term of the nationwide D Block license will not exceed 10 years from February 17, 2009. At the end of the 10-year term, the licensee will be allowed to

apply for license renewal. Renewal will be subject to the licensee's success in meeting the material requirements set forth in the Network Sharing Agreement ("NSA") as well as all other license conditions, including meeting the performance benchmark requirements. The licensee must also file a renewed or modified NSA for Commission approval at the time of its license renewal application"

I. Major issues being debated for renewal of 2G license

(ii) Among the issues which are mostly debated for the renewal process is whether the license holders can be allowed to reuse their second generation spectrum and re-farm it to support next generation services like 3G. Regulators mostly ensure that incumbents do not have competitive advantage by allowing flexi use for 2G and 3G networks and also all operators have equitable access to the 900 MHz spectrum band.

(iii) Number of countries within Eurpoe including France, Belgium, Finland and Estonia has allowed technologies other than GSM to be used in 900 MHz. Many European countries including Switzerland have consulted the issue as part of the national frequency plan or the 2G license renewal process.

(iv) Permission to use current spectrum to offer 3G services in the 900 MHz spectrum band will disturb the level playing field vis-à-vis 3G operators in 2.1 GHz bands who will have to pay at least Rs 3500 crores for payment of pan India spectrum. Incumbents would have windfall gains in case they are allowed 3G without re-farming and paying matching license fee.

II. License Renewal and License Fee

(v) A balance is needed between protecting ongoing investment, and optimal exploitation of the spectrum resources. In general, regulators tend to favour existing operators over new operators. It is proposed that existing operators should have first right to refusal for renewal of license.

(vi) The renewal fee should be fixed at such a level which does not result in negative impact on sector development. High license fees might impact the financial stability of the operators and reduce the possibility of further investment.

(vii) In view of above it is suggested that:

a) ***Investors should have high renewal expectancy. Existing operators should have first right to refusal for renewal;***

b) ***Renewal should be subject to new terms and conditions which ensure fair competition and are in the public interest. Re-farming of spectrum in the 900 MHz band and flexi use may be adopted subject to maintenance of level playing field;***

c) ***Renewal fee should be such which does not result in negative impact on sector.***

Uniform License Fee

42. What are the advantages and disadvantages of a uniform license fee?

(i) The currents rates of revenue share license fee is prescribed at:

License	**License Fee Rate**
Access Service	
Metro & Category A	10%
Category B	8%
Category C	6%
National Long Distance	6%
International long distance	6%
VSAT	6%
Internet with Internet Telephony	6%
Pure Internet	Nil%

(ii) The license fee should be charged on revenue based slabs for all the circles, as is being done in case of Income tax. The slab based system is being widely practiced by the Government of India.

(iii) This revenue share can be based on AGR or GR as may be decided by the Government.

In view of the above it is suggested that:

a) There should be revenue slab based license fee on all telecom licensed services except internet service to be charged on Gross Revenue instead of the present method of charging of Adjusted Gross Revenue;

43. Whether there should be a uniform License Fee across all telecom licenses and service areas including services covered under registrations?

(i) We strongly support revenue slab based license fee on telecom services except following two categories:

- Internet Service; and
- IP-I

I. Impact of imposing license fee on IP-I

(ii) The setting up of passive infrastructure like dark fibre, tower etc is not a telecom activity requiring any license under Section 4 of the Indian Telegraph Act. Even under the present scheme, the tower structure is being allowed by non-licensed third parties under the process of registration. Setting up of passive infrastructure by third parties is an international phenomenon to increase operational efficiency and not a case specific to India to save license fee. Few well known international tower companies include America Tower, Crown Castle etc.

(iii) Imposition of license fee on passive infrastructure companies would increase cost for providing telecom services and may also discourage infrastructure sharing. In the interest of increasing affordability. Promoting investment in the passive telecom infrastructure and infrastructure sharing, and avoiding legal complications, IP-I activities should be converted into a licensed activity and charged license fee.

(iv) Telecom service providers have outsourced number of other activities including managed services, call centres etc. These activities are linked to the telecom operations but not classified as telecom activities requiring license. There is even OSP category which are registered and not licensed. Taking a narrow interpretation of telecom services to include IP-I and other services would not be in the interest of the sector and may impact investments by the third parties.

(v) The Authority in its recommendations on unified licensing regime had recommended that infrastructure provider category should be permitted to operate under Authorisation and

there should be no license fee on such authorizations. (Page number 20, Para 3.3 (iii)) The extract is as follows:

iii) Licensing through Authorisation - This category will cover the services for provision of passive infrastructure *and bandwidth services to service provider(s) and Internet Services including existing restricted Internet telephony (Personal Computers (PC) to PC; within or outside India, PC in India to Telephone outside India, IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India), but not Internet Telephony in general. In the existing licensing regime these services have nil/very low entry and license fee. Though the license fee for IP-II services in the existing regime is 6%, TRAI is of the opinion that no license fee should be charged on IP-II service providers.* ***The service providers of these services may only notify themselves with DoT before starting the services.*** *At the time of Notification, these service providers may submit a compliance certification to Authorisation conditions, like security, etc. Voice mail, Audiotex, Video Conferencing, Videotex, E-mail service, Unified Messaging services, tele-banking, tele-medicine, tele-education, tele-trading, e-commerce and other service providers, as indicated in NTP'99 shall also be covered under 'Licensing through authorisation' category.*

II. Impact of imposing License Fee on Broadband and Internet Services

(vi) Imposition of license fee on Internet and Broadband will have very adverse impact on its expansion. It is widely recognized that internet is catalyst for economic and social development of a country. Availability of broadband services at affordable price levels would contribute to a higher GDP growth rate, provide for a larger and more qualified and informed labour force, and make that labour pool more efficient. Broadband is an extraordinarily transformative technology which can fundamentally change lives of many individuals.

(vii) Broadband service has potential help address many of our nation's most pressing challenges in healthcare, education, job creation and economic development.

(viii) The Broadband Policy, 2004, fixed a target of 20 million broadband connections and 40 million internet connections by the year 2010. However, the rate of growth has not picked up and the current levels of internet and broadband penetration are only 13.54 million

internet connections as on 31 March 09 and 6.80 million Broadband connections as on 31st July 2009. The country is way off the targets set up in 2004.

(ix) The wireless broadband is most viable option to expand reach of internet services. However, with BWA spectrum being auctioned, the input costs are likely to increase for internet service provider. Imposition of license fee would make this service totally unviable.

(x) The Authority may note that the Broadband policy itself recognizes that this service can expand only if services are offered at affordable rates and the DoT will work out a financial package to make these services affordable. However, any proposal to impose license fee on internet service will be against the Government objective of promoting broadband and internet services. The relevant part of the policy is reproduced below:

"4.4 Fiscal Issues

The Department of Telecommunications assigns a very high priority to indigenous manufacture of Broadband related equipments. It shall endeavour to work closely with the concerned Ministries and Manufacturers' Associations so that the equipments are available at an affordable price. ***The department is conscious of the fact that Broadband services can reach the urban and rural consumers only if services are offered at affordable and easy terms. Department of Telecommunications will work out a package in consultation with Ministry of Finance and related Departments as well as concerned service providers to achieve this."***

(xi) Imposition of license fee on internet service will not be consistent with the Broadband policy and policy objectives. Considering the overall objective of providing affordable broadband services and pushing Internet and Broadband to catalyze economic and social development of a country, there should not be any license fee on internet and broadband services.

(xii) In view of above we suggest

Revenue slab based license fee on all licensed services except internet;

b) Services which are offered under registration should not subjected to license and license fee should be chargeable.

44. If introduced, what should be the rate of uniform License Fee?

(i) As suggested above, Government should introduce a revenue slab based licence fee regime for telecom services as well

II. Reduced requirement of contribution towards Universal Service Obligation levy

(ii) Service providers contribute towards USO Fund a uniform levy of 5% of the AGR. The levy at one point of time was necessary to subsidize service providers to rollout services in rural and remote areas. With the expansion of mobile services, the growth is now seen mostly in the rural and remote areas and thus contributing to the objective of bridging the digital divide.

(iii) The USO Fund corpus is growing on year on year basis and USO Fund collection far exceeds the disbursement. The current USO Fund corpus is more than Rs 14,000 crores and expected to bloat further with increasing trend of revenues.

(iv) The USO levy should be in line with the universal service objectives and actual requirements. Since contribution for the USO Fund is ultimately passed on to the consumer, excessive levy of license fee is not in the consumer interest. At this stage there is strong case to reduce the USO levy, perhaps to the level of 3% to 3.5% of the gross revenue.

III. Anomaly of charging higher license fee from Access Providers

(v) There also exists an anomaly wherein the burden of licence fee is higher on the capital intensive Access Service which also have rollout obligations, whereas the same is lower at 6% for NLD/ ILD service without any rollout obligation.

IV. Impact of GST on Government Revenues

(vi) By introducing GST, the Government revenues from telecom services will increase as the GST rate are expected to be more than the service tax , VAT etc. Since GST rate is expected to be more than service Tax, consumers would have to bear higher burden of Government levies. Therefore, the Government should consider reducing license fee so that consumer is not adversely impacted.

V. Impact of Higher License Fee on Competition

(vii) While it may appear on the surface that license fee is even handed and proportionate but new operators have disproportionately effect on various licensees. New operators will be hard hit with the increase in regulatory cost. Lower margins at disposal of new operators impact their investment plans which in turn impact their capability to compete effectively with the established operators. Higher license fee would especially impact service providers who are operating in less lucrative circles and would have to pay a higher license fee equivalent to more viable category.

VI. Adverse impact on investment plans in Circle B and C

(viii) Government had imposed lower license fee in Circle B and C to provide incentives for investments and faster rollout of services. Lower license fee incentivises higher investment in B and C circles although these markets are less lucrative. Higher license fee than the current levels will have an adverse impact on investments by telecom players in B and C category circles, especially new operators.

VII. Higher license fee for operators having excess spectrum

(xvi) Current Licenses have linked spectrum of 2x5 MHz for CDMA systems and 2x6.2 MHz for GSM based systems. Many incumbent operators have obtained excess spectrum without any criteria and without any extra payment. This has provided undue advantage to these service providers and created an artificial scarcity of spectrum and entry barrier for new operators. The excess spectrum for GSM operators have not only guarded them against competition but also helped them to save capital expenditure on installation of towers and other use of other spectrum efficiency enhancement techniques. The advantage available with the incumbent operators should be taxed in form of higher license fee. It is therefore proposed that incumbent operators with excess spectrum should be charged double license fee for each MHz of spectrum.

(ix) In view of the above it is suggested that:

a) The license fee should be defined based on Revenue slab basis;

b) Licence fee can be fixed based on GR or AGR as desired by Government

c) License fee for Service providers having spectrum beyond contractual limit of 2x5 MHz for CDMA systems and 2x6.2 MHz for GSM systems should doubled for every MHz beyond 2x6.2 MHz..

d) the license fee should take into account actual requirement for USO Fund and charge accordingly.

Spectrum assignment

45. If the initial spectrum is de-linked from the licence, then what should be the method for subsequent assignment?

(i) Please refer to our detailed views under Issue No 7

(ii) The UASL provides allocation of spectrum up to 2x6.2 MHz for TDMA systems and 2x5 MHz for CDMA based systems. As per the DOT before the Hon'ble TDSAT in the matter of COAI Vs UOI in petition no 286/2007, the spectrum allocation up to 2x6.2 MHz for TDMA systems is a contractual obligation under the license.

(iii) The Authority has also correctly noted in the consultation paper that the license condition provide for assignment of spectrum up to 2x6.2 MHz in case of GSM and 5MHz in case of CDMA.

(iv) The Licensee and the licensor are bound by the licensing conditions. Licensing conditions and regularity in release of spectrum have resulted in *legitimate expectation* on part of service providers to receive spectrum upto 2x6.2 MHz for TDMA systems and 2x5 MHz for CDMA systems. The service providers have signed the UASL and entered into telecom business on the expectation that spectrum as promised shall be made available. The spectrum is basic raw material to provide voice and data services and therefore the license raises *'legitimate expectation'* to receive the allocation of contractual spectrum.

(v) The reversal of spectrum allocation to delink spectrum allocation from the licensing conditions would be against the level playing field. The reversal of policy must pass through the legal tests which have been provided in the doctrines of " *level playing field*", " *Legitimate expectancy*" and " *Promissory Estoppels*". We have submitted above that the delinking of contractual spectrum from the license would fail on all these three accounts.

(vi) In view of above it is submitted that

a) The allocation of spectrum in 800 MHz, 900 and 1800 MHz spectrum cannot be de-linked for the existing UAS licenses.

b) ***The new UASL License can be de-linked from spectrum in 800, 900 and 1800 MHz band. They can be allotted spectrum through auctioning after ensuring that all the existing UASL have received the mandated 2x6.2 MHz in TDMA and 2x5 MHz in CDMA.***

. 46. If the initial spectrum continues to be linked with licence then is there any need to change from SLC based assignment?

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47. In case a two-tier mechanism is adopted, then what should be the alternate method and the threshold beyond which it will be implemented?

(i) Incumbent operators have already been assigned spectrum more than the contracted threshold and in that process most of the 2G spectrum has already been assigned. Since spectrum requirement in most dense urban areas is only 2x6.2 MHz, it is proposed that spectrum beyond 2x6.2 MHz for GSM systems should not be allocated. Any operator having excess spectrum should be asked to return the excess spectrum.

I. Allocation of additional spectrum without any policy or guidelines

(ii) Before considering any alternate method for allocation of spectrum, it is imminent to consider legacy allocation of spectrum to incumbent operators. The Ist and 2nd cellular operators obtained additional spectrum without any guidelines, policy or subscriber linked criteria. Many 4th cellular license received 2x6.2 MHz spectrum in one go. Not only that, for some licenses spectrum was allocated in 900 MHz spectrum band, although, the license condition required allocation in 1800 MHz spectrum band. Delinking of spectrum at this stage would be against the natural justice and against the level playing field.

II. Allocation of spectrum using benchmarks which led to inefficient utilization and hoarding

(iii) The Authority in its recommendations dated 27.8.2007 noted that with the same amount of spectrum, some service providers are able to serve more than three times the subscribers the number specified in the spectrum allocation criteria and some of the service providers have excess spectrum as their actual subscribers are far below the subscriber numbers specified in the allocation criteria. In view of the position, the Authority felt that there is need to tighten the subscriber linked criteria.

(iv) By hoarding large amount of spectrum, the incumbent operators had put a barrier on entry of new operators.

III. Impact of launch of services by dual technology operators on competition

(v) It may be appreciated that with the launch of services by dual technology operators, the tariffs have crashed by more than 50%. Subscribers are also getting additional services like SMS, STD, roaming etc at the local call rates. New operators have broken the cartel of few operators who were charging exorbitant amounts from the subscribers.

IV. Impact of legacy assignment of spectrum on competition

(vi) The legacy allocation of spectrum to incumbent operators without any policy or guidelines much beyond the contractual obligation and even without payment of additional license fee has given undue benefit to these incumbent operators. It would not be appropriate and consistent with the level playing requirement to change the spectrum allocation criteria when only small part of the spectrum is left for allocation.

(vii) The incumbents have already been allocated spectrum in excess of contractual threshold. Any new allocation criteria or setting up of committees for determining new spectrum thresholds would delay the allocation process to new operators and consolidate the incumbency.

(viii) In view of the above, it is suggested that:

a) The initial spectrum should be continued to be linked with licence and additional spectrum upto 2x6.2 MHz is assigned on the basis of SLC for the existing UASL;

b) In case a spectrum cap of more than 2x6.2 MHz is fixed for GSM spectrum, the allocation beyond 6.2 MHz should be charged at a price determined by indexing per MHz fee paid by fourth cellular licencee in 2001 by 4 times of AGR or at a rate based on 3G auction determined price—whichever is higher. The spectrum beyond 2x6.2 MHz should be allotted on the basis of subscribers linked criteria of TRAI which was adopted by DoT on 17.01.2008.

c) The new UASL License can be de-linked from spectrum in 800, 900 and 1800 MHz band. They can be charged for spectrum at a price determined by indexing per MHz fee

paid by fourth cellular licencee in 2001 by 4 times of AGR or at a rate based on 3G auction determined price—whichever is higher.

48. Should the spectrum be assigned in tranches of 1 MHz for GSM technology? What is the optimum tranche for assignment?

(i) No, spectrum up to contractual threshold should be assigned in two installments, initial allocation of 2x4.4 MHz spectrum and additional spectrum allocation of 2x1.8 MHz after meeting the subscriber linked benchmarks

(ii) All incumbent operators have been allocated spectrum in trenches of 2x4.4 MHz or 2x1.8 MHz. Following 4th cellular operators received 2x6.2 MHz spectrum in one tranche although license clearly provided initial allocation of 2x4.4 MHz. that spectrum Any other criteria would provide competitive advantage to incumbents as new entrants would have to spend additional investment to provide matching quality of service.

(iii) Consumers have benefited from new competition from launch of services from dual technology operators. The Authority is requested to provide level playing field so that competition is nurtured and sustained. Delay in release of additional spectrum would delay expansion of services as that would require additional expenditure in already covered areas to provide quality service.

(iv) Service providers awaiting additional spectrum with in the contractual limit have "legitimate expectation" to receive additional 1.8 MHz spectrum on meeting the specified subscriber benchmarks in the manner other operators received additional allocation of spectrum.

(v) In view of above it is suggested that:

a) ***additional spectrum allocation of 2x1.8 MHz within the contractual threshold should be assigned in one tranche;***

49. In case a market based mechanism (i.e. auction) is decided to be adopted, would there be the issue of level playing field amongst licensees who have different amount of spectrum holding? How should this be addressed?

(i) Yes there will be an issue of level playing field in case market based mechanism is decided to allocate spectrum in 800, 900 and 1800 MHz band for 2G services.

(ii) Incumbent operators have obtained spectrum above the contractual threshold without payment of any additional fee. The incumbents have cornered nearly 10 MHz spectrum in many circles, and in that context it would be unfair for other operators to obtain the spectrum at market value.

(iii) The Authority also noted in its recommendations dated 27.8.2007 that the prevailing practice of allocating spectrum would impact the level playing field in case operators are now required to obtain the spectrum from the market value. The relevant portion of the recommendation is given below:

"…..Some stakeholders have viewed the charges/fee as a hybrid model of extracting economic rent for the acquisition and also meet the criterion of efficiency in the utilization of this scarce resource. The Authority in the context of 800, 900 and 1800 MHz is conscious of the legacy i.e. prevailing practice and the overriding consideration of level playing field. Though the dual charge in present form does not reflect the present value of spectrum it needed to be continued for treating already specified bands for 2Gservices i.e. 800, 900 and 1800 MHz. It is in this background that the Authority is not recommending the standard options pricing of spectrum, however, it has elsewhere in the recommendation made a strong case for adopting auction procedure in the allocation of all other spectrum bands except 800, 900 and 1800 MHz"

(iv) In case market based mechanism is to be decided it would fair to withdraw excess spectrum allocated to incumbents auctioned to all service providers.

In view of the above it is suggested that:

a) There should not be allocation of 2G spectrum through market mechanism;

b) ***In case market based mechanism for allocation of 2G spectrum is decided, to be fair and to maintain the level playing field excess spectrum above the contractual threshold should be withdrawn.***

50. In case continuation of SLC criteria is considered appropriate then, what should be the subscriber numbers for assignment of additional spectrum?

(i) Incumbent operators have already been assigned spectrum more than the contracted threshold and in that process most of the 2G spectrum has already been assigned.

(ii) The Government adopted TRAI recommended subscriber benchmarks on 17.1.2008 for additional allocation of spectrum. Any new allocation criteria or setting up of committees for determining new subscriber benchmarks would delay the allocation process and new operators would especially be impacted. The Government may review the subscriber linked criteria after 3 or 4 years.

(iii) Consumers have immensely benefited from new competition from dual technology operators. The Authority is requested to recommend early release of additional spectrum so that operators could enhance capacities and compete effectively with the incumbent operators.

(iv) In view of the above it is suggested that :

a) Additional spectrum may be released as per the TRAI recommended subscriber benchmarks which are currently in operations from 17.1.2008.

51. In your opinion, what should be the method of assigning spectrum in bands other than 800, 900 and 1800 MHz for use other than commercial?

(i) Government should only recover administrative fee for non-commercial assignment of spectrum for Government agencies.

(ii) The current spectrum assignments should be re-farmed and all commercial spectrum bands should be relocated.

(iii) The current payments of spectrum fee and auctions should be used to relocate current usage to other spectrum bands or fibre based networks.

Spectrum pricing

52. Should the service providers having spectrum above the committed threshold be charged a one time charge for the additional spectrum?

(i) All the operators having spectrum allotment beyond 2x6.2 MHz of contractual spectrum should be asked to return all the excess spectrum to maintain a level playing field.

(ii) In case, spectrum above the committed threshold is permitted, operators should be charged a one-time license fee for the additional spectrum.

(iii) Spectrum is a finite natural resource and therefore allocation of excess spectrum to incumbents beyond the committed threshold has resulted in scarcity of spectrum and preventing allocation of spectrum to other service providers. The allocation of excess spectrum beyond contractual limit on hand has led to saving of CAPEX and OPEX by the incumbent operators which have provided unfair advantage and on the other hand delaying onset of fresh competition as number of operators are even waiting for allocation of initial spectrum for launch of services.

I. *What is Contractual threshold for Allocation of Spectrum?*

(i) The 1st and 2nd cellular licenses were issued in 1994 for metro cities of Delhi, Mumbai, Kolkata and Chennai which had no provision for allocation of spectrum beyond 2x2x4.4 MHz. the relevant portion of the license is given below:

"20.2 A cumulative maximum of upto 4.5 MHz in the bands 890-902.5 and 935-947.5 MHz would be permitted based on appropriate justification. Exact 200 KHz RF channel frequencies will be assigned contiguously as far as practicable on case by case basis, after due coordination, wherever considered necessary."

(ii) In 1995, DoT issued cellular mobile service license for all remaining service areas. The same condition 20.3 mentioned above was also part of these licenses i.e this license also specified a threshold limit of 2x2x4.4 MHz for spectrum allocation.

(iii) As per the NTP'99 and TRAI recommendations, DoT issued two more cellular mobile telephone service license in 2001 for all service areas. One license was issued to BSNL/MTNL and other to the private operators. The relevant license condition dealing with spectrum allocation and threshold limit for allocation is reproduced below:

"24.7The frequencies shall be assigned by WPC from the designated bands prescribed in National Frequency Allocation Plan - 2000. (NFAP-2000). Appropriate frequency spots in frequency-band of _____ MHz paired with _____ MHz will be assigned. A cumulative maximum of upto 4.4 MHz + 4.4

MHz will be permitted. Based on usage, justification and availability, ***additional spectrum upto 1.8 MHz + 1.8 MHz making a total of 6.2 MHz +6.2 MHz,*** *may be considered for assignment, on case by case basis, on payment of additional Licence fee. The bandwidth upto maximum as indicated i.e. 4.4 MHz & 6.2 MHz as the case may be, will be allocated based on the Technology requirements. (e.g. CDMA @ 1.25 MHz, GSM @ 200 KHz etc.). The frequencies assigned may not be contiguous and may not be same in all cases, while efforts would be made to make available larger chunks to the extent feasible."*

(iv) In year 2003, the DoT introduced the Unified Access Service Regime. The relevant provision of UAS License for spectrum allocation from existing Cellular Mobile Telephone Service is reproduced below:

"43.5.(i) For wireless operations in SUBSCRIBER access network, the frequencies shall be assigned by WPC wing of the Department of Telecom from the frequency bands earmarked in the applicable National Frequency Allocation Plan and in coordination with various users. ***Initially a cumulative maximum of upto 4.4 MHz + 4.4 MHz shall be allocated in the case of TDMA*** *based systems (@ 200 KHz per carrier or 30 KHz per carrier) or a maximum of 2.5 MHz + 2.5 MHz shall be allocated in the case of CDMA based systems (@ 1.25 MHz per carrier), on case by case basis subject to availability. While efforts would be made to make available larger chunks to the extent feasible, the frequencies assigned may not be contiguous and may not be the same in all cases or within the whole Service Area. For making available appropriate frequency spectrum for roll out of services under the licence, the type(s) of Systems to be deployed are to be indicated.*

43.5(ii) ***The Licensee operating wireless services will continue to provide such services in already allocated/contracted spectrum****."*

(v) In the new unified service license, the relevant clause for allocation spectrum is discussed below:

"43.5.(i) For wireless operations in SUBSCRIBER access network, the frequencies shall be assigned by WPC wing of the Department of Telecom from the frequency bands earmarked in the applicable National Frequency Allocation Plan and in coordination with various users. Initially a cumulative maximum of upto 4.4 MHz + 4.4 MHz shall be allocated in the case of TDMA based systems @ 200 KHz per carrier or 30 KHz per carrier or a maximum of 2.5 MHz + 2.5 MHz shall be

allocated in the case of CDMA based systems @ 1.25 MHz per carrier, on case by case basis subject to availability. While efforts would be made to make available larger chunks to the extent feasible, the frequencies assigned may not be contiguous and may not be the same in all cases or within the whole Service Area. For making available appropriate frequency spectrum
for roll out of services under the licence, the type(s) of Systems to be deployed are to be indicated.

43.5(ii) Additional spectrum beyond the above stipulation may also be considered for allocation after ensuring optimal and efficient utilization of the already allocated spectrum taking into account all types of traffic and guidelines /criteria prescribed from time to time. However, spectrum ***not more than*** ***5 + 5 MHz in respect of CDMA system or 6.2 + 6.2 MHz in respect of TDMA based system shall be allocated*** *to any new Unified Access Services Licensee. The spectrum shall be allocated in 824-844 MHz paired with 869 - 889 MHz, 890 -915 MHz paired with 935 - 960 MHz, 1710 – 1785 MHz paired with 1805 – 1880 MHz.".*

(vi) From all licenses referred above it is clear that there is a contractual threshold of 2x4.4/ 2x6.2 MHz for allocation of GSM spectrum. The spectrum allocated beyond is in violation of the license conditions.

II. What flaws are there in the Spectrum Committee Report with regard to contractual threshold for spectrum allocation?

(vii) **The Spectrum Committee report is flawed in respect of number of recommendations.** As an example, the Committee report has provided the option to allottees of spectrum beyond 6.2 MHz, to go to a flat revenue share of 3% while simultaneously paying an upfront per MHz fee for the spectrum beyond 6.2 MHz, **or** to stay with the revenue share regime in practice today plus a payment of 1% more. With this recommendation, the committee recognizes the right of GSM service providers to get spectrum from 2x4.4 MHz to 2x6.2 MHz without payment of any upfront/onetime fee. However, in the case of licencees who have only 2x4.4 MHz today, the report requires them to pay additional upfront fees to acquire spectrum from 2x4.4 to 2x6.2 MHz via an auction process. This is an anomaly which unfairly burdens operators awaiting contractual allocation of spectrum and harms competition.

III. What is Spectrum Requirement by service providers?

(viii) The TRAI has obtained an expert advice on spectrum requirement to deploy a 2G network with reasonable levels of spectrum efficiency and to satisfy the subscriber needs in the densest areas. We do not agree with the TRAI analysis. As proved above, allocation of 2x6.2 MHz is sufficient to meet the spectrum requirement of even most dense urban areas.

(ix) <u>In view of the above it is suggested that:</u>

a) Any allocation of spectrum beyond 2x6.2 MHz may be withdrawn.

53. In case it is decided to levy one time charge beyond a certain amount then what in your opinion should be the date from which the charge should be calculated and why?

(i) As per the license conditions, spectrum beyond the contractual threshold is not allowed.

(ii) In 2001, the DoT issued license for the 4th cellular operator. The relevant license condition dealing with spectrum allocation and threshold limit for allocation is reproduced below:

"24.7 The frequencies shall be assigned by WPC from the designated bands prescribed in National Frequency Allocation Plan - 2000. (NFAP-2000). Appropriate frequency spots in frequency-band of _____ MHz paired with _____ MHz will be assigned. A cumulative maximum of upto 4.4 MHz + 4.4 MHz will be permitted. Based on usage, justification and availability, additional spectrum upto 1.8 MHz + 1.8 MHz making a total of 6.2 MHz +6.2 MHz, ***may be considered for assignment, on case by case basis, on payment of additional Licence fee.***

(iii) In line with above licensing condition it is suggested that:

a) One time charges are payable from the date the date of allocation of excess spectrum.

54. On what basis, this upfront charge be decided? Should it be benchmarked to the auction price of 3G spectrum or some other benchmark?

(i) The one time spectrum fee for the quantum of spectrum allotted beyond the contracted threshold can be derived out of per MHz charge from the Entry fee of Rs 1,650 Crores. The per MHz charge should be indexed from the date of allocation using appropriate indexing method. Few methods are suggested below:

- Indexing to the increase in telecom revenue from 2001 till date
- Based on price determined through 3G spectrum auction, as adjusted for efficiency of the spectrum band.

(ii) The GDP growth conveys overall growth of the economy but telecom growth is much more than GDP. Similarly the PLR is based on various factors-not connected with telecom and telecom sector had a much higher growth compared to the PLR.

(iii) We suggest charges for spectrum band should be at least 4 times of equivalent price discovered in 2.1 GHz 3G auction as spectrum in 900 MHz is much more economically profitable and value-able. Operators holding excess spectrum should be immediately asked to pay the interim charges based on the reserve price of the spectrum; while the balance amount can be paid post auction once true value is discovered in the various service areas.

55. Should the annual spectrum charges be uniform irrespective of quantum of spectrum and technology?

(i) *N*o, spectrum charges should not be uniform irrespective of quantum of spectrum and technology.

(ii) The current policy of escalating spectrum charges for higher allocation of spectrum was adopted to discourage substitution of physical infrastructure by spectrum when spectrum is assigned based on administratively determined subscriber thresholds. There is no logic to impose a lower flat spectrum usage charge across all operators irrespective of their spectrum holding. An impractical move such as this will create inefficient utilization of spectrum by those operators, who have already got additional spectrum beyond licensed 2x6.2 MHz free of charge.

(iii) Uniform spectrum fee will create a non-level playing field between new and established operators providing enormous regulatory benefit for operators holding larger chunk of spectrum. The current charge for spectrum up to 2x4.4 MHz is 2%; which has been proposed by the Spectrum Committee to be enhanced to flat 3% hence all the new entrant operators with the startup 2x4.4 MHz spectrum will end up paying 50% more spectrum charges but on the other hand, the established large operators will stand to gain as their annual spectrum charges liability would substantially reduce. The uniform spectrum fee

would benefit only established operators which have been allotted spectrum between 8 to 10 MHz in most of the service areas.

(iv) The graded escalating spectrum charges were recommended by the TRAI in its recommendation dated 28th August, 2007. The TRAI had recommended higher charges for higher quantum of allocated spectrum so to discourage spectrum hoarding. The relevant portion of the recommendation is given below:

"*Keeping in view the scarcity of the spectrum, there is a need to deploy spectral efficient technologies, if necessary through capital infusion, and to curtail the hoarding of spectrum. Tightening the norms for spectrum allocation, linking it with rollout obligation and a marginal rate revision; it is felt, would make the service providers look for technical solutions and effective utilization of this very scarce resource. "*

(v) The principle of higher spectrum charges for higher allocation of spectrum should be followed scrupulously for promoting efficient use of spectrum. The spectrum usage charges beyond 2x6.2 MHz should be steeply increased so that scarce spectrum is utilized efficiently. An added benefit of escalating spectrum charge rate would be revenues of the order of thousands of crores that will accrue to the Government.

(vi) A move to levy uniform flat fee will result in the Government losing thousands of crores of Rupees over the next couple of years and huge benefit of regulatory cost savings for the incumbent operators. This will result in the killing of competition and driving new entrants out of the market within a couple of years of issuing new licenses.

(vii) In view of the above it is suggested that:

a) The present principle of higher spectrum charges for higher allocation of spectrum should be followed.

b) The spectrum usage charges beyond 2x6.2 MHz should be steeply increased so that scarce spectrum is utilized efficiently.

56. Should there be regular review of spectrum charges? If so, at what interval and what should be the methodology?

(i) There can be review of spectrum charges rate but the principle of charging should remain same. Operators allocated more spectrum should be liable to pay spectrum charges at

higher rates. The spectrum charge should increase considerably beyond the contractual limit.

Structure for spectrum management

57. What in your opinion is the desired structure for efficient management of spectrum?

(i) The existing structure of WPC may be continued. However, the DoT may ensure that WPC follows the rules and regulations, thoroughly.