

**TRAI'S CONSULTATION PAPER ON "SPECTRUM RELATED ISSUES"**

Sl. No.	Issues	Comments																		
	<b>Chapter-2: Current spectrum availability and requirement.</b>																			
(i)	Should the 450 MHz or any other band be utilized particularly to meet the spectrum requirement of service providers using CDMA technology?	Development works in the 450 MHz band for mobile equipment is still going on. This band may be kept open for both GSM and CDMA technologies.																		
(ii)	The consultation paper has discussed ITU method for assessment of spectrum requirement. Based upon the methodology submit your requirement of spectrum for next 5 years. While calculating the required spectrum, please give various assumptions and its basis.	<p>The present status, anticipated growth in telecom services and expected future requirement of spectrum for BSNL is estimated to be as follows.</p> <p><b>A) Present status:</b></p> <table border="1"> <thead> <tr> <th></th> <th align="center">GSM</th> <th align="center">CDMA</th> </tr> </thead> <tbody> <tr> <td>Capacity</td> <td align="center">5955080</td> <td align="center">720150(U)+1557850 (R)</td> </tr> <tr> <td>Wkg. Connections</td> <td align="center">5777028</td> <td align="center">339044(U)+723805(R)</td> </tr> <tr> <td>Spectrum</td> <td align="center">2 X 6.2 MHz</td> <td align="center">2 X 5 MHz</td> </tr> <tr> <td>Expansion in 04-05</td> <td align="center">7000000</td> <td align="center">2550000</td> </tr> <tr> <td>New services</td> <td align="center">GPRS,EDGE, WCDMA etc.</td> <td align="center">CDMA 2000 1x</td> </tr> </tbody> </table> <p><b>B) Growth:</b></p> <p>As indicated above, the present spectrum allotted to BSNL specifically for GSM cellular operation is 6.2 Mhz. With the present growth rates in some of the cities, there is a need for increased bandwidth requirements to provide additional capacities.</p> <p>With a specific reference to the requirement of spectrum for the next 5 years, we need to look at the possible growth of cellular mobile services in the country and the targeted market share of BSNL.</p> <p>Presently, India's population is around 103 crore</p>		GSM	CDMA	Capacity	5955080	720150(U)+1557850 (R)	Wkg. Connections	5777028	339044(U)+723805(R)	Spectrum	2 X 6.2 MHz	2 X 5 MHz	Expansion in 04-05	7000000	2550000	New services	GPRS,EDGE, WCDMA etc.	CDMA 2000 1x
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with approx. 30% residing in urban and 70% in rural areas. It is presumed that, unlike in the case of fixed line where the saturation in the market is being witnessed in the urban areas at around 15% penetration, the mobile penetration (both GSM & CDMA) may saturate at around 60-70%. Of course, in rural areas with penetration of only around 1.5% in fixed line as on date, it is expected to grow faster and may reach a penetration level of about 20%, if investment in rural areas is properly encouraged and supported by the Government and the regulator through conducive regulatory policies. It is expected that growth may be even higher in rural areas. Assuming the population at the present level, the expected mobile connections to be subscribed shall be around 39-40 crores by 2010. Presently, with around 57 lakhs connections, the market share of BSNL is around 25% in the areas of its jurisdiction amongst the GSM operators. If CDMA and the metro operators subscribers' strength is also taken into account, it works out to be around 17-18%. It is expected that BSNL shall continue to maintain its market share at the present level of 25% within its area of jurisdiction and with the thrust on providing a national footprint, it is expected to capture a higher market share in future years. Even if the trend of present market share is maintained and continued till 2010, the total mobile connections that shall be provided by BSNL shall be around 9-10 crores in next five year's time frame. Keeping aside a possibility of netting of 2 crores subscribers by the year 2010 based on CDMA technology, the subscribers to be serviced by GSM based mobile services are expected to be around 8 crores.

Accordingly, the expected growth pattern of BSNL for GSM based mobile connections up to 2010 is given as below: -

	2004	2005	2006	2007	2008	2009	2010
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GSM CUSTO MERS	10 million	25 m	40 m	52 m	62 m	72 m	80 m
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**C) Spectrum Requirement:**

BSNL has been licensed to operate in 21 different licensed service areas. Based on the above projections up to 2010, if the total expected subscribers are to be distributed evenly, it is expected that each of the licensed service areas shall have around 4 million customers. However, in some of the minor circles viz HP, NE, Assam, J&K etc, it is expected to reach around 2.5M customers. On the other end, major Circles such as Gujarat, Maharashtra, TN, Kerala, AP, Karnataka, UP etc. are expected to have a subscriber base of around 4M each. For the sake of analysis, the metros such as Chennai, Kolkata, Hyderabad, Bangalore, Ahmedabad, which are expected to net around 2-2.5M customers by 2010, have been examined.

Invariably the growth in terms of number of cell sites shall be dictated by the inter cell distance specifically in the hot spots of Central Business District (CBD). The criticality of the same shall enforce the need for higher spectrum requirements. In the major metros like Chennai and Kolkata, the maximum number of BTSs, which can be installed, shall be around 400 numbers. This will enforce the inter cell distance to around 400 mtrs not only in CBD but also in major part of the cities. In hypothetical situation of growing to a configuration of 6+6+6 in each of the sites providing a subscriber handling capability of around 2700, it shall enable to have a growth of 1M only. This again is a hypothetical assumption, as the subscriber density across the city is not expected to be uniform.

Further, the interference level will also be another criteria which shall dictate the need for keeping a

		<p>minimum distance of inter cell sites. The present experience of providing basic voice telephony with a C/I of 9db has provided an insight in keeping a minimum distance of around 400 meters. The enhanced C/I requirement of 16 db for GPRS /EDGE shall dictate a higher inter cell distance in order to reduce interference possibilities. This has to be experienced before a proper assessment can be made. In any case, the inter cell site distance will have to be kept higher which will further push down the number of maximum BTSs for a specific city. It is, therefore, expected that by year 2010, the GSM operators including BSNL will require at least 2 x 20 Mhz. This spectrum requirement shall further increase as the popularity of 3G services increases. It is expected that the requirement of minimum 2 x15 Mhz will be felt by financial year 2005-06 itself, the time by which GPRS and EDGE facility shall be available in BSNL's network.</p>
(iii)	<p>Whether IMT 2000 band should be expanded to cover whole or part of 1710-1785 MHz band paired with 1805-1880 MHz?</p>	<p>No. Since 1710-1785 MHz band paired with 1805-1880 MHz band is allocated for 2G services for both GSM and CDMA, there is no need to expand the IMT-2000 band to cover that band in the Indian context. Moreover, both WCDMA and CDMA 2000 equipment are available for WARC-92 bands. Some countries have already licensed different IMT-2000 technologies in the WARC-92 bands and the networks are already in operation.</p>
(iv)	<p>Should IMT 2000 spectrum be considered as extension of 2G or should it be considered separately and provided to operators only for providing IMT 2000 services?</p>	<p>It should not be considered as extension of 2G services. IMT-2000 spectrum should be considered separately and provided to operators only for providing IMT-2000 services.</p> <p>WARC-92 identified the bands 1885-2025 MHz and 2110-2200 MHz for IMT 2000 applications. However, the 1880-1900 MHz band is presently being allotted for micro cellular WLL system based on TDD access techniques.</p> <p>ITU-R recommendation M1457 states that the</p>

		<p>organization of terrestrial radio interface would continue the philosophy that IMT-2000 should comprise a single terrestrial standard encompassing two high-level groupings namely CDMA and TDMA or a combination thereof.</p> <p>CDMA grouping accommodates FDD direct spread, FDD multi-carrier and TDD. The TDMA grouping accommodates FDD and TDD, single carrier and multi-carrier. These groupings satisfy the needs expressed by the global community.</p> <p>The terrestrial radio interface sections are identified as: -</p> <p>IMT-2000 CDMA Direct Spread  IMT-2000 CDMA Multi-Carrier  IMT-2000 CDMA TDD  IMT-2000 TDMA Single-Carrier  IMT-2000 FDMA/TDMA</p> <p>This means that implementation of any of these technologies in the frequency bands identified for IMT-2000 is fully in line with and supported by ITU-R.</p> <p>Licensing of IMT-2000 services in the WARC-92 band has taken place in nearly 40 countries. Only in USA, allocation of IMT-2000 services has been done in a band different from WARC-92 band. In countries like Japan and Korea, having both GSM and CDMA networks, the WARC-92 band has been allocated for introducing 3G services either by WCDMA technology or by CDMA 2000 technology. The point is that the core band in the WARC-92 band namely 1920-1980 MHz paired with 2110-2170 MHz should be exclusively reserved for providing IMT-2000 services for both i.e. GSM operators and CDMA operators.</p> <p>Allowing simultaneous use of WARC-92 bands by IMT-2000 and PCS 1900 will result in a chaotic condition wherein spurious emissions and</p>
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		<p>wideband noise from the PCS 1900 base stations transmitters will affect any subsequent use of WARC-92 bands. To mitigate the interference problems, introduction of external filters on all the PCS 1900 base stations and IMT-2000 base stations in the WARC-92 bands would become necessary. This will add to the capital cost of all the operators using these bands besides degrading the network performance. The introduction of external filters will further result in inefficient use of the spectrum.</p>
(v)	<p>Reorganisation of spot frequencies allotted to various service providers so as to ensure the availability of contiguous frequency band is desirable feature for efficient utilization of spectrum. Please suggest the ways and means to achieve it</p>	<p>The approach of the government and WPC should be to provide contiguous frequency band to mobile operators. The present allotment of spectrum is not contiguous e.g. in the case of BSNL, 6.2 MHz spectrum has been provided in as much as 8 bands. While competitors have the inherent advantage due to this, BSNL has been put at a disadvantageous position in a market where competition is intense and thereby adversely affecting the level playing field. The allotment of contiguous frequency band is essential due to following reasons: -</p> <ol style="list-style-type: none"> <li>1) Effective utilization of frequency spectrum, as there will be very little requirements for guard band.</li> <li>2) There will be less interference issues.</li> <li>3) The broadband repeaters can be utilized. The deployment of such repeaters in present case will boost competition as well.</li> </ol> <p>The reorganization of the frequency spectrum is essential and contiguous spectrum be allotted in the same band. The various methodology may be adopted for allotment/release of contiguous spectrum: -</p> <ol style="list-style-type: none"> <li>1) The operators may be asked to reorganize the spectrum among them, so that each gets benefited.</li> <li>2) The spectrum available with Defence may be got released. The money required for up gradation of the equipments of Defence may be arranged from spectrum charges paid by operators.</li> </ol>

		<p>3) BSNL has repeatedly reported to the licensor, that some of the operators are using frequencies not allotted to them. This unauthorized access needs to be checked from time to time and strict action be taken for violation, if any.</p> <p>4) The spectrum should not be blocked in the name of Defence on all India basis. The spectrum, not used by Defence in a particular area, may be allotted to mobile operators.</p>
(vi)	Whether the band 1880-1900 MHz be made technology neutral for all BSOs/CMSPs/UASLs and be made available with the pair 1970-1990 MHz or should it be kept technology neutral but reserved for TDD operations only.	The band 1880-1900 MHz should not be paired with 1970-1990 MHz and should not be made technology neutral for all BSOs/CMSPs/UASLs. Part of the band 1970-1990 MHz falls in the mobile stations transmitter frequencies in the IMT core band of 1920-1980 MHz. Since the WARC-92 band is to be kept reserved for IMT-2000 services, pairing of the band 1880-1900 MHz with 1970-1990 MHz should not be allowed. BSNL is providing services to rural areas by using Cor-DECT technology in the band 1880 – 1900 MHz. The band 1880 – 1900 MHz should continue to be reserved for micro cellular WLL systems using indigenous technologies.
	<b>Chapter-3: Technical efficiency of spectrum utilisation.</b>	
(vii)	Please offer your comments on the methodology outlined in this Chapter for determining the efficient utilization of spectrum. Also provide your comments, if any, on the assumptions made.	<p>The licenses awarded by the Govt are technology neutral and operators are free to choose a technology. Obviously different technologies shall have their own Spectral Utilisation Efficiencies (SUE) due to different modulation technique adopted by each one of them.</p> <p>Each of the operators licensed to operate the services may evaluate each of the technology and use it for different applications as the case may be. Thus, the spectral efficiency alone cannot be the yardstick for the operator to choose the technology.</p> <p>The choice of technologies has to be weighed along with various facilities offered by such technologies viz. economy of scale, international roaming, the proven ness of the technology, migration path</p>

		<p>feasibilities for future roll out of services etc. While CorDect technology may not be highly spectral efficient, it also has its own utility such as deployment in the rural network, which are low-density areas.</p> <p>Based on the Spectral efficiency as the yardstick for providing additional spectrum as stipulated in the consultation paper is not considered appropriate as it shall vary from one technology to another. While methodology adopted for spectrum efficiency is generally agreeable, but its application need to be technology specific. The applicability of the same methodology across the technologies will be discriminately and inappropriate for levy of any penalty and incentive.</p>
(viii)	Please provide your perception of the likely use of data services on cellular mobile systems and its likely impact on the required spectrum including the timeframe when such requirements would develop?	The use of data services on cellular mobile systems is already growing and a lot of new applications are also being developed with GSM technology. BSNL is about to start GPRS services and has plans to introduce EDGE during the current financial year. When full-fledged 3G services will be introduced there will be huge demand for spectrum for providing these services. BSNL would require at least 15+15 MHz in the band 1920-1980 MHz paired with 2110-2170 MHz. The time frame for this requirement will be 2005-2006.
<b>Chapter-4: Spectrum Pricing</b>		
4.10 (ix)	Is there a necessity to change from the existing revenue share method for determining the annual spectrum charge?	There is no need for changing the present revenue share method for determining annual spectrum charges based on AGR. However, it may be noted that spectrum is being allocated city wise but revenue share is collected license area wise. The spectrum may be allotted for full license area; otherwise some suitable methodology may be formulated for calculation of AGR city wise or as per the allocation of spectrum with in a license area. Further, to encourage efficient utilisation of the spectrum, relatively higher percentage of revenue share may be levied for additional spectrum.
(x)	If yes, what methodology should be used to determine	Our comments are as above.



(xi)	<p>spectrum pricing for existing and new operators?</p> <p>In the event AIP is adopted as a means to price spectrum, would it be fair to choose GSM as a reference for determining the spectrum price?</p>	<p>According to consultation paper, AIP is calculated on the basis of total saving in the network cost when new spectrum is allotted (other wise more BTS will be required to be installed). In this model, the price would be at such a level which influences the operator to install more BTS rather than asking for more spectrum.</p> <p>The above method of calculation as such is not appropriate. <b>There is a saturation level</b>, in terms of number of BTS with each BTS installed with maximum capacity and minimum inter-BTS distance. In such a case, <b>further expansion will be possible only after provision of additional spectrum</b> since there is no scope for installation of additional BTS except those, which are for meeting indoor solutions. Further, the calculation of no. of BTSs required to compensate for the spectrum will be very subjective and may vary from vendor to vendor and can become a bone of contention and may lead to legal complications. The present method of revenue share is considered very objective. Efficient utilisation of spectrum can be ensured by increasing the percentage revenue share in a relatively higher proportion for higher spectrum.</p> <p>As mentioned earlier, the comparison made with CDMA network is untenable as licenses issued to operators are technology neutral and choice of technology rests with the operators. Comparison, if at all is to be done, should be amongst operators using same technology and not across the technologies.</p>
(xii)	<p>Please provide your comments on the assumptions used in A.I.P.</p>	<p>Already discussed above.</p>
(xiii)	<p>In case auction methodology is used for pricing the spectrum, please give suggestions to</p>	<p>As submitted above, BSNL is of the view that present method of revenue share may continue.</p>

	ensure that spectrum pricing does not become very high and spectrum is available to those who need it.	
(xiv)	Should the new pricing methodology, if adopted, be applicable for the entire spectrum or should we continue with revenue share mechanism till 10 + 10 MHz and apply the new method only for spectrum beyond this?	New pricing methodology, if adopted, should be applicable beyond 10 + 10 MHz.
(xv)	What incentives be introduced through pricing to encourage rural coverage and/or using alternative frequency bands like 450 MHz?	To encourage rural coverage, allocation of up to 5 MHz in the 450 MHz band may be allotted free. Any further allocation beyond 5 MHz may be charged on a nominal basis.
(xvi)	Does M X C X W formulae for fixed wireless spectrum pricing need a revision? If so, suggest the values for M, C, W?	<p>The M x C x W formula for fixed wireless spectrum pricing definitely needs a revision, because it is arbitrary and not related to the aspect of revenue generation.</p> <p>It is submitted that prior to 1.10.2000, spectrum usage charges for fixed radio systems were payable as per guidelines circulated by WPC wing of the Ministry of Communications vide letter No. R-11014/4/87-LR(Pt.) dated 9<sup>th</sup> December, 1987 and No. R-11014/4/87-LRF(Pt.) dated 20<sup>th</sup> July, 1995. Section (V) of the July 95 order specifically dealt with microwave links for CMTS. However, operators were being charged for point to point and point to multi-point systems based on this formula. <b>This anomaly has to be corrected.</b></p> <p>In the meantime, in April 2002 new guidelines for calculation of spectrum charges for the radio systems used as back-haul links for CMTS systems were issued. By these guidelines, the spectrum charges were calculated as a percentage of AGR from cellular mobile services. This principle has not been extended to Point-to-Point microwave systems.</p>

BSNL took up this issue with DOT pointing out draw backs of the 1995 formula such as minimum distance applicable being 60 Kms and charging more for efficient use of spectrum. On persuasion by BSNL revised guidelines for point-to-point systems were issued vide No. R-11014/26/2002-LR dated 1.4.2003. Even though these guidelines provided some relief for the long distance operators, it still has the following drawbacks.

✍️ The present formula using M C & W has no relevance to the possible revenue generation by the use of these spectrum as demonstrated in the following two examples: -

- a) If we consider a small capacity system such as 25 Km long 2 GHz, 2 Mbps system without protection, the annual spectrum charges as per the present formula will be Rs. 2,88,000 per year and the expected leased line revenue as per the latest TRAI guidelines will be Rs. 73,895. Thus, the spectrum charges in this case are 389.7% of the expected revenue.
- b) The spectrum charges for a 60 Kms. long, 6 GHz radio link operating without protection channel is Rs. 14,40,000 per year. If the total capacity of this system is leased out, it would bring a return of Rs. 95,41,734 per year. Thus, the spectrum charges are 15.09% of the revenue that can be generated.

✍️ It is necessary that the spectrum charges are commensurate with the expected revenue as applicable to other services for viable operations and to ensure level playing field. BSNL is, therefore, of the view that instead of following the MCW formula we should take into account the factors of the distance and the bandwidth for point to point and point to multi-point radio systems. The spectrum charges for such links should be maximum of 3% of the expected

		<p>leased line revenue by the use of the allocated spectrum, for a given distance and bandwidth.</p> <p>Alternatively, if it is decided to continue with the MCW formula, the following changes are suggested:</p> <p>Constant Multiplier factor:</p> <p>M = 300 for point to point Microwave Link(s) with end-to-end distance less than or equal to 05 Kms</p> <p>M = 450 for point-to-point Microwave Link(s) with end-to-end distance greater than 05 Kms but less than or equal to 15 Kms.</p> <p>M = 600 for point-to-point Microwave Link(s) with end-to-end distance greater than 15 Kms but less than or equal to 25 Kms.</p> <p>M = 1200 for point-to-point Microwave Link(s) with end-to-end distance greater than 25 Kms but less than or equal to 60 Kms.</p> <p>M = 2250 for point-to-point Microwave Link(s) with end-to-end distance greater than 60 Kms but less than or equal to 120 Kms.</p> <p>M = 3750 for point-to-point Microwave Link(s) with end-to-end distance greater than 120 Kms but less than or equal to 500 Kms.</p> <p>M = 5000 for point-to-point Microwave Link(s) with end-to-end distance greater than 500 Kms.</p> <p>Weighing factor: No change</p> <p>No. of RF Channels (C) :</p> <p>At present, Go and Return channels are considered as two carriers. It is suggested that a pair of Go and Return channels should be taken as a unit i.e. C should be number of duplex RF Channels.</p>
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(xvii)	Should there be different pricing levels for shared spectrum versus spectrum that is allocated with protection? How should this be determined?	Yes, there should be different pricing level for shared spectrum which can be fixed at a minimum applicable percentage of revenue share.
	<b>Chapter-5: Spectrum Allocation</b>	
(xviii)	How much minimum spectrum (refer approach (i) & (ii) in section 5.4) should each existing operator be provided? Give the basis for your comments.	The minimum spectrum required varies from operator to operator for GSM operators. It depends on customer base, traffic per customer and type of services (GPRS/EDGE etc.) available in the Network. This though can not be specified for other operator, BSNL has planned to provide 25 million GSM connection by Dec 2005 and has demanded a minimum spectrum requirement of 2x8 MHz at present and shall require 2x15 MHz in 2005-06 with a total of 2x20 MHz by the year 2010 in each license area.
(xix)	At what stage the amount of spectrum allocation to new entrants be considered in the 800 MHz/900 MHz/1800 MHz frequency bands?	Even in the present situation with 4 GSM operators in a Licence Service Area, the spectrum availability constraints are being expressed. In such a situation it is not advisable to consider additional entrants except in case of Govt identifying surplus spectrum beyond projected requirement of 20 MHz for each operators in the 800/900/1800 MHz.
(xx)	Should spectrum be allocated in a service and technology neutral manner?	<p>No. The licence can be technology neutral but the spectrum allocation cannot be technology neutral. Further, different allocations still exists for different technologies in the 800 MHz and 900 MHz whereas 1800 MHz band is to be shared by the GSM and CDEMA operators. Therefore, spectrum cannot be allocated in a technology neutral manner.</p> <p>The GSM technology uses TDMA modulation technique and its spectrum requirement is different than CDMA.</p> <p>However, GSM and CDMA technologies deliver identical services and hence spectrum allocation can be service neutral. Also, WARC-92 band can</p>

		be allocated in an equitable manner for providing IMT-2000 services by any technology.
(xxi)	What should be the amount of cap on the spectrum assigned to each operator?	There may a cap on the number of operators to ensure that the operators are provided spectrum sufficient enough to provide existing services and are able to migrate to future services. Ideally, there should be no cap on allocation and as such no upper limit should be fixed. But, in multi-operator environment, the requirement of each operator should be considered before any higher allotment of spectrum to any of the operator. However, the present cap of 2x15 MHz in metro and A circles and 2x12.4 MHz in B & C circles will be sufficient for next two years. There will be 2x20- MHz spectrum requirements by the year 2010.
(xxii)	What procedure for spectrum allocation be adopted for areas where there is no scarcity and in areas where there is scarcity?	Ideally there should be no scarcity of spectrum once the licence has been awarded. In fact the Govt. should facilitate operators to meet their obligations as per licence conditions by providing spectrum. According to NFAP, a total of 2x75 MHz (1710-1785 MHz band paired with 1805-1880 MHz band) has been earmarked for 2G services by two technologies. All efforts may be made to free this spectrum for allocating to both GSM and CDMA operators. Even though the IMT 2000 core band 1920-1980 MHz band paired with 2110-2170 MHz band may be free, if should not be allotted for providing 2G services. As stated before, 2x75 MHz spectrum is available for 2G services and there is as such no scarcity of spectrum for 2G services.
(xxiii)	Which competitive spectrum allocation procedure (Auction/Beauty Contest) be adopted in cases where there is scarcity?	Auction may lead to hoarding of spectrum. Beauty Contest is not recommended in view of the disadvantage listed.  Further, spectrum is an enabler for wireless services and all operators licensed for this purpose should be made available the requisite spectrum, as per the present principles of spectrum allocation.
(xxiv)	Should we consider giving some spectrum in 900 MHz	As already stated in Chapter-2, the thrust should be to provide contiguous frequency band. As per the

	band to fourth CMSPs?	licence conditions, 1800 MHz band is allotted to fourth CMSPs. The existing policy or procedure/method to allocate 900 MHz for 3 operators and 1800 MHz for 4 <sup>th</sup> operator should continue. It will be economical for all operators to expand their network in the frequency band in which their systems are already working.
(xxv)	Comments of stakeholders are invited on the minimum blocks such as 2 X 2.5 MHz/2 X 5 MHz of additional spectrum to be allocated to existing service providers in situations where IMT 2000 band is opened as well as in situations where IMT 2000 band is opened as well as in situation where it is not opened. Additionally, comments are also invited on the minimum allocation to new entrants.	As already submitted above, any allotment of spectrum should be based on actual requirement. The allotment of spectrum should be different for different technologies as per the needs for given number of subscribers and type of services. The requirement of operators for next few years, their growth plan, technology used, and services to be offered, expected traffic etc. should be some of the criteria.  IMT – 2000 band should be opened only for providing IMT-2000 services without disturbing the pairing as specified in WARC-92. The allotment from this band should be when operators are able to meet technology requirement and should be allotted in 2x5 MHz blocks.  Since there are already 5 to 6 players for 2G services in each licence area, there is no need to allow new entrants for 3G services.
(xxvi)	In the event that IMT 2000 spectrum is treated as continuum to 2G, should existing operators using spectrum below the specified benchmark be treated as those eligible for IMT 2000 spectrum?	IMT-2000 spectrum (1920-1980 MHz paired with 2110 – 2170 MHz) should be allotted only for introduction of IMT-2000 services. The 3G equipment is available in IMT 2000 band.  The existing operators albeit using spectrum below the bench mark may have to provide services in line with the competitors to its subscribers and may be enabled by allocation of spectrum in IMT 2000
	<b>Chapter-6: Re-framing, Spectrum trading, M&amp;A and surrender</b>	
(xxvii)	What approach should be	The Government should take proactive stand for

	<p>adopted to expedite the re-farming of 1800 MHz and IMT 2000 spectrum from existing users?</p>	<p>the release of spectrum in the band 1800 MHz and IMT 2000 band. The telecom is very important part of infrastructure and growth in telecom ultimately leads to increase in GDP. The amount of FDI will also depend upon how the government is providing necessary support viz. spectrum for mobile services. Government should immediately take following steps: -</p> <ol style="list-style-type: none"> <li>a) Identify the bands used by operators/agencies other than telecom.</li> <li>b) Ask them to formulate the plans for vacation of these bands.</li> <li>c) Provide necessary financial support required for redeployment of band.</li> <li>d) The finance can be arranged from the spectrum charges collected till now. Government can see it as an investment opportunity and look forward for good return in future, when vacated band is allotted for provision of telecom services.</li> <li>e) Telecom bonds may be floated and money may be collected from public to fund such projects.</li> <li>f) A strict time frame for vacation of these bands may be prescribed.</li> </ol>
(xxviii)	<p>What approach should be adopted for re-farming of spectrum after expiry of license?</p>	<p>The existing licenses are awarded for 20 years. It will depend upon whether the operator is closing down or continuing with the business. If business is continuing, then suitable methodology may be adopted for reallocation of spectrum.</p> <p>The spectrum, which is to be allotted after expiry of licence, may be allotted some years earlier – say 5 years earlier. In this period the operator will expand the network in new band. The old spectrum will become free slowly. A further margin of six months to one year may be given after the expiry of licence for final release of spectrum.</p>
(xxix)	<p>Should there be any refund for spectrum surrender in principle?</p>	<p>No. There is no upfront fees being charged for allocation of spectrum and, therefore, there is no question of any refund. However, surrendering of the unutilised spectrum should be encouraged.</p>



		The further allotment of spectrum should not be done to surrendering operator for a particular period of time, say 5 years.
(xxx)	Should there be refund for spectrum surrender consequent to Unified Access license policy? If yes, what should be the basis?	No refund is admissible due to reasons explained above. Paying lower percentage of AGR after surrender of spectrum will automatically benefit the operator.
(xxxii)	How should the amount of refund be estimated?	Not applicable in view of above.
(xxxiii)	Should we open up the spectrum market for spectrum trading? If yes, what should be the time frame for doing so?	Spectrum trading should not be allowed at all. Trading can be permitted only when spectrum is allocated on Auction basis.
(xxxiii)	What are the pre-requisites to adopting spectrum trading?	Not applicable in view of our submissions above.
(xxxiv)	Whether we should specify a cap higher than 2 X 15 MHz for Metros and Category "A" service areas and 2 X 12.4 MHz for Category "B" and "C" service area in case of M&As or should it be retained?	At present the cap of 2x15 for Metros and category 'A' service areas and 2 x 12.4 MHz for category B&C service areas may be sufficient for next two years but with the increase in subscribes base and increase in the popularity of 3G data services, a spectrum to the tune of 2 x 20 MHz will be required for all Metros A, B &C circles by the year 2010.
(xxxv)	In case IMT 2000 is considered as a continuum of 2G Services, is there a need to have a cap higher than that without IMT 2000 services? Should there be individual caps on 2G and 3G spectrum or a combined cap?	IMT 2000 should not be considered as a continuum of 2G services. The IMT 2000 band should be allocated to all operators evenly and judiciously. The cap on 2G and 3G spectrum should be separate.
(xxxvi)	In case of M&As where the merged entity gets spectrum exceeding the spectrum cap, what should be the time frame in which the service provider be required to surrender the additional spectrum?	Technologically it is now possible to release the spectrum quickly. However, a time frame of 1 to 2 years can be prescribed for this purpose.



**Bharat Sanchar Nigam Limited**

(A Govt. of India Enterprise)

**Statesman House, Barakhamba Road,  
New Delhi-110001**

**No. 311-3/2004-Regln.**

**Dated: 23.07.2004.**

**To**

**The Secretary,  
Telecom Regulatory Authority of India,  
A-2/14, Safdarjung Enclave,  
New Delhi – 110 029.**

**Subject: Preliminary Comments on Consultation Paper No. 11/2004**

Sir,

Kindly find enclosed herewith the Preliminary Comments of BSNL on the Consultation Paper No. 11/2004 dated 31<sup>st</sup> May, 2004 regarding “Spectrum related issues” for further necessary action.

Thanking you,

Yours faithfully,

**( MAHIPAL SINGH )  
Jt. Dy. Director General (Regulation-I)  
23.07.2004.**