8.1.2001 - Recommendation

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TELECOM REGULATORY AUTHORITY OF INDIA

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D.O. No. CP/4-42/406-1/2000-FN
January 8, 2001

Dear Shri Ghosh,

Kindly refer to your Letter No. 10-2/2000-BS/Vol.I dated 9th October 2000 requesting a review of certain recommendations made by the TRAI on issues relating to Basic Service License. We had considered the issues mentioned and forwarded our views vide my letter No. 4-32/CP/411-3/2000-COM dated October 31, 2000. One issue on which we had not responded at that stage was the offer of WLL mobile Services by the Basic Service Operators as it was not part of the TRAI's initial Recommendations. In our response we had stressed that the TRAI would like to follow its usual process of eliciting views of all the stakeholders and throwing the issue open for public debate in view of the criticality of the subject and its long term impact on both Fixed and Cellular Services.

To formulate its Recommendations on the above issues, TRAI in line with its established practice, has completed a process of public consultations to ensure transparency and due consultation in its decision making process. This process included preparation of a Consultation Paper on the matter which made an attempt to analyse various issues connected with WLL, particularly in the context of DOT's reference to TRAI and raised questions on which inputs from stakeholders were solicited. In addition to the Open House discussions, TRAI had a meeting with a number of renowned telecommunication professionals, experts and others. TRAI received useful inputs from all stakeholders viz. Service Providers, consumers and consumer's organisations, Financial Institutions, policy makers, lawyers, chartered accountants, academicians, research institutions, and Members of Parliament and Legislative Assemblies. All these inputs have been duly considered by TRAI, before finalising its Recommendations on the subject as set out in Annexe to this letter.

In the exercise undertaken, it has been TRAI's endeavour to ensure that the interest of consumers remains the foremost test of any option being acceptable or unacceptable, such interests being sustainable long-term interests in terms of cost and quality for the individual user and growth, accessibility and the resultant tele-density for the masses. Pros and cons of

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giving mobility on the WLL platform have been carefully considered. In our deliberations we have endeavoured to answer four main questions viz

(i) Whether WLL with mobility should be permitted;
(ii) If it is to be permitted what should be its extent i.e. how much mobility is to be allowed;
(iii) The likely economic consequences of the mobility granted as in (ii) above and their impact on the main stake holders, and ;
(iv) In case the likely consequences of the grant of mobility are adverse for any of the stake holders in economic terms do these merit mitigation? If so, to what extent such mitigation is feasible and needed and what would be the modus operandi to achieve it.

In attempting to answer these questions, the arguments forwarded by both sides i.e. those who favour mobility on the WLL platform and those who oppose it, have been taken into account and their validity examined.

At the end of the aforesaid process, the TRAI has arrived at the conclusion that as the WLL mobility is not the same as that of the Cellular Mobile Services and that the disturbance expected to be created in the level playing field by the BSOs introducing this service can be evened out by making necessary policy changes, permitting WLL with mobility within the local area i.e. Short Distance Charging Area (SDCA) will be in the best interests of the consumer and the telecom services in the country. The same has therefore been recommended by us.

In the course of the public consultation the Cellular Mobile Operators have stressed the point that some terms and conditions of the present licensing regime place them in a disadvantageous position vis-à-vis the basic service operators. These according to them are making the level playing field uneven. The effect of these may be further aggravated if WLL mobility is permitted. These are indicated below:

i) License fee and revenue share percentage
ii) Spectrum charges
iii) Inter-connection principles and charges.
iv) Demarcation of service areas
v) Scope of the licensed service

Consequent upon the offering of WLL mobile services by the BSOs and its effect on the level playing field the TRAI is of the view that for the Cellular Services to maintain their competitive ability, some policy changes and ameliorative measures would need to be adopted. TRAI has therefore recommended bringing down the license fee (revenue sharing) of the Cellular Operators to the level of Metro and 'A' Circles of the Basic Service Operators i.e. 12 %, increasing the number of Points of Interconnection, permitting the

CMSOs to provide fixed phones based on their GSM Network infrastructure, and allowing them to retain as their collection charges and cover for bad debts 5% of the total amount of long distance calls and other revenues that the CMSOs collect from their subscribers which they pass on to the basic service operators.

So as to increase competition among BSOs in a service area, the CDMA band of 20 MHz in the 800/ 900 MHz band is recommended to be distributed among four operators in each Basic Service Area i.e. 5 MHz each instead of existing 8 MHz. The entry fee and percentage revenue share license fee should be the same as already recommended for Basic Services. As Basic Service tariff rates will continue to apply for wire-line as well as WLL fixed and hand held terminal mobility within the SDCA, TRAI does not recommend any additional Entry Fees for the Spectrum. Existing mode of charging for spectrum should be applied for new operators also. The basis of charging for WLL frequency spectrum in the CDMA band and the cellular mobile spectrum in the GSM band should be identical.

The Authority believes that these Recommendations are consumer friendly and in public interest. These will increase the level of competition in the industry, thus stimulating demand for mobile service resulting in greater tele-density in both rural and urban areas.

The recommendations along with the text of this letter have been placed today on the TRAI's web site (www.trai.gov.in) for public information.

Yours sincerely,

(M.S.Verma)

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Encl: Recommendation Document as Annexe along with supporting documents

RECOMMENDATIONS ON ISSUES RELATING TO "LIMITED MOBILITY" THROUGH WIRELESS IN LOCAL LOOP IN THE ACCESS NETWORK BY BASIC SERVICE PROVIDERS

These recommendations are set out as follows:

I - Context & Background

II - Discussion of Issues and Recommendations covering –

(a) WLL with mobility, its extent, consequences and managing those consequences,

(b) Basis for assigning WLL frequency,

(c) Amount of Entry Fee and spectrum charges as a percentage of revenue to be charged from the Basic Service Operator for extending the above facility in respect of existing as well as future Basic Service Licensees, so as to ensure a level playing field with the Cellular Operators.

III - Annexure I: Background Facts/Issues

Supporting Document "A": Consultation Paper on Policy Issues Relating to Limited Mobility By Use of Wireless In Local Loop Techniques In The Access Network By Basic Service Providers

Supporting Document "B": Comments By Stakeholders On TRAI Consultation Paper

Supporting Document "C": Comments Received in the Meeting With Experts/ Telecom professionals.

I. CONTEXT & BACKGROUND

Cost effective last mile connectivity i.e. connection between Exchange and Customer's Premises Equipment (CPE) is a critical and often the most difficult part of the Telecom Network roll out. This provides customer accessibility and , therefore, the growth of telecommunication network is affected significantly by the cost and quality of last mile connectivity as well as the ease and speed with which it can be provided. In India local loop has thus far been provided mostly by laying underground cables or by construction of overhead alignment. The laying of underground cable especially in congested areas is both cumbersome and time consuming. This has, therefore, come in the way of quick roll out of Telecom Networks and contributed to delay in achievement of the teledensity targets. This problem has been taken note of in NTP, 1999, and in order to obviate the necessity of laying underground copper cables in congested areas, the Basic Service License issued by Department of Telecommunications (DOT) stipulates Wireless In Local Loop (WLL) as the preferred method for providing Basic Service.

2. While the License Agreement for the Basic Service Operator provides for use of WLL, it does not permit mobility. The Basic Service Operators (BSOs) have, therefore, thus far deployed WLL Systems as Fixed Wireless Access Systems. These systems, are, however capable of being engineered to provide mobility within a specified area using the same frequency spectrum as already allotted to them. Therefore, there is a growing demand from the BSOs to offer some limited mobility as part of the Basic Service package to the customers. In this background, the Department of Telecommunications (DOT) had recently written to the TRAI seeking its recommendations in regard to permitting limited mobility by use of WLL systems in the last mile.

3. In their letter dated 9th October, 2000, addressed to the TRAI, DOT have stated that the Telecom Commission has considered and recommended the use of hand held terminal in Local Area i.e., the Short Distance Charging Area (SDCA) by the subscribers of Basic Service Operators (BSOs) using the Wireless Local Loop

platform. In accordance with that recommendation, the Numbering Plan of Local Area is to be followed and Inter Base Station Controller/Manager authentication will not be permissible. Basic Service Operators have been allotted frequency from CDMA band and their systems are engineered based on CDMA IS95 Air Interface. As per the present plans of frequency allocation none of them is to be allotted any frequency from the GSM band. The Government has clarified that in order to avoid any conflict of interest with the present Cellular Operators the frequency in GSM band of 890-915 MHZ paired with 935-960 MHz and 1710-1785 paired with 1805-1880 MHz will not be allotted under any circumstances to the Basic Service Operators.

DOT has requested TRAI to submit its recommendations in respect of the following:-

(a) Scope of Area of Hand Held subscriber terminals under Wireless Access System operations,

(b) Basis for assigning WLL frequency,

(c) Amount of Entry Fee and spectrum charges as a percentage of revenue to be charged from the Basic Service Operator for extending the above facility in respect of existing as well as future Basic Service Licensees, so as to ensure a level playing field with thc Cellular Operators.

To formulate its recommendations on the above issues, TRAI in line with its established practice, has completed a process of public consultations to ensure transparency and due consultation in its decision making process. This process included preparation of a Consultation Paper on the matter which made an attempt to analyse various issues connected with WLL, particularly in the context of DOT's reference to TRAI and raised questions on which inputs from stakeholders were solicited (a copy of the Consultation Paper is available as Supporting Document 'A'). In addition to the Open House Discussions, TRAI had a meeting with a number of renowned telecommunication professionals, experts and others. A list of Consultants who were invited to share their views on the subject is attached herewith as Supporting Document 'C' along with the recorded proceedings of the meeting held with them.

6. The Authority received useful inputs from all stakeholders viz. Service Providers, consumers and Consumer's Organisations, Financial Institutions, Policy Makers, lawyers, chartered Accountants, Academicians, Research Institutions, and Members of Parliament and Legislative Assemblies (Please see Supporting Document B) as well as the views of professionals/ experts (Supporting Document C). All these inputs have been duly considered by the Authority before finalizing its recommendations on the subject as set out in the following Sections.

II. DISCUSSION ON ISSUES REFERRED TO TRAI AND THE AUTHORITY'S RECOMMENDATIONS

In the exercise undertaken it has been TRAI's endeavour to ensure that the interest of consumers remains the foremost test of any option being acceptable or unacceptable, such interests being sustainable long-term interests in terms of cost and quality for the individual user and growth, accessibility and the resultant tele-density for the masses.

TRAI believes and has stated even earlier that the best way to serve the interests of the consumer is to ensure fair and open competition for telecom services. There is no better way to serve the consumer than through an open, fair and competitive market and, therefore, in its recommendations the TRAI has endeavoured to create such conditions.

A. Scope of Area of Hand Held subscriber terminals under Wireless Access System operations

In its deliberations relating to the recommendations to be made TRAI has attempted to answer the following questions and related issues.

(i) Whether WLL with mobility (WLL(M)) should be permitted;

(ii) If it is to be permitted what should be its extent i.e. how much mobility is to be allowed;

(iii) The likely economic consequences of the mobility granted as in (ii) above and their impact on the main stake holders, and ;

(iv) In case the likely consequences of the grant of mobility are adverse for any of the stake holders in economic terms do these merit mitigation? If so, to what extent such mitigation is feasible and needed and what would be the modus operandi to achieve it.

After considering the above four basic issues, some related issues have also been considered and recommendations in respect thereof have also been made.

(i) Whether mobility in WLL should be permitted

In arriving at any decision on this issue submissions made by the two sides favouring and opposing WLL mobility will have to be considered carefully. TRAI has endeavoured to do so.

While examining this issue, TRAI has constantly kept in view what would be in the best interests of the consumers. Responses and suggestions received from sources in the course of the Open House Discussions held in the four metro cities indicate that this is a facility which the normal consumer is wanting to have and looks forward to using it. Mobile telephones have brought far reaching changes in the way people live and work and while the Cellular Mobile Telephones have demonstrated what is possible, the high tariffs of this service have kept it largely outside the reach of the consumer with modest means. Such people see their chance in WLL phone connections with mobility and expect to avail of, at least, some advantages that have so far been available only to the subscribers of the higher priced Cellular Mobile Services.

Peoples' expectations apart, there is the more basic issue of restricting the consumers from a facility which otherwise, available technology as well as economic considerations permit. There is no reason to deny a facility as long as the likely adverse impact on level playing field is kept in view and ways can be found to mitigate these.

The Authority has noted that the WLL technology allows mobility with handsets with some incremental costs. Further, the costs of the infrastructure required to be erected for providing WLL based mobility services are such that the per line cost of WLL mobile is likely to be comparable and even lower than the average per line cost incurred, at present, by the basic service provider in giving wire line connections. It is also understood that at present in India the landed cost of a fixed wireless access telephone is higher than a WLL handset. According to the figures available from the DOT while the cost of the former is Rs.15,000/- (inclusive of air interface) the latter costs only around Rs.6,000/-. This huge price differential is difficult to explain as in engineering terms differences in the two items are not substantial. The price difference between the two, therefore, appears to be more on account of customs duty and other extraneous reasons, such as a smaller market for the fixed wireless access telephone set Whatever may be the reason, the fact remains that presently handsets are far lower in price and they will continue to be so because the global trends indicate falling prices of handsets on account of their mass production. WLL fixed terminals are not being mass produced at present. Therefore, on cost considerations also permitting the use of mobile handsets would appear to be in the interest of both the operator and his subscribers.

However, before coming to any conclusion the validity of the arguments against permitting WLL mobility also needs to be examined. Most of these have been advanced by the CMSOs. Important amongst these are the following:-

(a) WLL with limited mobility is a "back door" entry for the BSOs in the market licensed to the mobile operators of CMSOs. Given mobility, the WLL service offered by the BSOs will become quite comparable to the fully mobile services offered by the CMSOs but will be preferred by the consumers because of its low tariff which the BSOs will be able to offer as a result of their ability to subsidise it out of the more remunerative segments of their business i.e. long distance carriage service. This will impact the market of the CMSOs adversely and disturb the level playing field between the two types of service providers i.e. mobile and fixed.

(b) The other argument of the CMSOs is in respect of the terms and conditions of their license. It has been stated that any type of mobile service can be offered to subscribers only under the license granted for mobile services and not for basic services. CMSOs claim that by permitting mobility based on WLL system, the terms of their license will be violated. The CMSOs have further argued that if the BSOs plan to offer WLL with mobility they should obtain the same license as obtained by the CMSOs on the same terms and conditions

(c) Another reservation expressed against permitting WLL with mobility (WLL(M)) is in respect of the limitation on the number of WLL connections that can be given because of the limited availability of frequency spectrum granted to basic operators for fixed connections. It has been argued that the ability of the BSOs to give such connections is likely to fall far short of the demand and it is apprehended that the severe imbalance in the supply and demand positions could result in unduly long waiting lists, consumer dissatisfaction and all other deficiencies and demerits attendant to the economy of shortages.

TRAI has considered these arguments against providing WLL with mobility carefully. CMSOs main objection is on the ground that the two services will become substitutable and since the BSOs intend offering WLL services at the same tariff as applicable to local calls, the CMSOs will face unequal and unfair competition which will disturb level playing field conditions. A close examination of the issue, however, shows that the apprehensions expressed by the CMSOs can be said to have some basis only if the extent of mobility provided by the basic operators is the same as the one available based on GSM systems i.e. if the extent of mobility under the two systems is identical. But, as long as there is a significant difference in the scope of the two services in terms of coverage and facility, such as seamless roaming nationally and internationally, as well as a large number of tele & supplementary services which the GSM network is capable of offering whereas the basic is not, the quality and scope of service provided by CMSOs will continue to be different. It follows that GSM service providers will be able to command a premium on their services in comparison to the basic service operators.

CMSOs have time and again stressed the point that they are not against competition. The issue, then, is only about comparability of the two services and their pricing. The currently obtaining competitive environment for cellular service, even with only two operators in each service area, has already driven the tariffs of mobile services substantially down. This process is bound to intensify with the entry of the third and fourth operators into the market in the very near future. Noticeably, in at least one service area viz. Tamil Nadu competition has already driven the air time tariffs of cellular services down to the levels which are quite comparable with the basic services tariffs. However, even as cellular tariffs continue to fall, the subscriber base is growing fast mitigating to a large extent the loss in revenue caused by tariff reduction. The direction of the market is, thus, clear. The fall in tariff rates is to be made up and in fact more than made up by the increasing subscriber base This has been the pattern of the growth of cellular mobile services worldwide and there is every reason for it to be so here as well. The TRAI is, therefore, of the view that as long as the extent of WLL mobility is not comparable with that of the mobility and roaming enjoyed by mobile subscribers of GSM networks, the apprehensions of the CMSOs that they may be priced out of the market are exaggerated. In the short run, there would be some loss of revenue as the CMSOs in their effort to retain the customers reduce their tariffs to match that of their competitors. However, in the longer run the effect will largely be mitigated as with the reduced tariff the customer base expands faster. It also needs to be kept in view that due to paucity of the available frequency spectrum the supply of WLL services will be limited.

As regards the argument that permitting WLL mobility will amount to violation of the CMSOs license terms, it needs to be noted that with the acceptance of migration to NTP 99, the CMSOs have accepted that their markets will no more be protected for them by the terms of their licenses. NTP 99 as well as the recent policy announcements acknowledge greater competition as the policy norm in both basic and cellular mobile sectors. Increased competition, therefore, cannot be denied. Of course, it will have to be ensured that such competition is generated without making the level playing field uneven. In making these recommendations, TRAI has been conscious of the need to address this aspect of the issue adequately.

As regards the reservations expressed on the limited supply of WLL services due to scarcity of available frequency spectrum for the purpose, it can be said that introduction of a service cannot be restrained only because in the initial stages the demand is likely to outstrip the supply. Firstly, such a situation is likely to arise only in the metros and in a few large cities. The BSOs offering the service are expected to manage the situation adequately by adopting suitable pricing mechanisms. The highest rate basic services call charges and differential rentals for WLL Services would obviously reduce its attraction to a large majority of telephone users with whom lower tariffs resulting from permissible free and concessionary call charges are important and for whom mobility is not such a big issue. Moreover, the price to be paid for WLL(M) handsets will also be a factor whether the consumer purchases the handset himself or the service provider provides it to him against a deposit which is the present practice. On overall consideration TRAI is of the view that for some time to begin with demand may outstrip supply of WLL services at some places, particularly in metros, but eventually market mechanisms will prevail and an equilibrium between supply and demand will be reached.

In view of the foregoing, TRAI has arrived at the conclusion that in case the WLL mobility is not the same as that of the cellular mobile services and provided that the disturbance expected to be created in the level playing field by the BSOs introducing this service can be evened out by making some necessary policy changes, permitting WLL with mobility will be in the best interests of the consumer and the telecom services in the country.

(ii) What should be the extent of mobility i.e. how much mobility should be allowed

While the circumstances very clearly point out that permitting mobility on the WLL platform is desirable the answer to the question as to how much mobility should be permitted, is not as evident. Quite understandably, the Basic Service Operators (BSOs) have strongly represented that full service area mobility should be granted. The Mobile Service Operators(CMSOs) have opposed it equally strongly. The CMSOs have serious apprehensions that once full service area mobility is granted on the WLL platform and the service is offered at a tariff comparable to that of basic services, it will affect their subscriber base and business very adversely. According to them this will amount to entry of the BSOs into the Cellular Services "through backdoor" and the ability of the BSOs to subsidise these services will result in unequal and unfair competition driving the CMSOs out of the market. There is no denying that WLL systems were originally not conceived as a full mobile service and mobility in this context can only be seen as a bye-product and, therefore, can not be extensive. This mobility should not be comparable to the mobility available through cellular mobile services so that the two services continue to have a separate market segment or their own niches of operations.

TRAI is of the opinion that circle-wise mobility sought by the BSOs cannot be permitted on the WLL platform as it will pose a number of techno-economic and regulatory problems. Availability of the frequency spectrum is another important issue in this regard. For WLL systems the spectrum available at present is only about 20MHz (paired). Since the total number of subscribers in a service area is proportional to the quantum of frequency spectrum allotted, from engineering angle also covering the entire telecom circle will pose serious problems in terms of number of subscribers that can be served. Looking at the issue from the charging angle also, considering that the BSOs have offered to provide WLL mobile service at the same tariff as that for local fixed service, the scope of the WLL service would need to be limited to that of the local area only. Looked at from purely legal angle any "local loop" service has to be within the limits of the local areas and NTP 99 has discussed WLL in the context of the last mile connectivity which literally means the local areas or the SDCA.

In case the BSOs are allowed to cover the whole circle by the WLL systems, the economic level playing field will be disturbed as they will then be able to price intra-circle long distance calls as local calls. This would amount to heavy subsidization of the intra-circle long distance calls in the garb of WLL services. The incumbent i.e. BSNL will be able to cross subsidise its WLL service from the considerable profits it is able to earn from the near monopoly market it enjoys in most of the telecom circles. In that event since the scope of service of WLL based circle wide mobility service and that of a full mobility service offered by the Mobile Services Operators will be almost similar and the two will become almost substitutable services, the growth of cellular mobile services could get affected quite adversely. Such a move will also affect the new entrants to the Basic market, as the incumbent will have the ability to pre-empt their entire intra-circle long distance market by its WLL service.

Above all, at present, it is nobody's case that the WLL service should be brought at par with the Cellular Mobile Services. These are two different licenses and different services and, therefore, it is required that differences in the character of the Basic and Cellular Mobile Services are understood and retained.

The Authority is of the view that considering the entitlements under the two licenses i.e. one for the Fixed Service Offered by BSOs and the other offered by the CMSOs with full mobility and roaming facility, in the interest of level playing field, there is need to maintain a clear service differentiation. Although both WLL systems and Mobile systems employ similar Air Interface and network infrastructure such as cells, there are significant differences between the two. While in cellular mobile systems, such as GSM based networks which are operational in a large number of telecom circles in the country, there is a mobile exchange called mobile switching center (MSC) capable of extensive mobility management/roaming function, the WLL systems are engineered essentially to provide the so called 'last mile' linkage with the existing exchange, and these do not have an exchange viz. mobile switching centers as part of the WLL system. Considering this essential difference and also the intrinsic characteristics of WLL as indicated by the nomenclature itself i.e. 'local loop', the TRAI is of the view that extension of WLL mobility only up to the local area i.e. SDCA will be the most optimal solution and serve interest of telecom growth in the country best. Accordingly, the Authority recommends that the Basic Service Operator (BSO) be allowed to offer WLL with mobility within the local area i.e. Short Distance Charging Area (SDCA).

(iii) The likely consequences of the mobility granted as in (ii) above and their effect on the main stake holders

The impact of permitting mobility on the WLL platform is likely to be felt by both the BSOs and the CMSOs. While the common consumer will emerge a clear winner and the BSOs will get a market which they have not been able to cover so far, the CMSOs are likely to encounter, at least in the immediate run, some loss of market. It will be especially so because WLL mobility will be available to the consumers at the price of basic services or at prices quite close to it. It may be added in this context that the Authority is not in favour of altering the present tariff structure in any substantial manner before certain additional data on relevant costs and revenues can be obtained and analysed. However, it must also be understood that WLL service with mobility will have an added value and need not be at the same concessional and subsidized rate. The TRAI, therefore, is of the view that irrespective of any concessional charge permissible under the tariff fixed for local calls in basic services, these calls be charged at the highest charge for basic calls e.g. Rs.1.20 per 180 seconds for local calls. Other tariff items (other than rental and call charge) should also be those specified for general subscribers of Basic Services (excluding ISDN) in the Telecommunication Tariff Order 1999. In the case of rentals the charge will have to be fixed taking into account the actual cost of the last mile connections. It should be possible to arrive at the Fully Allocated Costs (FAC) of providing WLL connection based on the cost of systems required to be introduced and additions and improvements required to be made by the BSOs in their existing infrastructure. The Authority will take up this exercise separately and advise the rentals for WLL connection which will be fully cost based. The Authority expects to make suitable determination in this regard within the next three months which will be before any operator is expected to introduce the service. The reason for making such a recommendation is that mobility, even if limited, is a value addition to the service available to the consumer and there has to be a suitable price therefor. This price should be cost based. If this principle is not followed, at some point of time in the course of the growth of this service a stage may be reached when this service too may become dependent on availability of subsidies. Any such situation needs to be avoided in the long-term interests of this service itself as well as of the consumers who will need it.

Fixed service with WLL mobility given at tariffs applicable to fixed service may immediately raise some problems regarding level playing field between the BSOs and the CMSOs. CMSOs so far had a far higher tariff structure for their services and although these have been coming down due to competition and, at least, in one circle have come down close to the tariff levels of fixed service, could now be faced with immediate prospects of having to reduce their tariffs rather quickly. CMSOs have also argued that the BSOs enjoy a better revenue sharing arrangement under the existing inter-connection regime and that their license fee in terms of revenue share is much lower as compared to the CMSOs. As stated earlier they have contended that by being allowed WLL with mobility BSOs will get a "backdoor" entry into the cellular mobile market which will amount to unfair competition and discrimination against the CMSOs. Their apprehension is that as a result of BSOs clear advantages in the aforesaid areas over the cellular service operators the latter will find the competition to be unequal and unfair. The CMSOs have expressed apprehensions that the lower cost structure would enable the BSOs to offer artificially lower tariffs and thus substantially erode the market for cellular operators. According to them, this would lead to further fragmentation of the mobile market and adversely affect the viability and investments in the sector.

The Authority has examined the above contention of the CMSOs. Although the nature of the proposed WLL mobility (limited to SDCA) will not be the same as that offered by the CMSOs, and the latter service will continue to be a premium service as it already has and will have many additional features and far greater flexibility, their apprehensions about the loss of market are not entirely ill-founded. Notwithstanding the fact that the mobility of WLL will be limited to the SDCA, the ordinary consumers will find in WLL(M) a highly acceptable and a cheaper option than Cellular Mobile. In a certain segment of the telecom market, the cheaper pricing of WLL and its mobility will become important determinants in the consumer's choice of service.

These tariff differentials which are mainly due to policy considerations such as affordability of basic services, could trigger migration of subscribers from cellular mobile to WLL, especially of high revenue subscribers, i.e. those making a high proportion of STD calls. An indication of such a likely customer response was provided, for instance, when CDMA mobile services were introduced by MTNL in Delhi last September.

It can be visualised that to retain their present subscriber base, Cellular Mobile Service Providers would have to face stiff competition from the basic service providers and in the process significantly reduce their air time charges. The rate of growth of cellular service which in the last one year has on an average been over 96% nationally may also come down for some time. The full extent of such a decline can not be foreseen at this stage but the point pertinent in this context is that even before the BSOs are able to deploy WLL (M) systems fully, the third and fourth cellular operators would have entered the market with significantly lower tariff due to dramatic reduction in per line cost of GSM network infrastructure. The main threat to the market of the existing CMSOs, is therefore, likely to come from the third and the fourth CMSOs rather than the WLL (M) operators i.e. the BSOs.

A study conducted to estimate the probable impact of the introduction of WLL with mobility on cellular operators has yielded interesting results which may be mentioned here. The study relates to the situation in Tamil Nadu where competition between the two cellular service providers has brought the air time tariff level of cellular services to almost the level of basic services. It gives fair indications of things to come. As is known in Tamilnadu, out of the two cellular service providers, one viz BPL preceded its competitor Srinivas Cellcom by about two years and during that period had the entire market to itself. Srinivas Cellcom on its arrival sought to get its share quickly by following a strategy of keeping the tariff very low. However, the Tamilnadu market of BPL was not affected so seriously by the entry of the competitor Srinivas Cellcom, who offered its mobile service at a very low air time tariff which at present is at almost the rate of basic services, with nominal or no incoming call charges. Despite an aggressive price war raged by the latter, BPL has come out largely unaffected in so far as subscriber growth rate and ARPUs are concerned. These are, in this case, close to several other circles i.e. where the competition has not been so intense. Their airtime usage is much higher than that registered for most CMSOs.

The main inferences that are drawn from the study are as follows:-

(a) Competition from WLL(M) is unlikely to have a major restraining effect on the growth of air time usage and cellular mobile subscribers. This is expected to be so due to high elasticity of the GSM cellular market and the host of tele and supplementary services which the cellular mobile operators offer.

(b) While there will be a fall in ARPU due to a reduction in tariffs, contributed in good measure by the entry of the third and the fourth cellular mobile operators in the market, the total revenue is unlikely to fall in any significant manner because of the high price elasticity of cellular mobile markets as evidenced by the Tamilnadu example. Also, the decline in the ARPU of the cellular mobile operators due to the introduction of the WLL (M) should not be substantial as it is foreseen that the cellular mobile operators ability to offer sophisticated supplementary services and better quality of service on the GSM platform will enable them to hold their own against the competition offered by WLL (M).

(c) The revenues for cellular service providers are likely to be higher than projected. Due to high price elasticity of demand, the reduction in cellular mobile tariffs should normally be followed by a larger increase in subscriber base. A good portion of the new subscriber base could come from the large basic service segment.

(d) The quality and scope of service provided by cellular mobile will be quite different and superior to WLL (M). This would imply that these service providers will be able to command a premium on their service in comparison to WLL services.

(e) The existing cellular networks will continue to grow fast as their marginal costs will be much lower than the average costs of a new network. In the case of expansion of mature networks, incremental and marginal costs would need to be taken into account whereas for new networks it is the average cost which is more relevant.

The Authority has no doubt that competitive price decreases should be encouraged. However, the aforesaid likely changes have to be viewed in the overall context of the growth of the industry and it needs to be assessed whether certain modifications in the policy regime should be made to promote competition in a level playing field.

In all probability reduced ARPUs would characterise the cellular mobile market in the next two to three years. The issue before us, therefore, is that a somewhat unforeseen market development viz. introduction of WLL with mobility, could be forcing the prices down at a pace faster than what competition at the earlier anticipated levels would have achieved. The precise task, therefore, is one of managing the unanticipated level of competition in the immediately forthcoming years.

Among service providers, the main beneficiary in the emerging situation are likely to be the main incumbents, i.e. BSNL and MTNL. These service providers already have a presence in all SDCAs and will be able to roll out WLL (M) infrastructure in their service areas with relatively low incremental costs. They are the ones likely to make a dent in the cellular mobile market in the country as a whole and increase their market power. The Authority, nonetheless, is recommending WLL with limited mobility because ultimately it will increase competition in both basic and cellular mobile segments and lead to a faster growth in tele-density. This will be to the considerable advantage of the customers.

The Authority recognizes that immediately, the incumbents, who are the dominant basic operators, could gain a further competitive edge by this policy change. This will not be in keeping with the principle of providing a level playing field for all competitors and therefore, some steps will have to be taken to even out, as far as practicable, the effects of undue advantages/disadvantages caused by the policy changes. Whenever such differentials tend to hamper open competition, these need to be removed. The case for regulatory and policy interventions becomes stronger when undue differentials arise not because of market forces but as results of policy changes.

Therefore, in the interest of promoting fair competition in the market the Authority is of the view that for the cellular services to maintain their competitive ability, some policy changes and ameliorative measures would need to be adopted. These are discussed in the following paragraphs.

(iv) In case the likely consequences of the grant of mobility are adverse for any of the stake holders in economic terms do these merit mitigation? If so, to what extent such mitigation is feasible and needed and what would be the modus operandi to achieve it?

A detailed examination of the issue undertaken by the TRAI indicates that the consequences of permitting the BSOs to offer WLL services with mobility will be quite noticeable. While for the consumers, the Basic Service Operators and for the overall growth of telecommunication in the country, the consequences will be beneficial, for the CMSOs, it will be quite different. They are likely to experience a fall in their ARPU. There may also be initially a reduction in total revenues earned until such time as the reduced levels of tariffs enable them to gain a much wider subscriber base, enough to neutralise the effects of fall in tariffs. Another adverse impact that they are likely to experience could be on the valuation of their business which may register a fall as a result of lowered prospects of future profit realisation. This, however, is not unexpected as the enhanced competition from the current market players as also from the third and the fourth players likely to join the fray very shortly, cannot but affect the present business valuations of CMSOs.

TRAI has made efforts to estimate reasonably the extent of the aforesaid adverse impact. In doing so the current rate of business growth, the future growth potentials of cellular mobile services, the growth potential of the WLL(M) services and the impact of the latter on that of the former have been taken into account. It is extremely difficult at this stage to project the market precisely and to make inarguable estimates of loss or gains by a given class/set of service providers. However, taking into account the experience in markets where conditions have already become comparable to the likely future market scenario, TRAI estimates that generally CMSOs are likely to face a reduction in the rate of their growth as well as ARPU of the order of 10 to 20% in the first two years of effective introduction of WLL services. Effective introduction of WLL(M) services is relevant because in different service areas it may not be introduced simultaneously or with equal success. Save in few specially chosen pockets, WLL(M) service is not likely to make its presence felt as a competitor to cellular mobile services before another 8-12 months. At quite a few places it could be even more. The Cellular Service Operators are sure to utilize this time to their advantage for consolidating their positions further. Competition from WLL(M) will affect the cellular operators in different metros and circles, differently.

But, the above mitigating factors notwithstanding, it should be acknowledged that WLL mobile service will provide to the BSOs entry into an area which till now the CMSOs consider to be exclusively theirs. As a result of this development they may have to recast their business projections and some of their financial plans. It may, therefore, be necessary to give them some relief in the terms and conditions of their license. By doing so it should be possible to ensure for them a level playing field vis-à-vis the BSO operator, if they are to be allowed to offer WLL services with mobility.

Maintaining a level playing field between the BSOs and the CMSOs

The cellular service operators have pointed out superior and advantageous conditions favouring the BSOs in the following areas :-

(1) License fee and revenue share percentage

(2) Spectrum charges

(3) Inter-connection principles and charges.

(4) Demarcation of service areas

(5) Scope of the licensed service

In the following paragraphs each of these points has been examined and recommendations for changes wherever considered necessary in the interest of creating a level playing field between the BSOs and the CMSOs have been made.

(1) *License fee and revenue share percentage*

Following NTP 99 both BSOs and CMSOs who had earlier paid an entry fee and agreed to pay fixed license fees over the entire duration of the license were allowed to migrate to a new license fee regime in which they would be required to pay per year a certain percentage of the revenue earned by them as the license fee. The outstandings on account of the license fee as on the deemed date of migration i.e. 31-7-99 were treated as entry fee whereafter the revenue sharing arrangement would be effective.

The Government had referred the matter relating to the quantum of license fee payable by the BSOs as well as the CMSOs to the TRAI and sought its recommendations in the matter. Recommendations on some other related issues were also sought in both the cases. TRAI after due consideration has recommended revenue sharing as license fee in the two cases as under:-

<u>Basic Services</u>

12 percent for Metros and 'A' Circles, 10 percent for 'B' Circles and 8 percent for 'C' Circles.

Cellular Mobile Services

17 percent for all Service Areas, except Jammu and Kashmir and Andamans and Nicobar islands for which revenue sharing of 10 % was recommended.

Revenue has been clearly defined and in both cases its definition is the same. In both the cases DOT has provisionally prescribed 15% of the revenue share as the license fee until a final decision is taken by them in this regard on receipt of TRAI's recommendations. The Government has, as yet, not decided the issue finally.

The CMSOs have, however, been representing for quite some time that the 17% revenue share as license fee which has been recommended by the TRAI in their case is very high and that it should be reduced. In the course of the public consultations held by the TRAI at the time of its making the recommendations regarding the CMSOs' license terms, a strong representation was made that the license fee should be minimal and should be sufficient only to cover the cost of administration and regulation. It was expected to be not more than 2-3 % of the yearly revenue.

TRAI while making its recommendations on this particular issue i.e. on the quantum of the license fee for CMSOs, took into account the entire background in which NTP 99 was formulated and the earlier agreed conditions of licensing for the service providers were permitted to be changed. The circumstances in which migration was allowed from a fixed license fee regime to revenue sharing were considered carefully. In arriving at the recommended license fee the basis adopted was to permit the service providers to earn a reasonable Internal Rate of Return (IRR) and a Reasonable Return on Equity (ROE). For this purpose, different scenarios were built and analysed to find out the sensitivity of the IRR to different levels of license fee in terms of percentage of revenue. Since it was found that a sharing of revenues at the rate of 17% allowed the CMSO businesses in circles as well as the metros, a fairly decent IRR as well as ROE of 20% plus in all cases, the recommendation for sharing 17% of the revenues as license fee was considered just and equitable. The entire analysis was completed based on the data furnished by the operators themselves. Besides the service providers getting a decent return on their investments, the need for Universal Services Obligation (USO) funding had also to be taken into account. From a separate exercise undertaken by the TRAI it transpires that in the years to come this requirement is going to be substantial. Since NTP 99 expects all service providers to contribute to the fund, based on the projections of revenues likely to be raised by the different telecom service providers in the next 5 to 7 years it is estimated that unless we can find other sources at least 7-10% of the revenues earned would need to be utilised as contribution towards funding of USO. There would appear to be no alternative as the low affording capacity of the Indian telecom services consumers necessitates such an expenditure. If, therefore, funding of USO is to be considered from contributions from the service providers reduction in the license fee to the level of 2-3% of their revenue is not at all feasible.

In the case of the BSOs, a different level of revenue sharing has been recommended taking into account the character of their business and their revenues and profit generating capacity. In these cases a careful note has been taken of the fact that licenses for basic services in all but six circles have not attracted any bidders despite repeated attempts at auction. The dominant position of the incumbent and the long gestation for any newcomer before he can expect to make a serious dent in the incumbent's market, is proving to be a deterrent. The TRAI, therefore, felt that in their case a lower revenue share as license fee would be justified.

The country has now reached a tele-density of about 3% and in about another five years i.e. by 2005 it needs to raise it to 7%. By the year 2010 the tele-density is targeted to reach 15% with the objective of rural tele-density at that time being 4%, increased from the current rural tele-density of approximately 0.6%. To achieve all this both the basic and the cellular mobile services will have to achieve a high rate of growth involving a very substantial investment of the order of about US $ 70.00 billion. Such investments would need to come from both domestic as well as foreign sources. In our telecom policy and regulation this requirement which is essential for fulfilling the objectives of NTP 99 will always have to be kept in view.

In studying the impact of permitting the BSOs to introduce WLL with mobility on telecom services in India, the above factor has been kept in view. The need for ensuring fast growth of basic as well as cellular services and attracting continued investment therein, cannot be over emphasised. Between them, therefore, there must be a level playing field and none of the two services should be disadvantaged against the other.

As revealed by TRAI's examination of the issue, the introduction of WLL with mobility by the BSOs is likely to impact the rate of growth of the cellular mobile business in the immediate run by about 10-20%. This may also affect their ARPU and the total revenue unless they succeed in covering quickly the fall in ARPU by a growth in the number of subscribers. Also, as the number of subscribers grows, further investments would be required to be made on upgrading the network and increasing its capacity to handle the growing subscriber base.

Considering all the above factors, TRAI is of the view that it would be desirable to keep the license fees of both BSOs and CMSOs at comparable levels. It is, therefore, recommended that revenue share as license for the CMSOs may be prescribed at 12% of the annual revenue which will be the same as revenue share prescribed for BSOs in Metros and category-A Circles. This will bring the two services at par in terms of license fee and provide immediately, mitigation for the loss of market which the CMSOs may have to face as a result of the introduction of WLL services with mobility by the BSOs.

(2) *Spectrum charges:*

Availability of frequency spectrum and the price at which it is available to the service provider is going to be the most critical factor in the growth of telecom services. It must, however, be appreciated by the service provider that this is a very scarce national resource and will have to be priced always keeping in view its utilisation and demand. As is the case with most developed countries, when the competition is fully open and market forces are allowed to rule, the service provider prepared to pay the highest for the spectrum available, gets it. The concept of pricing the spectrum will, therefore, have to continue. However, since in our conditions the considerations of growth continue to be over-riding, it will be some time before the market forces become the sole determinants and the pricing of spectrum is fully market determined. It is, therefore, recommended that the frequency spectrum made available to both BSOs and CMSOs should be very reasonably priced so as not to create a serious pressure on their revenues. The TRAI would also like to recommend that the basis of allotment and pricing while being in accordance with the national plan should be the same for both BSOs and the CMSOs.

(3) *Interconnection principle and charges*

Basic inter-connection terms and conditions relating to inter-connection between the networks of the CMSOs and that of the BSNL/MTNL such as charges payable by the CMSOs for accessing a PSTN subscriber of the BSNL/MTNL by a mobile subscriber are embedded in the license agreement itself. Similarly the six BSOs have signed a license agreement in which the manner of sharing the revenue for an inter-network call involving a BSO/BSNL (erstwhile DOT) has been stipulated. However, the license stipulates that a separate inter-connection agreement will be signed by the two parties. Inter-connection agreement has already been signed between the six basic service providers and the DOT (now the BSNL). Although CMSOs have not signed an agreement with the DOT (BSNL/MTNL), their network is connected to the BSNL/MTNL network presumably based on the terms as determined by the BSNL/MTNL. The two sides have been negotiating for quite some time but so far have not been able to resolve the differences. TRAI has been mediating between the two parties to get an inter-connection agreement signed based on the principles of non-discrimination and level playing field. The CMSOs continue to represent that the inter-connection regime is disadvantageous to them as the Points of Inter-connection (POI) allowed to them are very limited. Limited number of POIs, according to the CMSOs, is affecting the growth of their business adversely. They have also been representing that whereas the BSOs in terms of their inter-connection agreement with the BSNL/MTNL are sharing revenue from domestic long distance calls approximately in the ratio of 60:40, the CMSOs are not getting any revenue share from long distance call charges, which they collect from the subscribers and pass on to the BSNL for the fixed leg of the call. The CMSOs argue that access and carriage charges have to be cost based, non-discriminatory and equitable. TRAI is in agreement with these principles and has taken note of the same in the inter-connection Regulation issued by it in May'99. According to the CMSOs, therefore, there must be a revenue sharing arrangement for them too at par with or at least similar to the BSOs.

Although the differences of opinion between the BSNL/MTNL and CMSOs on the issues relating to inter-connection have persisted for quite some time, the efforts for mediation made by the TRAI have since borne fruit in as much as out of the 18 items on which there were differences of opinion between the two parties, the TRAI has mediated and already given its considered views on 13 items for adoption by the two parties. On the remaining issues falling basically in two categories of (a) number and level of inter-connection; and (b) revenue sharing, TRAI considers that a determination by itself would be necessary. Under the TRAI's Determination on Interconnection issued separately today Number of Point of Interconnections (POIs) with BSNL/ MTNL are recommended to be increased to cover all Level I and II Trunk Automatic Exchanges (TAX) and TAX and tandem exchanges in Metros. However, POIs below TAX and tandem levels may be provided with mutual agreement. Interconnection is to be provided within 3 months of the request being made. If for any reason, it cannot be done, the matter will have to be reported to the expert Committee working under the aegis of the TRAI, which will then look into the reasons for the POI being delayed or not granted. TRAI taking all facts of the case will, then determine the issue.

In so far as sharing of revenue from domestic long distance calls between BSNL/MTNL and CMSOs is concerned, TRAI is of the view, that in the principles of costing adopted and the tariff fixed for CMSOs, any fundamental revision of the arrangement incorporated in the Authority's regulation issued in May, 1999, is not called for at this stage.

This should not, however, be taken to mean that the Authority is in favour of letting the present regime continue unchanged indefinitely. The entry of another network operator such as a National Long Distance Operator (NLDO) will result in a multi-operator network and the issue of usage charge for origination, transit and termination will have to be addressed. The May, 1999, regulation also recognises that the prevailing system would have to be changed as these are not based on costs of network elements. A detailed assessment of the underlying costs would imply changes in the existing revenue sharing arrangements. The Authority is in the process of specifying Accounting Separation that will segregate the relevant elemental costs for the charging regime. Once the requisite preparations have been completed in this regard, the present regime would be altered to bring in a new regime relevant to a multi-operator network which would distinguish and specify payment for usage of network resources relating to origination, transit and termination of a call

The Authority, however, recognises the need for some urgent changes in the present system on account of the fact that cellular mobile service providers incur collection costs and bad debt costs for the amount of long distance calls and other revenues that they collect from their subscribers and pass on to the basic service providers carrying the call. To account for these TRAI has determined that 5 % of the aforesaid revenues be given to the CMSOs as their share to cover the costs of their bad debts and collection charges. This would remove the avoidable burden they bear on account of collecting charges in respect of all inter-network calls from their customers and passing them on to the BSOs.

(4) *Demarcation of Service Areas:*

The CMSOs have being representing and did so also in the course of public consultations conducted by the Authority in connection with the WLL services that the demarcation of service areas done for the BSOs and the CMSOs were different, and, therefore, violated the principles of level playing field. The main bone of contention is that whereas the three metros Mumbai, Calcutta and Chennai, are included in the Maharashtra, West Bengal and Tamilnadu circles, specified as the service area of the basic service provider, for cellular mobile operation they have been specified as independent service areas. According to them such demarcation is against the interests of the CMSOs. Considering the fact that defined service areas for different services need not be the same and also the fact that the demarcation was announced before the issue of the licenses which were bid for on the basis of the known demarcation, the representation that the differences in the demarcation of service areas of the BSOs and the CMSOs amount to violation of the principles of the level playing field, is not reasonable. The so called differential demarcation does not, in the opinion of the TRAI disturb the level of the playing field between the BSOs and the CMSOs.

(5) *Scope of the Service:*

The CMSOs have argued that if the BSOs are allowed to offer WLL services with mobility, this will be a serious intrusion in the cellular mobile market and in fact the BSOs will become for all practical purposes a mobile service provider. They have further argued that in case this is to be permitted, in the interest of maintenance of level playing field, the CMSOs should also be allowed to offer fixed services. This line of argument assumes total inter-changeability of the scope of the two licenses which obviously is not being intended in the present context. Also, since the WLL mobility is being limited to the SDCA it is not as if the two services are becoming interchangeable. For this reason, on considerations of equity and maintenance of level playing field there is no ground for the CMSOs to be allowed to operate as BSOs. However, since limited WLL mobility is being allowed to the

BSOs derived from their existing infrastructure, a similar concession may be allowed to the CMSOs in the interest of level playing field. The Authority has taken note of the fact that the GSM Mobile Network Infrastructure built around the mobile switching centres can also be used to provide a fixed telephone. In view of this convergence of the fixed and mobile infrastructure, the Authority would recommend that the CMSO operators may be permitted to provide fixed phones based on their GSM network infrastructure. Their services can be of help in providing telephone connections in the rural areas and in case they provide such telephones which will qualify for the USO funding, these may be considered as entitled thereto in the same manner as that of a basic operator.

II. Other Related Issues:

(B) Basis for assigning WLL frequency

Frequency Spectrum is a scarce National Resource and is to be shared optimally by all type of Telecommunication Services. In India, currently WLL Systems are operating in 800 MHz (CDMA based). The License Agreement stipulates that the Basic Service Operators obtain a separate License from Wireless Planning and Coordination Wing of the Ministry of Communications and pay separate License Fee and Royalty for use of the Frequency Spectrum. National Frequency Allocation Plan 2000, issued by the Ministry of Communication (WPC Wing), has the following remarks in the National Frequency Allocation Table relating to WLL:

i) Frequency band 824 to 844 MHz paired with 869-889 MHz has been ear-marked for Wireless Local Loop (WLL) Services.

ii) Requirement of Cellular and WLL in the frequency band 1700 to 2000 MHz may be coordinated on case by case basis, initially (10 + 10) MHz in the frequency band 1710 to 1785 MHz paired with 1805 to 1880 MHz. Additional (10 + 10) MHz may also be coordinated on case by case basis, subsequently in the frequency band 1710 to 1785 MHz paired with 1805 to

1880 MHz. These allocations may not be contiguous and may be in smaller chunks of 1.25 MHz.

The guidelines relating to the allotment of the frequency spectrum for WLL systems are as follows:

(i) For WLL, availability of appropriate Frequency Spectrum as required is essential not only for providing optimal bandwidth to every Operator but also for entry of additional Operators.

(ii) Review of the spectrum utilisation from time to time keeping in view the emerging scenario of spectrum availability, optimal use of spectrum, requirements of market, competition and other interest of public.

(iii) The WLL frequency shall be awarded to the FSPs, based on the payment of an additional one-time fee over and above the FSP entry fee.

(iv) The basis for determining the entry fee and the basis for assigning WLL frequency shall be recommended by the TRAI.

(v) All FSP Operators utilising WLL shall pay a license fee in the form of a revenue share for spectrum utilization. This percentage of revenue share shall be over and above the percentage payable for the FSP license.

(vi) The appropriate level of entry fee and percentage of revenue share for WLL for different Service Areas of operation will be recommended by TRAI in a time-bound manner, keeping in view the objectives of the New Telecom Policy."

The band allocated to Cellular Mobile Operator, as per GSM technology is in Frequency band of 890-915 MHz paired with 935-960 MHz and 1710-1785 paired with 1805-1880 MHz, which do not fall within the WLL bands indicated above. The bands allocated for Basic and Mobile Services operation are as per NFAP-2000 and are also consistent with License Agreements. As such there is no need to disturb the present frequency allocation in NFAP.

In the light of the foregoing discussion the Authority would like to recommend that the WLL frequency for Basic Service Operators be the same as already allotted to them in 800/ 900 MHz Band and 1700/ 1900 MHz Band. This is as contained in the existing Basic Service License and in accordance with the National Frequency Allocation Plan (NFAP) 2000.

As the frequency in GSM band in 890-915 MHz paired with 935-960 MHz and 1710-1785 paired with 1805-1880 MHz will not be allotted under any circumstances to the Basic Service Operators, there is no likelihood of any conflict of interest with the Cellular Operators on this issue.

Under the duopoly regime for Basic Services, it was decided by the DOT that 40% spectrum will be allotted from the above band to each of the Operators and balance 20% will be allotted on first request As such in 800/ 900 MHz Band where only 20 MHz + 20 MHz has been made available for WLL Basic Service Operations, 8 MHz + 8 MHz was earmarkod for BSNL and one private operator i.e. BSO in each Circle.

Each RF Channel needs 1.25 MHz. A typical operator would require a minimum of say two RF carriers of 1.25 MHz each i.e each operator would need a minimum of 2.5MHz + 2.5MHz in the two paired frequency slots. At present only 20MHz + 20MHz is available for CDMA WLL. With 8MHz already reserved for BSNL/MTNL, only 8MHz is available for other private operators and 4MHz is in reserve. If this distribution is not changed, practically only one private basic services operator can enter the market in each Circle as a competitor to the incumbent. This will severely limit competition and will virtually result in continuance of a duopoly regime for quite some time. The Authority would therefore, strongly recommend that instead of 8 MHz, the allotment of spectrum for WLL services be only 5 MHz so that at least three BSOs in addition to the incumbent can be accommodated in 800/900 MHz CDMA band. The Authority would also recommend allocation of the other (10 MHz paired) frequency spectrum in 800/ 900 MHz band also for the use by WLL systems of the BSOs.

In the light of the discussion in pre-para the Authority would like to recommend as follows:

(i) So as to increase competition among BSOs in a service area, the CDMA BAND of 20 MHz in the 800/ 900 MHz band should be distributed among four operators in each Basic Service Area i.e. 5 MHz each. It is considered necessary as the present proposal to allot 8 MHz to each operator will mean limiting the competition to only 2 operators, which will lead to Duopoly market structure which is not in the interest of the consumers.

(ii) Four more BSOs can be accommodated through Micro-Cellular technology in the 10 + 10 MHz spot reserved for WLL in 1800/ 1900 MHz Band. However, this issue needs to be examined in greater detail, as the existing operators have shown a preference for the 800/ 900 MHz band as infrastructure costs for a macro cellular system is less than that of a micro cellular system.

(C) **Amount of Entry Fee and spectrum charges as a percentage of revenue to be charged from the Basic Service Operator for extending the above facility in respect of existing as well as future Basic Service Licensees, so as to ensure a level playing field with the Cellular Operators.**

For Basic Service Providers, the Authority is not treating the provision of limited mobility with WLL as a service outside the ambit of their service provision. To do otherwise would be to prevent consumers to benefit from the fruits of technological progress. The Authority views WLL with mobility similar to a supplementary or value added service for basic service. In that sense, this service would be similar to the supplementary services and roaming services that are presently allowed for cellular mobile. The Authority is of the opinion that there is no reason to re-consider the issue of entry fee of Basic Service Providers, particularly because the purpose of entry fee was mainly to deter non-serious entry of service providers.

Likewise, the Authority is of the view that the license fee percentages recommended earlier need not be altered for Basic Service Providers. Though their revenue streams will now be higher, the amount of revenue share license fee would also be higher as a consequence. The Authority does not favour imposing a greater license fee burden on the service provider, unless there is a need at any time to do so for the purpose of USO funding. Such increase will almost certainly pass on to the consumer, which as long as it is possible must be avoided.

In the light of the above the Authority would like to recommend that WLL with limited mobility should be provided as part of the Basic Service License. The entry fee and percentage revenue share license fee should not be altered and be as applicable to Basic Service as at present.

Frequency Spectrum Charges

At present, there are two types of charges for spectrum. First, a one-time fee, which is termed as "license fee". Second, an annual spectrum charge which is termed as annual royalty fee. NTP 1999 and all subsequent TRAI recommendations have used the terminology of one time entry fee for the license and an annual license fee as a percentage share of revenue. Consistent with this usage, we will term the one time fee as the spectrum entry fee, and the royalty as the license fee for spectrum.

Entry fee for spectrum:

It is observed by TRAI that the formula for spectrum charges for use of WLL frequencies is the same for Basic Service Operators and Cellular Mobile Service Operators.

The Authority would like to recommend that the existing mode of frequency charge i.e. what is applicable in case of CMTS should be applicable for WLL mobile service provided by Basic Service Providers

For WLL, no change in methodology for frequency allocation is proposed. Existing WLL operators have already made payments for cities where RF channels have been allocated by WPC based on request of Basic Service Operators at city level. As Basic Service tariff rates will continue to apply for wire-line as well as WLL fixed and hand held terminal mobility operations within the SDCA, the Authority is of the opinion that there is no justification for any additional Entry Fees for the Spectrum. Existing mode of charging for spectrum should be applied for new operators also.

In this context we would like to mention that the Authority has received a request for intervention from the Cellular Operators Association of India (COAI) regarding WPC royalty charges levied for use of frequency spectrum by CMSOs. In their request the COAI has brought to the notice of the Authority that according to them, the Govt. i.e. WPC wing of the Ministry of Communications, has wrongly levied royalty and license fee for the frequencies assigned to the circle cellular operators. According to them the present basis of charging city-wise, instead of service area wise is violative of the terms of the licenses granted to the cellular operators. In support of their contention they have stated that whereas for the Metro cities of Delhi, Mumbai, Calcutta and Chennai, the basis of charging is the service area as a whole, in case of telecom circles, the method of city-wise charging has been adopted thereby imposing a heavy financial burden on them. It is understood that they have also represented the licensor DOT and the matter is being examined by the licensor. The Authority would therefore withhold any intervention in the matter till a decision is taken by the licensor on the representation filed by the COAI with them. However, we would like to recommend that the basis of charging for WLL frequency spectrum in the CDMA band and the cellular mobile spectrum in the GSM band should be identical. In the long run frequency spectrum being a limited national resource may have to be auctioned both for CDMA based WLL systems and GSM based CMTS.

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