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**TELECOM REGULATORY AUTHORITY OF INDIA**

**THE TELECOMMUNICATION TARIFF (FORTY FOURTH  
AMENDMENT) ORDER, 2007**

No.1 of 2007

**NOTIFICATION**

**New Delhi, the 24<sup>th</sup> January, 2007**

No. 301-34/2006- Eco. — In exercise of the powers conferred upon it under sub-section (2) of section 11, read with sub-clause (i) of clause (b) of sub-section (1) of the said section, of the Telecom Regulatory Authority of India Act, 1997( 24 of 1997), the Telecom Regulatory Authority of India hereby makes the following Order further to amend the Telecommunication Tariff Order, 1999, namely: -

**1.** (1) This Order may be called the Telecommunication Tariff (Forty fourth Amendment) Order, 2007.

(2) This Order shall come into force on the 15<sup>th</sup> day of February, 2007.

**2.** In the Schedule II to the Telecommunication Tariff Order, 1999, under item (14), for sub-item (14.a) and entries relating thereto, the following sub-items and entries relating thereto shall be substituted, namely:-

Schedule II  
Cellular Mobile telecom Services (CMTS)

ITEM	TARIFF
“(14.a) Regional and National Roaming:	
(14.a.i) Refundable Security Deposit	Forbearance
(14.a.ii) Entry Fee (One time charge)	Nil
(14.a.iii) Monthly Access Charge for Regional or National Roaming	Nil
(14.a.iv) Composite charge including Public Switched Telecom Network (PSTN) charges for incoming call while Regional or National Roaming	Ceiling of Rs.1.75 per minute
(14.a.v) Composite charge including Public Switched Telecom Network (PSTN) charges for outgoing local call while Regional or National Roaming	Ceiling of Rs.1.40 per minute
(14.a.vi) Composite charge including Public Switched Telecom Network (PSTN) charges for Outgoing long distance (inter circle) call while Regional or National Roaming	Ceiling of Rs.2.40 per minute
(14.a.vii) Public Switched Telecom Network (PSTN) charge while Regional or National Roaming	Included in item (14.a.iv, v and vi) above
(14.a.viii) Surcharge while Regional or National Roaming	Nil
(14.a.ix) Incoming Short Message Services (SMS) while roaming	Nil
(14.a.x) Outgoing Short Message Services (SMS) while roaming	Forbearance
(14.ab) International Roaming:	Forbearance
(14.ac) Any other matter related to Roaming but not falling under sub-items(14.a) and (14.ab) above.	Forbearance.”.

( M. Kannan )  
Advisor (Eco.)

Note.1. – The Telecommunication Tariff Order, 1999 was published in the Gazette of India, Extraordinary, Part III, Section 4 under notification no.99/3 dated 9<sup>th</sup> March, 1999, and subsequently amended as given below:-

<u>Amendment No.</u>	<b>Notification No. and Date</b>
1 <sup>st</sup>	301-4/99-TRAI (ECON) dated 30.3.1999
2 <sup>nd</sup>	301-4/99-TRAI(Econ) dated 31.5.1999
3 <sup>rd</sup>	301-4/99-TRAI(Econ) dated 31.5.1999
4 <sup>th</sup>	301-4/99-TRAI(Econ) dated 28.7.1999
5 <sup>th</sup>	301-4/99-TRAI(Econ) dated 17.9.1999
6 <sup>th</sup>	301-4/99-TRAI(Econ) dated 30.9.1999
7 <sup>th</sup>	301-8/2000-TRAI(Econ) dated 30.3.2000
8 <sup>th</sup>	301-8/2000-TRAI(Econ) dated 31.7.2000
9 <sup>th</sup>	301-8/2000-TRAI(Econ) dated 28.8.2000
10 <sup>th</sup>	306-1/99-TRAI(Econ) dated 9.11.2000
11 <sup>th</sup>	310-1(5)/TRAI-2000 dated 25.1.2001
12 <sup>th</sup>	301-9/2000-TRAI(Econ) dated 25.1.2001
13 <sup>th</sup>	303-4/TRAI-2001 dated 1.5.2001
14 <sup>th</sup>	306-2/TRAI-2001 dated 24.5.2001
15 <sup>th</sup>	310-1(5)/TRAI-2000 dated 20.7.2001
16 <sup>th</sup>	310-5(17)/2001-TRAI(Econ) dated 14.8.2001
17 <sup>th</sup>	301/2/2002-TRAI(Econ) dated 22.1.2002
18 <sup>th</sup>	303/3/2002-TRAI(Econ) dated 30.1.2002
19 <sup>th</sup>	303/3/2002-TRAI(Econ) dated 28.2.2002
20 <sup>th</sup>	312-7/2001-TRAI(Econ) 14.3.2002
21 <sup>st</sup>	301-6/2002-TRAI(Econ) dated 13.6.2002
22 <sup>nd</sup>	312-5/2002-TRAI(Eco) dated 4.7.2002
23 <sup>rd</sup>	303/8/2002-TRAI(Econ) dated 6.9.2002
24 <sup>th</sup>	306-2/2003-Econ dated 24.1.2003
25 <sup>th</sup>	306-2/2003-Econ dated 12.3.2003
26 <sup>th</sup>	306-2/2003-Econ dated 27.3.2003
27 <sup>th</sup>	303/6/2003-TRAI(Econ) dated 25.4.2003
28 <sup>th</sup>	301-51/2003-Econ dated 5.11.2003
29 <sup>th</sup>	301-56/2003-Econ dated 3.12.2003
30 <sup>th</sup>	301-4/2004(Econ) dated 16.1.2004
31 <sup>st</sup>	301-2/2004-Eco dated 7.7.2004
32 <sup>nd</sup>	301-37/2004-Eco dated 7.10.2004
33 <sup>rd</sup>	301-31/2004-Eco dated 8.12.2004
34 <sup>th</sup>	310-3(1)/2003-Eco dated 11.3.2005
35 <sup>th</sup>	310-3(1)/2003-Eco dated 31.3.2005
36 <sup>th</sup>	312-7/2003-Eco dated 21.4.2005
37 <sup>th</sup>	312-7/2003-Eco dated 2.5.2005
38 <sup>th</sup>	312-7/2003-Eco dated 2.6.2005
39 <sup>th</sup>	310-3(1)/2003-Eco dated 8.9.2005
40 <sup>th</sup>	310-3(1)/2003-Eco dated 16.9.2005

41 <sup>st</sup>	310-3(1)/2003-Eco dated 29.11.2005
42 <sup>nd</sup>	301-34/2005-Eco dated 7.3.2006
43 <sup>rd</sup>	301-2/2006-Eco dated 21.3.2006

Note 2. – The Explanatory Memorandum explains the objects and reasons for the said amendments.

## **EXPLANATORY MEMORANDUM**

### **Introduction & Background**

1. Tariffs applicable for National Roaming Service are regulated in the form of ceiling tariffs which were fixed by the Telecom Regulatory Authority of India (Authority) under clause 14(a) of Schedule II of Telecommunications Tariff Order (TTO), 1999 (hereafter referred to as the TTO, 1999) as amended by The Telecommunication Tariff (Eighteenth Amendment) Order, 2002 (hereafter referred to as the 18<sup>th</sup> Amendment to TTO). The various elements of charge for roaming mandated by the Authority through the said order are (a) monthly rental for national roaming at Rs.100 (ceiling), (b) roaming airtime charge of Rs.3.00 per minute (ceiling) and (c) a surcharge at 15% on airtime component (ceiling) and Public Switched Telecom Network (PSTN) charges as applicable from time to time to the fixed network. Tariffs for international roaming services are under forbearance.

2. Representations received by the Authority from time to time from consumers indicate that despite intense competition in voice telephony in general in the cellular mobile services, competition does not appear to be adequate in the roaming services market even now. The Authority also found that there are justifiable grounds for a review of the tariff structure applicable for roaming services which had been fixed five years back, i.e. in the year 2002. With a view to revisit the tariffs applicable for roaming services, the Authority obtained cost estimates in respect of providing roaming services by cellular mobile service providers. The Authority has also noted a number of significant developments that have taken place during the last four years which inter alia include (i) fixation of cost based Interconnection Usage Charges (IUC), (ii) periodical review of that regime resulting in reduction of carriage charges, (iii) regime change with respect to Access Deficit Charges (ADC), (iv) reduction in the applicable license fee payable by the operators on the Adjusted Gross Revenue (AGR), (v)

the explosive growth of subscriber base and (vi) the resultant growth in minutes of usage. These factors have implications for tariffs for roaming services. The Authority after analyzing the cost of providing roaming services, prevailing roaming tariff structure and the level of competition for the service and taking into consideration the views of stakeholders has decided to revise the existing ceiling tariff for roaming service. While arriving at the ceiling tariff in the Order, the Authority has considered the inputs received during the consultation process and during the meetings with the stakeholders.

**Gist of views of Stakeholders:-**

3. The Consultation Paper (No.16/2006 dated 24.11.2006) issued by the Authority on “Review of Ceiling Tariffs for Roaming Services” sought the views of stakeholders on various aspects of roaming tariff and also suggestions for enhancing competition in roaming services market. The Consultation Paper had examined in great detail, the currently prevalent roaming tariffs, charging pattern adopted by mobile service providers and outlined the need for review of roaming tariffs with evidence. The Consultation Paper had thus established inadequacy of competition in roaming services and made a case for review of ceiling tariff fixed in the year 2002. The methodology of cost estimation, the data on costs used by the Authority and its consistency, results of cost estimation, summary of calculation of costs for the roaming service, have been given in the Consultation Paper. The relevant portions of the Consultation Paper on these aspects are given in Appendix-1 to this Explanatory Memorandum. The Authority found no reason to change the methodology of cost estimation after the consultation process.

4. The stakeholders were to submit written comments by the 14<sup>th</sup> December 2006. On the request of some stakeholders, the date for submission of written comments was extended till the 28<sup>th</sup> December, 2006. Written comments were received from Cellular Operators

Association of India (COAI), Association of Unified Telecom Service Providers of India (AUSPI), few service providers, consumer organizations and individuals. Gist of comments received from stakeholders by the extended date of submission of comments i.e. 28.12.2006 was put out in TRAI's website. Open House Discussions were held on 2.1.2007 in Delhi with the stakeholders. One more opportunity was given by the Authority for another round of discussions with the association of service providers, namely COAI/AUSPI and also with BSNL/MTNL on 11.1.2007 and a consumer organisation representing cellular phone users on 12.1.2007. These stakeholders had expressed views on various aspects of review of roaming tariff. These comments are briefly discussed below:

5. On the issue of Authority specifying a composite ceiling of tariff for national roaming services, the associations representing the industry have advocated the approach of forbearance in the roaming tariff. In their view, the forbearance principle has been very successful in the past and the overall tariffs for mobile services in India have come down over a period of time. Further, they argued that, since various Value Added Services are offered as a package, it would be inappropriate to have the charges for an individual service as cost based. While some of the services may be offered below cost so as to attract the specific class of users, tariff for some of the other services under the package may be above cost. In case the Authority feels that it is absolutely necessary to fix the ceiling charges, the operators have expressed preference to the present system of fixing ceiling charges for roaming service plus PSTN charges. Two mobile service providers have favoured reduction in the roaming tariff fixed by the Authority in 2002. The consumer organizations and the other individual consumers have supported the view that Authority should prescribe ceiling roaming tariff. According to them the prevailing roaming tariff is on a higher side and there is a coordinated pricing strategy among GSM operators. Since the competition is not found to

be adequate in roaming services segment, the intervention of the Authority is necessary.

6. All the operators and their associations have opposed the idea of adopting the “Home’ Pricing Rule” for roaming tariff. According to them Home Pricing should not be made mandatory for roaming services provided by an operator to the subscribers of inter-network as there are costs involved in providing seamless roaming services. The operators have also reiterated their stand of adopting forbearance to roaming tariff. The reaction of consumers and consumer organizations was mixed. While some have supported the Home Pricing Rule others have not recommended the same.

7. The present tariff framework allows 15% surcharge on roaming airtime. The consumers and their organizations have strongly opposed to allowing surcharge in any form for roaming service. Some operators and their associations have not specifically commented on the issue of surcharge, since according to them the principle of forbearance should be applied to tariff for roaming service. Those operators who responded on the issue of surcharge, want the same to be continued at the same level. The AUSPI even while recommending forbearance in roaming tariff, feels that there should be no surcharge on national roaming tariffs in any form.

8. On the issue of charge for SMS, the consumers and consumer organizations generally are against any additional SMS charges other than the one applicable in the Home network usage. Operators on the other hand feel that delivery of SMS while roaming costs more and therefore the usage charge have to be higher as compared to the charges for the SMS originated in the home network. However, no operator has demonstrated the actual costs of SMS while in the Home Net work and additional cost incurred for delivering a SMS while roaming.

9. In addition to the comments submitted on issues directly related to roaming tariff, stakeholders have made several suggestions for enhancing the competition in roaming services in the country. These suggestions include enhancing transparency on roaming tariff, mandating roaming arrangement among operators and introduction of number portability. The operators, however, are of the view that competition in the Indian telecom market including the roaming segment is sufficient.

**Examination of key issues raised in the Consultation Process:**

10. In what follows, key issues raised by various stakeholders in the consultation process have been addressed by the Authority. For the sake of clarity, the points raised by the mobile service providers/their associations are given in italics followed by the views of the Authority on that point.

11. First, the grounds on which service providers/association of service providers have objected to revising the ceiling tariff applicable for roaming services as elucidated in the Consultation Paper have been examined in the following paragraphs.

**Issue No.1: ‘Approach of Forbearance to be extended to roaming also’:**

*“The approach of forbearance has been successful in the Indian telecom market which is clearly evident from this fact that since then, the customer tariffs have shown a consistently declining trend”.*

In this matter, the Authority recalls that forbearance was introduced in tariffs for voice telephony (except for rural fixed line and roaming in cellular) in India only after the Authority was convinced that the market for telecom services in general had become sufficiently competitive. When forces of market are considered inadequate,

forbearance would result in the consumers having to pay unjustifiably higher prices. In this regard, the following observations made in a recent publication entitled 'Communications Law in India (Legal aspects of Telecom, Broadcasting and Cable Services)' are noteworthy:-

“TRAI has generally adhered to the standard of effective competition when deciding whether to forbear from regulating tariffs. Applying this standard, the Authority withdrew from active regulation of tariffs for international and national long distance services citing ‘intense competition’ in the market for these services. As a general rule, TRAI exercises its regulatory discretion in determining whether to forbear from regulating tariffs. But the Authority’s discretion in this matter is neither absolute nor beyond reproach.” The Author of the book referred to in the preceding paragraph has also cited one occasion where Telecom Disputes Settlement Appellate Tribunal (TDSAT) did not approve of the Authority’s decision relating to one case of forbearance where service providers took advantage of the decision to increase their tariffs.<sup>1</sup>

11.1 In the views of the Authority, the roaming services market is not yet matured enough to warrant forbearance, as competition is considered to be ineffective. Moreover, representations received by the Authority reveal that even the tariff offerings and the manner in which subscribers are charged for availing roaming services are not transparent. The Authority has noted in this context, a point made by one consumer association which is reproduced below:-

“The coordinated pricing mechanism is well evidenced and is clearly documented in the TRAI’s Consultation Paper. The industry

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<sup>1</sup> Vikram Raghavan, ‘Communications Law in India’ [Legal Aspects of Telecom, Broadcasting and Cable Services], Lexis Nexis Butterworths, New Delhi, 2007, para H of Chapter 19.

has read the same as cartelization; it just cannot be the case that each operator in the private sector has to offer the same tariffs. Pre-paid subscribers account for close to 90% of all mobile subscribers, there has been no attempt from the operators' side to provide any kind of tariff rationalization/relief for this huge segment of Cellular Users. On the contrary the entire set of operators (except for public sector undertaking operators) has been consistently practicing a coordinated tariff approach.”.

11.2 The point being made repeatedly by the mobile service providers and their associations is the one which relates to declining tariff for access services in general. It would be appropriate to keep the following relevant factors in view while examining the claim of the operators that the tariff has been declining in general without the intervention of Authority and therefore cellular roaming tariff should also be forborne, namely:-

- (a) Decline in the tariff for access service is generally noticed and it has been acknowledged by the Authority in the past. It is well acknowledged by now that key policy/regulatory initiatives have been responsible for unprecedented growth of telecommunication sector in India. Growth in the subscriber base coupled with growth in the minutes of usage in the voice telephony resulted in steep decline in the cost of provision of services. Added to this, is the decline in the equipment prices and the manner in which expansion of capacity is financed currently (more details on this are discussed in the later part of this Memorandum).
- (b) Findings of the study paper<sup>2</sup> on lifetime tariff schemes supposedly targeted at low and marginal usage subscribers, reveal that these schemes yielded higher Revenue Per Minute

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<sup>2</sup> Study paper No. 3/2006 dated 19/12/06 on ,”Analysis of Tariff Schemes with Lifetime Validity,” Telecom Regulatory Authority of India, NewDelhi

(RPM) to mobile service providers than the RPM under normal plans prevailing in the market.

- (c) One major change in the tariff offerings of mobile service providers in the recent past is the launch of micro prepaid cards which has lower denomination value thereby targeting the lower and marginal segment of users. Performance of this product in the market as has been analyzed with empirical evidence by Morgan Stanley Research<sup>3</sup> reveals that the overall revenue realization per minute under these packages has risen by 34% and their analysis further points to the fact that Earning Before Interest, Taxes, Depreciation and Amortisation (EBITDA) margins on micro prepaid is higher by 19% than the traditional prepaid package.

11.3 It is, therefore, clear that tariff schemes launched by cellular mobile service providers targeting low-end subscribers have yielded higher margins than the normal tariff plans.

11.4 It has been noted by one of the stakeholders that the telecom service providers have been given forbearance for almost all tariff areas. In such segments, particularly, certain value added services which include ring tones, wallpapers, games, text based info services, voice based info services and caller ring back tones, tariffs have been reported to be quite high and it does not appear that such tariffs have any relation to cost. A recent estimate by an investment research group<sup>4</sup> places the market estimation of the above mentioned value added services to reach Rs.75 billion in 2010 at a CAGR of 66% during FY 2006-10. **Cellular Operators Association of India (COAI)** in collaboration with **PriceWaterhouseCoopers (PWC)** in their report<sup>5</sup>

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<sup>3</sup> MORGAN STANLEY RESEARCH ASIA/PACIFIC dated 10-01-07, on, "India Telecommunications Ringing Louder"

<sup>4</sup> Citigroup Asia-Pacific/India Telecom Services on Indian Wireless dated 8.11.2006

<sup>5</sup> Cellular Operators Association of India/PriceWaterhouse Coopers, Indian GSM Cellular Benchmarking Study 2005, April 2006, New Delhi.

published in April 2006 (hereinafter to be referred as Benchmark Study of COAI) on Indian GSM Cellular industry have acknowledged that the VAS (excluding roaming service) as a percentage of net service revenue has increased from 6% in 2002 to 12% in 2005.

11.5 In fact, the Authority has noted in the Consultation Paper No.16/2006 that the service providers do not appear to have passed on many benefits arising out of certain policy/regulatory decisions which they have received in recent years, such as reduction in carriage charges, change in the ADC regime and reduction in license fee, etc.

11.6 Therefore, to say that without the intervention of the Authority, forbearance has resulted in reduction in tariffs is untenable. Further, as the foregoing analysis proves conclusively that in many segments which are under forbearance, tariffs are not low. This has also been supported by Citigroup research report<sup>6</sup> when it said that, “the present Value Added Service (VAS) charges are quite high. For example, a polyphonic ring tone or caller ring back tone cost Rs.10. Decline in prices would boost usage and further VAS penetration.” On the contrary, it has been acknowledged by many investment research groups that the regulatory/policy initiatives induced changes brought in the declining tariff environment in telecom services in India.

**Issue No.2: ‘Roaming Segment is a miniscule of total Mobile Services market’:**

*‘The number of subscribers using roaming service are a very small percentage of the total subscriber base and therefore the roaming minutes of usage are insignificant in comparison to the total minutes of usage. Hence, the roaming segment is a minuscule of the total mobile service segment.’*

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<sup>6</sup> Ibid, page 4

11.7 The Authority has noted the above argument and is of the view that the basis relied upon by the mobile service providers for seeking forbearance in roaming tariff is not justifiable for the following reasons, namely:-

- (a) The Authority had sought to revisit the roaming tariff after watching the market developments for quite some time and after coming to the conclusion that the market for roaming services segment lacks sufficient competition to allow for the free play of market forces.
- (b) In matters relating to deciding whether tariff regulation is required in a particular segment or not, the basis for such a decision is not whether the segment is small or big, but whether competition is sufficient or insufficient. In this case, it has been established by the Authority in the Consultation Paper and in the analysis contained in this order that the prices for roaming services are not competitively determined. To quote from the Consultation Paper<sup>7</sup>:-

**“While competition is considered to be adequate in mobile telephony services in India, the same is not true of roaming services segment of the mobile telephony. Evidence available with Authority on subscriber’s tariff for roaming services reveal that there appears to be a coordinated arrangement in pricing of roaming services among the private GSM service providers. Tariffs applicable for roaming services are not only uniform among these operators for various types of roaming calls but are also similar / identical for various distance slabs as well. Further, in many instances in the past, changes in roaming tariff had been effected almost simultaneously.”**

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<sup>7</sup> Consultation Paper No.6/2206 dated 24.11.06 on, “Review of Ceiling Tariffs for Roaming Services”, TRAI, New Delhi, Para 3.6

11.8 The Authority in this context noted one of the written submissions of a consumer association which has stated that **‘It is because of coordinated pricing, restricted competition and collective failure of service providers that the market size of roaming has not been allowed to grow.’** In this context, the Authority considers it necessary to recall the significance of elasticity of demand in the telecommunications sector while considering price fixation as stated in its Consultation Paper<sup>8</sup> on Framework and Proposals on Telecom Pricing issued on 9<sup>th</sup> September, 1998. **The significance of elasticity of demand is that it shows the extent to which any price reduction results in rise in the demand for the service whose price is reduced and *vice versa*. In that analysis of the impact of elasticity of demand, the Authority had concluded that long distance call segment demand has greater elasticity implying thereby, with the reduction in prices, there would be substantial increase in the demand for the services.** Considering the general growth momentum seen in the Indian economy and the growth in the telecom services in particular, it is the view of many stakeholders that the market potential for roaming services is much larger than the one witnessed till now and therefore, with the reduction in general roaming prices applicable to subscribers, the size of the roaming market is likely to go up substantially resulting in overall revenue growth of service providers.

**Issue No.3: ‘Incidence of Roaming is insignificant’:**

*‘The roaming tariff is not a significant issue while subscriber decides as to which operator he should opt for. For an ordinary subscriber, the incidence of roaming is so insignificant that roaming charges do not get reflected in his buying decision. On the other hand, the high end customers who use roaming extensively make their*

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<sup>8</sup> Consultation Paper No.98/3 dated 9.9.1998 on Telecom Pricing – Framework and Proposals, TRAI, New Delhi, para IV – 1(b).

*decision mostly based on quality of service rather than tariff. Under these circumstances, a significant competition in roaming charges alone should not be expected.’*

11.9 The above statement of a service provider goes to prove conclusively that neither they want competition in the market nor do they expect the regulator to promote competition in the market. Moreover, the statement that roaming tariff is not a significant issue in the choice of the service provider by a subscriber is not supported with any empirical evidence. It is reiterated that price regulation is considered relevant when market forces are insufficient to prevent the exercise of market power. Consumers cannot be expected to pay prices for services that are unjustifiably higher than the cost of providing such services, irrespective of the fact whether the incidence of roaming is significant or not. The Authority is of the view that reduction of the roaming charges on the basis of cost orientation would further promote inter-State trade, commerce and movement of people throughout the territory of India which would strengthen the unity and integrity of the nation.

#### **4. ‘Roaming facility is a Value Added Service’:**

*“National roaming facility is a value added service which meets the requirement of a particular segment .....and also does not come under the mandate of basic connectivity to be offered by an operator.”*

11.10 The Authority has noted this point of view of one of the industry associations and has considered this not to be a relevant argument for not regulating the tariffs of roaming services. In this context one of the consumer associations has appealed to the Authority stating that, “the march of technology has created a dynamic situation in the market, i.e. all those products that are termed as premium on their launch become non-premium within very

short span of time”. The Authority is, therefore, of the view that, if roaming services are made affordable, the benefits of technology can be reaped by common man, but when tariffs are kept high having no relation to cost, the service will be availed only by a select few.

**Issue No.5: ‘Prevalent Roaming Tariffs are below the ceiling’:**

*‘Even though the Authority has fixed the ceiling of Rs.3 per minute (excluding PSTN charges as applicable), the operators are generally charging Rs.1.99 per minute from subscribers of other network and much lower charges of Rs.1 per minute from their own subscribers while roaming in their own network outside the home network.’*

11.11 The above argument of the mobile operators has been examined and it is found that it is factually incorrect to claim that the roaming airtime charge is Rs.1.99 per minute for off-network roaming. The Consultation Paper has made this point quite clear in Chapter 3 under Need for Review of Roaming Tariffs. Table No.2 of the Consultation Paper has analysed the trends in roaming charges since February 2002 and the structure of the composite roaming charges applicable for the subscriber. The key conclusion of that analysis contained in the Consultation Paper (para 3.3) is reproduced below:-

**“Trends in the composite roaming charges levied by private GSM operators since February 2002 would indicate clearly that all reductions that had taken place till February 2005 were mainly on account of reduction in the PSTN charges mandated by the Authority from time to time. Service providers did not at any point of time reduce the roaming airtime charge or the surcharge on roaming airtime. They have always been operating at the ceiling fixed. The only exception being the reduction of Re.1 per minute in the roaming airtime charge made by them in May**

**2005. Even this reduction has been almost nullified by the operators when they reported Rs.3.99 per minute as the applicable composite tariff for the distance slab of 500 kms and above.”**

Further, the Authority has expressed its concern in the Consultation Paper that reduction in the cost of providing roaming services does not appear to have been passed on fully by service providers to customers. The relevant para of the Consultation Paper is reproduced below:-

**“Reduction in the cost of providing roaming services including reduction on account of access deficit charge payable by operators on account of movement to revenue share regime of ADC payment does not appear to have been passed on fully by service providers to customers. Similarly, reduction in carriage charge effected by the Authority in its recent determination of IUC regulation dated 23.2.2006 does not appear to have been fully reflected in the retail tariffs applicable for long distance calls and roaming services. Further, the reduction in annual license fee payable by NLDOs from 15% of Adjusted Gross Revenue (AGR) to 6% of AGR effected by the Government, which is one of the major opex items of costs has not been passed on to the consumers by the operators. Some operators have in fact hiked the tariffs applicable for roaming services during recent months which suggests that roaming services market is not sufficiently competitive.”**

11.12 The lower charges of Re.1 per minute applicable for roaming in on-network argument of the mobile operators is not acceptable for the following reasons, namely:-

- (a) First, the monthly rentals applicable for availing this 'lower charges' are much higher than the monthly rentals applicable in most commonly found tariff plans in the market.

- (b) Secondly, the subscribers forgo the flexibility of using the network of other service providers while roaming because subscribers who access other networks while roaming have to pay the higher roaming charges.
- (c) Currently, mobile service providers who have offered lower roaming charge on on-network as explained above have restricted such tariff plans only to post-paid platform and is not available to prepaid subscribers who form a very large proportion of the total mobile subscriber base.

**Issue No.6: ‘Roaming Tariffs should not be seen in isolation’:**

*‘It would be unfair for the Authority to only view the roaming tariffs in isolation while disregarding the large bulk of the service being provided at below cost tariffs and the long term viability of the operators.’*

*‘The charges for each individual service under a package are not necessarily cost based. While some of the services may be offered below cost so as to attract specific class of users, tariff for some of the other services under the package may be above cost.’*

11.13 The argument that the Authority should not view the roaming tariffs in isolation leaving aside large bulk of the service being provided based on tariffs that are below cost and financial viability of the sector etc. has been examined by the Authority and this argument of the mobile service providers is not found acceptable for the following reasons, namely:-

- (i) Neither the service providers nor the associations representing the service providers have demonstrated to the Authority, how some services that they offer are below their costs and what is that quantum of revenue from services like roaming which is compensating services that are offered below costs.

- (ii) Evidence available indicates that the cost of providing services in telecommunication sector in general and in mobile telephony in particular has been declining over a period of time. In the report of Morgan Stanley Research, Asia Pacific dated 10.1.2007, this point has been explained with evidence which is reproduced below:

**“The Indian operators have had several advantages since they started building their networks in the last five years.**

**(a) Capex prices have fallen as equipment vendors worldwide have lowered prices in the past 4-5 years.**

**(b) India has had the further advantage of needing only cheaper 2G infrastructure, when the rest of the world has been moving to 3G.**

**(c) The Indian Government has given additional spectrum to the operators crossing a threshold subscriber base-further lowering incremental capex. The more spectrum given by the Government, the lower the capex per erlang.**

**(d) Regular reductions in customs duties on telecom equipment and handsets by the Government have decreased the cost of setting up a network and increased the affordability of the services.**

**(e) Telecom equipment for 2G GSM equipment have declined, especially with superior technologies surfacing like Adaptive Multi Rate Systems and India becoming perhaps the world’s biggest 2G GSM consumer.**

**(f) Sharing of networks amongst operators incrementally lowers their capex per subscriber base.”<sup>9</sup>**

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<sup>9</sup> *Ibid*, PP 21-22

11.14 It is evident from the above that there are a number of factors that have been responsible for driving down the costs of providing telecom services in general. Evidence published by the Authority in the Study Paper<sup>10</sup> on Tariff schemes with Lifetime validity goes to prove that service providers have been getting a reasonable Average Revenue Per User (ARPU) from the scheme despite the fact the scheme was primarily targeted towards low usage and marginal customers. The scheme has kept the tariff levels at Rs.2 per minute for local calls and Rs.3 per minute for domestic long distance calls, which are much above the call charges prevailing in the market under other plans. Further, the study has revealed that revenue per minute (RPM) for lifetime tariff schemes is Re.0.80 which is higher as compared to the RPM of Re.0.77 for the full mobility service as a whole. It is noteworthy that even a tariff scheme such as this which was launched mainly to cater to low income users yielded a higher margin incrementally for the operators.

11.15 Thus schemes like lifetime validity and micro prepaid cards launched by mobile service providers, targeting low and marginal subscribers have in fact enhanced the margins of the service providers, let alone these schemes getting subsidised by the service providers.

**Issue No.7: ‘Indian Telecom Sector is lagging behind’:**

*“On certain financial parameters Indian telecom sector is lagging behind in comparison to emerging telecom markets, whereas huge investment is required in coming years.”*

11.16 In support of this point of view, COAI has in its written submission to the Authority taken up certain parameters like Revenue Per Minute (RPM), ARPU, EBITDA margins, Return on Capital Employed (RoCE), capex and cash flow of operators etc. for

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<sup>10</sup> *Ibid*

comparison overtime and across certain countries. The argument of the industry association in this regard has been examined based on evidence and the Authority has come to the conclusion that revision of ceiling tariff for roaming services will not impact the cellular industry adversely. The basis for this view of the Authority in this matter are given below:-

- (a) Significant developments have taken place in the last year which the analysis of the cellular industry association has not taken into account. In fact, reports of number of investment research firms have viewed the Indian wireless sector as an attractive investment for regional and global investors. These are explained with accurate references in the following paragraphs.
- (b) On the issue of RPM in India, the industry association has submitted certain data as part of its written submissions to the Authority as an evidence of falling call charges. As stated earlier, the Authority does not disagree with the fact that tariffs for telecom services have fallen over a period of time. However, it is necessary to clarify a conceptual issue in the kind of temporal comparisons made by COAI. The RPM data that has been used in the submission to the Authority has taken into account total minutes of usage i.e. outgoing and incoming which does not reflect call charges particularly in countries like India where Calling Party Pays (CPP) regime is in place.
- (c) Subscriber growth and higher minutes of use per subscriber (MOU) witnessed during the period June 2003 to March 2006 have more than compensated for the decline in tariffs (RPM). This has been acknowledged in the report of Macquarie Research Equities which is reproduced below:-

“India’s average revenue per minute may be one of the lowest in the world at about 2 Cents per minute, but it has definitely not been a value destroyer for Indian operators. Average usage has gone up to over 400 minutes per month

and has more than compensated the operators for the fall in tariffs. As a result, the decline in ARPU has been benign.”<sup>11</sup>

- (d) The report of the Benchmarking Study of COAI/PWC itself has acknowledged the growth of EBITDA margins as percentage of net service revenue from 15 in 2000 to 44 in 2005.<sup>12</sup> The report of Merrill Lynch, September 2006 has also documented that the average EBITDA margin for the country in the wireless sector has risen from 26.9% in 2001 to 36.2% in the second quarter of 2006. Further, in the same report, comparison of EBITDA margins across several countries shows that the margin in Indian wireless sector is higher than what is available in countries like Hong Kong, South Africa, Austria, Brazil, Argentina, Columbia, Finland, Israel, Japan, Korea, Netherlands, Peru, UK and US.<sup>13</sup>
- (e) Evidence is available to say that the growth in EBITDA margins will be sustained. The report of *Ernst & Young* has concluded in their study of India Telecom that they do not see the EBITDA margins falling despite fall in ARPU and increasing cost of acquisition and retention as the sheer volumes would ensure EBITDA sustenance.<sup>14</sup>
- (f) For the year ending March 2006, report of Morgan Stanley<sup>15</sup> has estimated that for the two major mobile operators, EBITDA would grow 71% and 80% year on year (YoY) and the net profits for them are expected to grow at 88% and 154% YoY. It is further stated in the same report that such EBITDA estimates stem from higher net adds and higher ARPUs. Therefore, they are of the view that the Indian wireless sector is an attractive investment for regional and global investors. Incidentally, it may be mentioned that as per the report cited above, the weighted

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<sup>11</sup> *Macquarie Research Equities, Report on India Telecoms dated 27.11.2006, page 13.*

<sup>12</sup> *Ibid page 27.*

<sup>13</sup> *Merrill Lynch, Global Wireless Matrix 2Q06, dated 19<sup>th</sup> September 2006 page 59*

<sup>14</sup> *Ernst & Young, From Emerging to Surging, India Telecom 2010, December 2006, page 25*

<sup>15</sup> *Ibid, Page 1*

average cost of capital (WACC) calculated for the two major private players is 10.7% and 12.14 percent respectively. The cost calculations for fixation of roaming tariff in this exercise undertaken by the Authority has taken into account 14% WACC.

- (g) Return on capital employed (ROCE) for the Indian telecoms in the wireless sector has been calculated by Morgan Stanley Research in their report dated 10.1.07 for the incremental consumer at various levels of incremental capex per subscriber which is the scientific method of analyzing ROCE. This ranges from 28% to 31% depending upon the incremental capex which is by no means low return.<sup>16</sup>
- (h) On the issue of capex requirement for future expansion, it is true that additional capital expenditure will be needed for the sector with the growth but the incremental capex are bound to be lower. It is also a matter of fact that the model for capex deployment has undergone a sea change in the sense that the service providers are now outsourcing the same on managed capacity and managed services model. Under this type of model the vendors initially provide credit on the capex to the operators until the consumer joined the network thus greatly moderating the capex requirement for the operator.
- (i) Comparison of these parameters across emerging markets is beset with a number of complexities and thus may not lead to appropriate conclusions. Countries differ widely in terms of purchasing power/income levels, stage of development of the economy, structure of the economy, demographic and occupational pattern, annual rates of inflation, legal/regulatory framework, banking systems and practices, monetary/credit policy of the banking system, accounting systems and costing standards and other socio-cultural factors. All these factors

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<sup>16</sup> *Ibid, Exhibit 21, PP21*

have a bearing on the parameters chosen for comparison by the industry association.

- (j) After taking into account all these evidences discussed above, the Authority is of the view that the analysis of the COAI are at the best self-serving selective inferences. The mobile service providers have themselves accepted in their written submissions that, **“the roaming revenue forms very small part of the total revenue of an operator.”** Thus, there is no evidence to say categorically that revision of the existing ceiling tariffs applicable for roaming services by the Authority on the grounds of insufficient competition would impact the mobile operator’s profitability and viability of the sector.

#### **Objects and Reasons of Amendments:**

In addition to the foregoing paragraphs, the objects and reasons of the amendments made are as under:-

#### **I Ceiling Tariff for various elements of roaming**

Based on the analysis of various elements of cost and revenue data, the views of stakeholders received in writing and in the course of discussions, the prevailing tariff for calls originated in home networks, and other relevant factors, the Authority has decided to re-fix ceiling tariff for various elements as specified in this Order. In order to enhance transparency for the subscribers and for the detailed reasons discussed above, the Authority has decided to fix composite roaming charges as ceiling instead of fixing monthly access charges and call charges separately. The prevailing tariff order permits the operators to have PSTN charges in addition to the roaming airtime charge. The Authority feels it would be transparent and more convenient for subscribers if a ceiling call charges are fixed inclusive of the PSTN component. Therefore, the call charges specified in this tariff order are all inclusive of and it is not permissible to levy charges for origination, carriage, termination, ADC, surcharge or any other charges in

addition to the ceiling call charges specified in this order for various types of calls. The major components of roaming tariff are briefly discussed herein below.

Security Deposit and one time entry fee.

Clause 14(a), Schedule II of TTO, 1999 as amended by 18<sup>th</sup> Amendment to TTO dated 30<sup>th</sup> January, 2002 had specified forbearance in respect of security deposit and nil charges as entry fee. There is no change proposed to these components in this Tariff Order.

**II Underlying principles in Roaming Tariff Structure**

Cost orientation to the tariff structure, transparency, simplicity and flexibility to operators have been the underlying principles that guided the Authority in evolving the framework for roaming tariffs mandated in this order. Flexibility is facilitated by continuing to keep the roaming tariffs as a ceiling. Service providers have been given the freedom to offer different rates for different slabs of distances and also differential tariffs for roaming in the on-network and network of other service providers (off-network) within the overall ceiling fixed. In this Order, the Authority has moved away from the two part charging regime i.e. a monthly fixed charge for access to the roaming facility and airtime charge that depend on usage, to a usage based composite roaming tariff that takes into account the following:-

- (a) All the incremental costs arising out of roaming services covering capital expenditure (CAPEX)
- (b) All the incremental costs arising out of roaming services covering operating expenditure (OPEX) and
- (c) Applicable Interconnect Usage Charges (i.e. origination, carriage and termination) and Access Deficit Charges.

### **III No Two part charging regime**

Composite roaming tariff structure was proposed by the Authority in its Consultation Paper No.16/2006 dated 24.11.2006 based on grounds of transparency and fairness for the consumer.

11.17 After detailed analysis of data on costs, traffic pattern and the number of subscribers availing roaming facility across mobile operators whose data was made available and considered for analysis, the Authority has come to the conclusion that the cost estimates are realistic and reflective of the resources utilized only when the roaming tariffs are fixed in a composite manner. It would be appropriate in this context to recall the detailed explanation of the Authority in the Consultation Paper in this aspect:-

“Separate estimates for determination of monthly rental and roaming call charges do not appear to be realistic in the present context on account of the asymmetrical distribution of In-roaming Minutes of Usage and the subscriber base availing roaming facility across operators. Data available indicates that the total number of in-roamers into the network of an operator in a particular service area is several times that of the number of subscribers who have availed roaming facility on payment of monthly rentals in the same service area of the same operator. If monthly rental has to be determined purely based on the number of subscribers with roaming facility, then the cost will be disproportionately loaded on such roaming subscription resulting in high rental amount. Such a situation would be iniquitous and thus unfair as it does not distinguish between subscribers availing one-off roaming usage and other frequent roamers. In fact, the two part cost determination, one covering the capex recovery through monthly rental and another for meeting the opex recovery through usage charges is throwing up results indicating the anomaly described here. On the contrary, incremental cost estimates covering both capex and opex together for operators have

yielded robust results providing reasonable range of costs. For this purpose the recovery of capex and the opex were added for each of the licensee and an incremental cost of roaming call per minute was derived.”.

11.18 A composite roaming tariff structure does not mean that capital costs associated with access to roaming facility has been left out or not taken into account. Far from that. The Authority has clearly stated in its Consultation Paper (para 5.5) that, ‘the capital cost component has also been subsumed in the incremental cost estimates attributable to roaming and thus no category of costs has been left out.’ What a composite tariff for roaming means is that there shall be a roaming tariff based on usage i.e. separately for incoming call, local outgoing call and inter-circle outgoing call while roaming on a per minute basis without the consumer having to pay any fixed monthly charges in the form of rental or otherwise. It is reiterated that costs associated with the access to roaming facility is already part of the incremental cost arising out of provision of roaming services. Further, there shall be no additional PSTN charge (later clarified by the Authority as IUC charges) allowed to be charged from the roaming subscribers as they are part of the composite roaming tariff (more discussion on this later).

11.19 In the discussions held by the Authority with the mobile service providers and their associations during the consultative process, a point was made by them that signaling charges are incurred on a per subscriber basis for providing roaming facility which is of recurring nature and therefore the two part regime containing, inter alia, rental should continue to exist in the roaming tariff structure. The Authority has found this argument of one of the mobile service providers to be untenable for the following reasons, namely:-

- (a) Discussions with the industry sources reveal that by and large, mobile service providers have their own signaling system and do not depend on the incumbent operator for such a facility any more and thus monthly payment on that account on a per subscriber basis has almost ceased to exist.
- (b) It is common knowledge that a mobile service provider who is either leasing capacity or setting up its own capacity for carrying long distance calls including for roaming will not have to separately incur signaling charges payable to another operator as it existed several years ago. Carriage charges determined by the Authority at Re.0.65 per minute have been fully allowed in arriving at the incremental cost arising out of provision of roaming services.
- (c) In any case, even conceding that one or two service providers are incurring expenditure on account of signaling charges, the amount reported to have been incurred by them in their data submissions to the Authority (pertaining to FY 2003-04) has been included totally without any deductions for purposes of arriving at cost estimates on account of provision of roaming services.
- (d) The service providers associations who had met the Authority in a meeting held on 11.01.07, eventually conceded that on the cost estimates or the basis of the cost estimates arrived at by the Authority which are shown in the Consultation Paper are correct. Their contention was on the ground that forbearance in mobile tariffs in general had led to declining tariff environment and therefore Authority should desist from continuing with any regulation of roaming tariffs in isolation. Examination of this issue is contained in an earlier section of this Explanatory Memorandum viz. paras 11.1 to 11.7.

11.20 In this context, the Authority also recalls its Directive dated 16.6.2004 wherein it had to mandate the mobile service providers to

inform the subscriber through SMS whenever they roam into another license area that they would be charged for the roaming facility *only if the subscriber chooses to either make or receive a call while roaming*. It was further mandated that any fixed charges for roaming such as roaming rental should not be charged unless roaming is activated i.e. a call is either made or received by a customer while roaming (Directive No.101-3/2003-MN (Pt.II) dated 16.6.2004 on auto roaming services to all prepaid subscribers). Despite such a directive, complaints continued to be received by the Authority from prepaid subscribers for being charged roaming rental/some fixed charge even though they do not want to avail the roaming service.

11.21 Keeping in view the above factors, the Authority has decided that there shall be no monthly access charges for roaming in the name of rental or any other fixed charges for accessing roaming facility in any form other than the per minute usage charges of roaming whether it is prepaid or postpaid. The Authority also clarifies that schemes involving combination of any fixed charges for accessing roaming facility and nil or lower charges for usage and similar other plans combining roaming charges with tariffs for content services, etc. shall not be permitted as there is every possibility of the tariff determination for roaming services getting circumvented giving rise to serious problems for monitoring regulated tariffs.

#### **IV Composite Roaming call charges**

The Authority as explained in the Consultation Paper and further amplified in the foregoing paragraphs of this Explanatory Memorandum has decided to fix ceiling on tariffs for roaming calls on a per minute basis and that tariff is all inclusive. Paras 5.6 to 5.10 of the Consultation Paper contain detailed discussions on the routing of various types of calls while roaming, the network resources utilized and the underlying cost elements.

## **V Incoming call while roaming**

The following components of cost category are relevant for estimating the cost arising out of enabling the roamer in the visiting network to receive an incoming call whether it is local or inter circle, namely:-

- (a) Carriage
- (b) Termination
- (c) Access Deficit Charges
- (d) Incremental cost for roaming services

11.22 Carriage charge is taken to be Re.0.65 per minute which is the ceiling carriage charge specified by the Authority in its Interconnection Usage Charges (IUC) determination as currently applicable. Since roaming tariff is also fixed as a ceiling, the Authority has given full provision by taking Re.0.65 per minute as the applicable call charge irrespective of the distance slab involved in the roaming. Termination charge of Re.0.30 per minute is also the one which is the currently applicable as per the IUC determination of the Authority. With the change of regime in ADC, access providers are required to pay 1.5% of their AGR to BSNL and it has been estimated that at the best, per minute ADC shall not exceed Re.0.05. A brief indication of the composition of currently prevalent roaming charges is given in the Consultation Paper in Chapter 3 in which ADC component of Re.0.05 per minute is also shown. Thus, these three elements put together would amount to Re.1 per minute.

11.23 The Authority then examined the incremental per minute cost estimates for roaming service as discussed in the Consultation Paper in paras 4.8 to 4.10. From the range of cost estimates shown in that Table which is also given in the Appendix-1 to this Note at the end of this Explanatory Memorandum, the Authority has decided to

adopt the maximum of the cost estimates available for the 17 licensees. While adopting this cost estimate of Re.0.76 (rounded off to 0.75) per minute, the Authority is guided by the following, namely:-

- (a) The lowest and highest cost estimate of Re.0.07 and 1.09 respectively are clear outliers and they need to be excluded from consideration.
- (b) The Authority is fixing roaming tariff as ceiling and by this it seeks to provide flexibility to operators to offer tariffs in a competitive manner.
- (c) The Authority also seeks to permit some additional margin in its choice of the available range of cost estimates.

The sum of all the above categories of cost elements comes to Rs.1.75 per minute. Accordingly, the Authority has decided to fix Rs.1.75 per minute as all inclusive roaming tariff for an incoming call (local or inter circle). This works out to a reduction of around 56% from the maximum tariff applicable for the maximum distance slab as prevalent in the market for receiving an incoming call while roaming.

## **VI Roaming tariff for an outgoing call – Local**

11.24 The following components of cost category are relevant for estimating the cost arising out of enabling the roamer in the visiting network to make an outgoing local call, namely:-

- (a) Origination – Re.0.30
- (b) Termination – Re.0.30
- (c) Access Deficit Charges – Re.0.05
- (d) Incremental cost for roaming services – Re.0.75

11.25 Although origination is forborne, the Authority in its first cost based IUC determination had fixed origination charge as the same as that of termination i.e. Re.0.30 per minute. Accordingly, origination charge of Re.0.30 is taken into account. The sum total of all these components of cost categories given above for a local

outgoing call while roaming comes to Rs.1.40 per minute. The Authority has therefore decided to fix ceiling roaming tariff on an outgoing local call at Rs.1.40 per minute which will be applicable on all such local calls irrespective of the terminating networks. This works out to a reduction of around 55% from the maximum tariff available in GSM services for making a local outgoing call while roaming.

## **VII Outgoing call while roaming – Inter-Circle (national long distance calls)**

11.26 The following components of cost category are relevant for estimating the cost arising out of enabling the roamer in the visiting network to make an outgoing inter circle call, namely:-

- (a) Origination – Re.0.30
- (b) Carriage – Re.0.65
- (c) Termination – Re.0.30
- (d) Access Deficit Charges – Re.0.05
- (e) Incremental cost for roaming services – Re.0.75

11.27 The sum totals of all these components of cost categories given above for an outgoing inter circle call while roaming comes to Rs.2.05 per minute. While the Authority is fully conscious of the fact that the sum of all relevant cost categories comes to Rs.2.05 per minute for an inter-circle outgoing call while roaming, in deciding the roaming tariffs for this call category, the Authority has kept in view the range of prevalent tariffs applicable for the long distance calls terminating in different networks. Thus taking into account these market realities and the cost estimates at Rs.2.05 per minutes, the Authority has decided to fix ceiling roaming tariff on an outgoing inter circle call at Rs.2.40 per minute which will be applicable on all such calls irrespective of the distance slabs and terminating networks. This works out to a reduction of around 40% from the maximum tariff

applicable for the maximum distance slab as prevalent in the market for making an outgoing inter circle call while roaming.

### **VIII SMS while Roaming**

11.28 The Authority has examined the viewpoints of various stakeholders on the issue posed for consultation i.e. whether the outgoing SMS while roaming should attract any tariff other than the one applicable in the home network usage. Currently, private GSM operators levy Rs.3.45 as SMS charges while roaming. These are significantly higher than the charges for SMS applicable in the home network. The consumers have represented to the Authority that high SMS charges are burdensome to them and in fact they have demanded to the Authority to fix tariffs for SMS based on cost. After examination of the various viewpoints and on the basis of evidence available with the Authority, it has come to the conclusion that there appears to be no case for any additional tariff for a short message service while roaming (whether for incoming or outgoing) over and above what is payable by the subscriber for a similar service in the home network.

11.29 The rationale behind this conclusion of the Authority is given below:-

- (a) All the cost items (capital and operating) associated with the provision of roaming services have already been taken into account in arriving at the cost estimates of roaming calls.
- (b) The Authority recalls its decision dated 21.8.2006 regarding IUC for SMS wherein it was stated that, there is no supplementary cost for the terminating and transiting traffic. Primary resources utilised for SMS are necessary provision for handling the signalling for the voice traffic and are used for SMS only during the period when it is not used for voice traffic signalling or any other service. As such, there is no cost justification for

permitting additional levy on the roamer either for an incoming or outgoing SMS.

11.30 The Authority then examined different offers of tariffs in the market for SMS in the home network and concluded that there is a divergent offers relating to tariff applicable for SMS both as part of tariff plans and in the form of Top-up packs. The Authority then weighed the merits and demerits of linking the tariffs for SMS while roaming to the tariff applicable for SMS in the home network usage to a subscriber and has decided not to mandate applying home tariffs for SMS while roaming for the time being. Since the other option of fixing a cost oriented SMS was not open to consultation, the Authority preferred to forbear in fixing tariffs for outgoing SMS while roaming. The analysis of prevailing tariffs for voice calls and SMS while roaming reveals that by and large tariffs for SMS are below the call charges. With the revision of roaming tariffs for calls, the Authority expects that the mobile service providers would voluntarily reduce the charges applicable for SMS while roaming. While the Authority is not inclined to fix for the time being tariff for SMS while roaming, it may revisit the subject in case there are competition issues and more importantly where interests of consumers are adversely affected. However, the Authority would continue to monitor the market developments relating to tariffs applicable for SMS while roaming and intervene if circumstances so warrant and so required. In this context, the Authority recalls its decision dated the 21<sup>st</sup> August, 2006 on Interconnection Usage Charges for Short Message Service which is as under:-

The Authority is concerned with the high and increasing premium SMS charges. It must be acknowledged that the subscriber does not often make his choice on the basis of SMS rates. Moreover, the awareness at the subscriber level is low as the charges are not so transparent. The subscriber in many respects is captive to operator. He is denied the real choice as

he would be loath to changing operators just on account of SMS rates. Also the bundling of service may not highlight the tariff of an individual service. While the Authority refrains from making any Regulation at this stage it reserves the right to revisit the subject in case there are competition issues in the retail market and more importantly where the consumers interest are adversely affected.”<sup>17</sup>

## **IX Non-applicability of surcharge**

11.31 In the existing regime, a surcharge on airtime component of 15% is specified under clause 14(a), Schedule II of TTO, 1999 as inserted by 18<sup>th</sup> Amendment to TTO dated 30<sup>th</sup> January, 2002. The Authority has examined the comments of various stakeholders in this matter and also the other evidence available and based on which, it has been decided not to allow any surcharge on the roaming charges. This is justified on the grounds that the IUC regulation that exists now provides for mobile termination charge based on cost and the home network gets termination charge in respect of calls forwarded to its roaming subscribers which was not available when surcharge was specified under under clause 14(a), Schedule II of TTO, 1999 as inserted by 18<sup>th</sup> Amendment to TTO dated 30<sup>th</sup> January, 2002. Specification of cost based IUC would render the rationale for envisaging the surcharge redundant. The industry associations made two points in favour of retaining the surcharge. One, provision of roaming services involves usage of additional network elements/costs such as inter operator signaling, exchange of TAP files, inter operator settlements costs and bad debts. Second, they claimed that there is also a significant value addition for the customer who avails of this service. Both these points have been examined, and the Authority is of the view that when all costs relevant for provision of roaming services, have been taken into account, there exists no justification for

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<sup>17</sup> *Decision of the Telecom Regulatory Authority of India dated 21<sup>st</sup> August, 2006 on Interconnection Usage Charges for Short Message Service, para 11.*

levy of surcharge. On the point of bad debts, the Authority has noted that in cellular mobile telephony, more than 80% of the subscribers are in prepaid platform where the money is collected in advance by the service providers and there is no merit in the said point. Generally, it is seen that service providers also obtain security deposits from the post paid subscribers for providing such services and credit limits are fixed by the service providers for each post paid subscriber depending upon various criteria including the profile of the user. Secondly, surcharge has no relationship with value addition as claimed. Thirdly, surcharge in any tariff structure cannot allowed to be a permanent feature.

#### **X PSTN Charges**

11.32 In the structure of roaming tariffs as mandated by clause 14(a), Schedule II of TTO, 1999 as inserted by 18<sup>th</sup> Amendment to TTO dated 30<sup>th</sup> January, 2002, there is a provision for PSTN charges applicable from time to time to the fixed network in addition to the roaming airtime charge. Subsequently, after the Telecommunication Interconnect Usage Charges Regulation 2003, the interpretation of what constitutes PSTN charge has undergone a change. This decision was communicated by the Authority in 2004 to all stakeholders.<sup>18</sup> Thus, as per the currently applicable interpretation, PSTN charges has been replaced with IUC charges i.e. carriage and termination and ADC. Since the cost estimates derived by the Authority include all components of IUC charges and ADC and a composite tariff thereof has been determined for roaming services separately for each type of call, there should be no charges in the name of PSTN.

11.33 **Accordingly, the Authority has decided the following tariff structure for various scenarios of call and SMS while roaming:-**

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<sup>18</sup> TRAI Letter No.310-7(28)/2004-Eco. dated 14.5.2004 addressed to all mobile service operators/unified access service providers/COAI/ABTO.

- (a) For incoming call – ceiling of Rs.1.75 per minute.**
- (b) For outgoing call (local) – ceiling of Rs.1.40 per minute.**
- (c) For inter-circle call – ceiling of Rs.2.40 per minute.**
- (d) Monthly access charge (rental) for roaming – Nil.**
- (e) PSTN charges – Nil.**
- (f) Surcharge – Nil.**
- (g) For incoming SMS while roaming – Nil.**
- (h) For outgoing SMS while roaming – Forbearance.**

11.34 Thus, the revised roaming tariff fixed by the Authority by this Order to the TTO, 1999 is all inclusive and is in the nature of a composite tariff. Since the tariffs applicable are fixed as ceilings, the service providers have the freedom to offer any tariffs below the respective ceilings. It is also important to note that the Authority has not permitted any other version of roaming tariff offers in which there is scope for breach of ceilings fixed. The mobile service providers are required to restructure their roaming tariffs consistent with this Order and implement the same on 15<sup>th</sup> February, 2007 and report to the Authority as per the reporting requirement. The Authority would closely monitor the developments in the market, and revisit this issue at an appropriate time and even consider leaving roaming tariff to be driven by the market forces if perceptible competition evolves in the market.

**Appendix 1 to the Explanatory Memorandum**  
**Extracts from Consultation Paper No: 16/2006**

**Currently prevalent Roaming Tariffs, charging pattern  
and its Analysis**

2.1 Tariffs for national roaming services are in two parts – one being the monthly rental and the other being the call charges while roaming.

**Roaming Rental**

2.2 Currently service providers generally levy a monthly rental of about Rs.50 for providing access to National Roaming Services as against the ceiling rental of Rs.100/- per month fixed by the Authority in the year 2002.

**Roaming Call Charges**

2.3 Charging pattern adopted by service providers for national roaming calls currently is in the form of composite tariffs which is all inclusive i.e. roaming air time charge, IUC/ADC, surcharge. Roaming tariffs currently prevalent can be better appreciated if the following possible call scenarios are kept in view:

- a) For outgoing local call while roaming
- b) For outgoing inter-circle call while roaming
- c) For incoming call while roaming

(b) and (c) above are further classified into different distance slabs. Table No.1 below gives the currently prevalent roaming call charges as offered by various operators in respect of general tariff packages both in prepaid and postpaid platforms.

**Table No.1**  
**Currently prevalent Composite Roaming Call Charges**

[Rs. per minute]		
Distance slabs	Private GSM service providers	BSNL (GSM)
<b>Outgoing call while Roaming</b>		
<b>Local</b>	2.89 - 3.09	1.50
<b>Inter-Circle</b>		
0-50 Kms	3.09	2.40
51-200 Kms	3.54	2.40
201-500 Kms	3.79	2.40
Above 500 Kms	3.99	2.40
<b>Incoming call while Roaming</b>		
0-50 Kms	3.09	2.00
51-200 Kms	3.54	2.00
201-500 Kms	3.79	2.00
Above 500 Kms	3.99	2.00

Note: Major GSM/CDMA operators are offering plans with a monthly rental (ranging from Rs.299 to Rs.490) for roaming customers. In these plans, roaming tariff is Re. 1 per minute for roaming in their respective network.

### **Local Outgoing call while Roaming**

2.4 The private GSM operators levy tariff ranging from Rs.2.89 to Rs.3.09 per minute for a local call while roaming. There is no distinction in roaming call charges between prepaid and postpaid subscribers in as far as the private GSM operators are concerned. BSNL (GSM) charges Rs.1.50 per minute for a local outgoing call while roaming. This tariff is common both for prepaid and postpaid roaming subscribers. In lifetime plan, BSNL levies a higher tariff of Rs.2/- per minute for a local call while roaming.

2.5 In the case of two CDMA operators offering full mobile services i.e. Tata Teleservices and Reliance Communications, roaming call charges for local outgoing calls are different depending upon whether the subscriber is in prepaid or postpaid platform. For postpaid subscribers, roaming call charges for local outgoing calls levied by CDMA operators are the same as the applicable tariffs for home

network usage. In the case of prepaid subscribers, the applicable tariffs generally range from Re.1 to Rs.3.00 per minute. However, in few long term validity plans, roaming tariffs for local calls are more than this range.

### **Inter-Circle Outgoing Call while Roaming**

2.6 Private GSM operators offer a distance based roaming tariffs applicable for inter-circle calls. It ranges from Rs.3.09 per minute for a distance slab of 0-50 kms to Rs.3.99 per minute for a distance slab of above 500 kms.

2.7 BSNL (GSM) offers its roaming subscribers a distance neutral roaming tariff applicable for inter-circle calls at the rate of Rs.2.40 per minute. For lifetime plan subscribers, the applicable tariff is Rs.3/- per minute.

2.8 In the case of private CDMA operators they levy a distance neutral inter-circle tariff that ranges from Rs.1.00 to Rs.3.99 per minute while roaming. The applicable inter-circle roaming tariff for postpaid subscribers is linked to the home network tariff plans.

### **Incoming Call while Roaming**

2.9 Depending upon the distance slabs, charges for an incoming call while roaming vary from Rs.3.09 to Rs.3.99 per minute among the private GSM operators. BSNL (GSM) levies a uniform tariff of Rs.2.00 per minute for all incoming calls while roaming except for lifetime plan subscribers at Rs.3 per minute. Private CDMA operators levy a distance neutral inter-circle incoming roaming tariff that ranges from Rs.1.00 to Rs.3.99 per minute.

## **Special Tariff Packages**

2.10 Service providers have offered special tariff packages where roaming tariffs are much less when subscribers roam on their networks. However, such tariff packages attract higher monthly rent of Rs.300 and above. These packages offer a uniform tariff at Re.1.00 per minute for all types of roaming calls including incoming calls *provided* the subscribers choose to roam on their *own* network.

## **SMS Charges while Roaming**

2.11 Private GSM operators levy Rs.3.45 as charges for outgoing SMS while roaming. BSNL (GSM) levies a tariff ranging from Re.0.80 to Re.1.00 per message from the roaming subscriber. As far as the CDMA operators are concerned, the charges applicable for an outgoing SMS while roaming would be the same as per the home tariff plan. For lifetime plan subscribers of BSNL, SMS costs Rs.2/- per SMS while roaming.

## **Analysis**

2.12 The analysis of the existing charging pattern of the service providers and the currently prevalent tariffs for roaming reveals the following:-

- a) The roaming tariff structure as prevalent in the market is complex and thus there is considerable scope for making it more transparent to the consumer.
- b) There is not only a uniformity seen in the charging pattern adopted by private GSM operators but there is also uniformity in the level of roaming tariffs. Current charging pattern amongst them reveals that they adopt a distance based charging for roaming calls including incoming calls while roaming. This is an evidence of a coordinated pricing arrangement among these operators.

- c) Full mobile services using CDMA technology are offered by two operators viz. Tata Teleservices and Reliance Communications. The roaming tariff structure in CDMA mobile services is linked to home network tariff plans in respect of postpaid subscribers. For prepaid customers, roaming tariffs are not linked to the home tariffs.
- d) Off late, CDMA operators have hiked tariff applicable for roaming services and in few cases their tariffs exceed that of private GSM operators. Charging pattern of CDMA operators in respect of roaming calls varies from prepaid to postpaid.

### **Need for Review of Roaming Tariffs**

3.1 For quite some time now, stakeholders have been representing to the Authority that tariffs applicable for availing roaming services are on the higher side. The roaming tariffs fixed by the Authority in 2002 was based on the incremental cost of providing roaming services as it existed four years ago and since then substantial reduction is reported to have taken place in such costs. Reduction in tariffs for roaming services is not commensurate with the reduction in the underlying costs of providing services.

3.2 Table No.2 gives the trends in composite roaming charges (with break-up) as levied by private GSM operators from time to time since February 2002 when the ceiling fixed by the Authority came into effect.

**Table No.2**  
**Trends in Composite Roaming Charges**

(Rs. per minute)

<b>Time Period</b>	<b>Roaming Airtime Charge</b>	<b>Surcharge</b>	<b>PSTN Charge (applicable for &gt;500 kms distance slab)</b>	<b>Composite Roaming Charges for the subscriber</b>
February 2002 (ceiling as per 18 <sup>th</sup> Amendment)	3.00	15%	9.6	13.05
March 2003 (reduction in PSTN charges)	3.00	15%	4.8	8.25
May 2004 (change in interpretation of applicable PSTN charges)	3.00	15%	2.2	5.65
February 2005 (reduction in ADC)	3.00	15%	1.7	5.15
May 2005	1.99	15%	1.7	3.99
Currently prevalent tariffs**	2.99		1.0*	3.99

\* Re.1/- is arrived at by summing up maximum carriage charge of Re.0.65, termination charge of Re.0.30 and approx. ADC component of Re.0.05 per minute.

\*\* Pvt. GSM service providers report Rs.3.99 composite roaming tariffs as applicable for distance slab of 500 kms and above.

3.3 Trends in the composite roaming charges levied by private GSM operators since February 2002 would indicate clearly that all reductions that had taken place till February 2005 were mainly on account of reduction in the PSTN charges mandated by the Authority from time to time. Service providers did not at any point of time reduce the roaming airtime charge or the surcharge on roaming airtime. They have always been operating at the ceiling fixed. The only exception being the reduction of Re.1 per minute in the roaming airtime charge made by them in May 2005. Even this reduction has been almost nullified by the operators when they reported Rs.3.99 per

minute as the applicable composite tariff for the distance slab of 500 kms and above (see last row of Table No.2)

3.4 Reduction in the cost of providing roaming services including reduction on account of access deficit charge payable by operators on account of movement to revenue share regime of ADC payment does not appear to have been passed on fully by service providers to customers. Similarly, reduction in carriage charge effected by the Authority in its recent determination of IUC regulation dated 23.2.2006 does not appear to have been fully reflected in the retail tariffs applicable for long distance calls and roaming services. Further, the reduction in annual license fee payable by NLDs from 15% of Adjusted Gross Revenue (AGR) to 6% of AGR effected by the Government, which is one of the major opex items of costs has not been passed on to the consumers by the operators. Some operators have in fact hiked the tariffs applicable for roaming services during recent months which suggests that roaming services market is not sufficiently competitive. Barring few service providers, generally every operator levies a higher tariff for SMS while roaming, which does not appear to reflect the cost of providing such a service.

3.5 The Authority from time to time has attempted to stimulate competition in the market by enhancing consumer transparency through various directions and advisories issued to operators mandating them to publish tariff inter-alia roaming tariffs in their websites and through other means. However, imposition of such regulatory obligations does not appear to have had any salutary effect on the subscriber tariff for national roaming services in the market. This is mainly on account of the market not being sufficiently competitive in respect of roaming services.

### **Analysis of the State of competition in roaming services segment**

3.6 While competition is considered to be adequate in mobile telephony services in India, the same is not true of roaming services segment of the mobile telephony. ***Evidence available with Authority on subscriber's tariff for roaming services reveal that there appears to be a coordinated arrangement in pricing of roaming services among the private GSM service providers.*** Tariffs applicable for roaming services are not only uniform among these operators for various types of roaming calls but are also similar / identical for various distance slabs as well. Further, in many instances in the past, changes in roaming tariff had been effected almost simultaneously.

3.7 CDMA mobile operators admittedly have contributed to the enhanced level of competition in mobile telephony in a big way. However, as far as roaming services is concerned, the competition is not considered effective enough due to the fact that the roaming service available to the subscriber of CDMA network is limited to the CDMA network of the same operator. Over a period of time, CDMA service providers have also started levying comparable roaming tariffs as that of the private GSM operators.

3.8 The ceiling tariffs fixed vide 18th Amendment to TTO dated 30.1.2002 is outdated in the sense that significant developments have taken place since then in the market, all of which have implications for tariffs to the consumers. Notable among them being the decline in the cost of provision of service owing to explosive growth of subscriber base and the minutes of usage reported by mobile operators in general. Data reported to the Authority for select operators shows that the number of subscribers with roaming facility has increased manifold during the period from 2001 to 2004. For the same period, the roaming minutes of usage has registered steep increase as per the

data reported to the Authority. Another significant development since the time the roaming tariff was fixed in 2002 pertains to the introduction of cost-based IUC regime in 2003 which inter-alia includes specification of termination charges at Re.0.30 per minute and introduction of calling party pays (CPP) regime. Further, the cost based IUC regime is being revised from time to time since 2003. One other major development having implications for consumer tariffs including roaming services is the change of regime of the ADC payment from per minute call basis to a revenue share regime. As discussed in the earlier paragraphs, reduction in the cost of provision of services does not appear to have been fully reflected in the roaming tariffs applicable to subscribers.

3.9 Price regulation is considered relevant when market forces are insufficient to prevent the exercise of market power. The considerations that were responsible for regulatory intervention in the market by imposing tariff regulations in roaming services are not only relevant today but have also become more important for reasons discussed in the foregoing paragraphs. Consumers cannot be expected to pay prices for services that are unjustifiably higher than the cost of providing such services and also with no prospects of any internal correction.

3.10 One of the operators with significant market share conveyed its scheme for additional revenue share over and above the prescribed termination charge for terminating the roaming calls (national and international) in its network and sought a provision for entering into commercial agreements with other operators on reciprocal basis. The Authority after going through a consultation process on this issue gave its ruling vide its letter dated 11.9.2006 (copy at Annexure-2) wherein it reiterated that there was no justification for a revenue sharing arrangement among operators in respect of roaming calls including international ones. Nevertheless, the Authority reiterated its

concern about high roaming tariffs levied by service providers and indicated that it would in the near future consider issuing a Consultation Paper to review the present roaming tariff regime.

3.11 A further cause of user and consumer concern is that roamers pay charges for receiving mobile calls while they are roaming contrary to the calling party pays (CPP) principle. This observation is relevant in the Indian context because the “service area” in India is based on circle basis, unlike many countries in the world where the entire country is one service area.

### **Methodology of Cost Estimation**

#### **Methodology proposed for determination of Roaming Tariffs**

4.1 The 18<sup>th</sup> Amendment to TTO adopted an incremental cost approach while deciding the tariff regime applicable for national roaming. Only the directly attributable incremental costs associated with roaming facility was taken into consideration. The approach proposed to be adopted by the Authority for determination of costs in this exercise will also be the same. It is proposed to consider the same set of elements of capital costs and operating costs that had been taken into account by the Authority while determining the roaming tariffs in 2002.

### **Data Consistency and Verification**

4.2 The Authority vide its letter No.301-27/2004-Eco. dated 29.6.2004 informed all the cellular mobile service providers and their industry associations about its intention to review roaming tariffs which were specified in January 2002. Accordingly, it sought revenue and cost data in respect of roaming services as per standard format (Annexure-3) from the service providers. Data on cost of providing roaming services was received from operators for two years (FY 2002-03 and 2003-04) in respect of 25 licensees across the country covering metro and non-metro circles. Examination of the data received from

operators shows that data in respect of few licensees was not amenable for analysis of cost for a number of reasons like inconsistencies in respect of data for certain parameters, absence of any specific basis of apportionment, etc. and thus these had to be excluded from analysis.

### **Capital Expenditure (capex) Recovery**

4.3 Two factors are considered when calculating the required annual return to the licensee for estimating the cost of providing the service over and above the recovery of operational expenditure. These are recovery of depreciation on assets and return on capital employed (ROCE) which is also known as weighted average cost of capital (WACC). Since capital assets are in the form of equipment, there is a need to devise a mechanism for recovery of the capex over a period of time, besides providing for opex (discussions on this follow later). Towards this end, an annual depreciation rate of 10% has been assumed for capex recovery of capital assets. This is derived from straight line depreciation calculations on the life of capital assets of ten years. Suggestions by industry sources indicate that the depreciation period for equipments which are considered as capital assets in this service could be longer than considered above, thereby reducing the annual return required. However, in general, depreciation calculated at 10 years life period could be taken as reasonable basis for calculation. The second part of capex recovery is setting the value for ROCE, which will be applied to the total capital expenditure amount claimed by the licensees and is treated as the required annual return on the capital invested and employed. A WACC of 14% has been adopted for this exercise based on the data submitted by the operators. This is almost the same WACC as was adopted by the Authority in the recent past tariff determinations. In this exercise, the Authority has allowed reasonable rate of return on net capital invested in various network elements to provide the roaming services as at the end of March 2006. To arrive at the net capital investment, the accumulated depreciation from the original

capital investment in various network elements has been deducted as per their base years.

### **Operational Expenditure (opex)**

4.4 All the items of operational costs claimed by operators as operational expenditure required to be incurred for providing the facility of roaming services that are consistent with the heads of expenditure that had been allowed by the Authority in its previous determination in the year 2002 have been included in the estimation of costs.

4.5 Based on the data on total capital expenditure attributable to roaming facility as claimed by service providers, capex recovery for FY 2006-07 was arrived at by applying cost of capital at 14% per annum after adjusting for applicable depreciation as described above. Separately, opex recovery was effected based on data in respect of annually recurring operating expenditure and the roaming minutes of usage as provided by the operators. To this cost, license fee and spectrum charges at 10% were also added as these are annually payable charges and form part of the costs. It is noteworthy that license fee and spectrum charges considered for purposes of cost calculation in the roaming tariff determination of 2002 was 15% of AGR.

4.6 The analysis of data on costs in respect of various operators in respect of the two part costing exercise reveals that it may be necessary to derive the incremental cost arising out of roaming services covering both capex and opex. The necessity of deriving incremental cost of a roaming call in this manner is discussed in the following paragraph.

4.7 Separate estimates for determination of monthly rental and roaming call charges do not appear to be realistic in the present

context on account of the asymmetrical distribution of In-roaming Minutes of Usage and the subscriber base availing roaming facility across operators. Data available indicates that the total number of in-roamers into the network of an operator in a particular service area is several times that of the number of subscribers who have availed roaming facility on payment of monthly rentals in the same service area of the same operator. If monthly rental has to be determined purely based on the number of subscribers with roaming facility, then the cost will be disproportionately loaded on such roaming subscription resulting in high rental amount. Such a situation would be iniquitous and thus unfair as it does not distinguish between subscribers availing one-off roaming usage and other frequent roamers. In fact, the two part cost determination, one covering the capex recovery through monthly rental and another for meeting the opex recovery through usage charges is throwing up results indicating the anomaly described here. On the contrary, incremental cost estimates covering both capex and opex together for operators have yielded robust results providing reasonable range of costs.

4.8 For this purpose the recovery of capex and the opex were added for each of the licensee and an incremental cost of roaming call per minute was derived. Table No.4 below gives the summary position of incremental cost estimates of a roaming call per minute for each of the licensee.

**Table No.4**  
**Summary of Calculations of Incremental Cost Estimates for**  
**Roaming Service for the FY 2006-07**

(Re. per minute)

Service Provider	Base Year	
	FY 2002-03	FY 2003-04
Licensee – 1	0.92	0.76
Licensee – 2	0.56	0.26
Licensee – 3	0.26	0.24
Licensee – 4	0.38	0.25
Licensee – 5	0.69	0.48
Licensee – 6	0.41	0.42
Licensee – 7	1.18	NA
Licensee – 8	0.22	0.33
Licensee – 9	NA	0.07
Licensee – 10	1.12	0.62
Licensee – 11	NA	0.48
Licensee – 12	0.64	0.24
Licensee – 13	0.66	0.37
Licensee – 14	3.30	1.09
Licensee – 15	0.31	0.19
Licensee – 16	NA	0.27
Licensee – 17	0.35	0.23

### **Results of cost estimation**

4.9 The lowest of the cost estimates is Re.0.07 per minute and the highest of the cost estimates is placed at Re.1.09 per minute. These are obviously outliers as is evident from Table No.4. Range of cost estimates fall between Re.0.19 to Re.0.62 per minute barring one estimate at Re.0.76 per minute shown against Licensee 1. Seven out of seventeen licensees cost estimates show that it is hovering around

Re.0.25 per minute. Cost estimates in respect of five licensees fall within the range of Re.0.30 to 0.50 per minute. As stated earlier, two estimates are clear outliers i.e. Rs.1.09 and 0.07 per minute and two other estimates at Re.0.76 and 0.62 per minute are also outside the two commonly found range of cost estimates.

4.10 The Authority has also noted that between the two years for which cost estimates have been worked out based on the cost data of the operators, there has been a substantial decline of costs in the second year (see Table No.4). Extent of decline in the cost per minute for a roaming call within a period of one year ranges from 5% to as high as 67%. Explosive growth of subscriber base coupled with increase in usage of subscribers shall in the views of the Authority justifiably accelerate the decline in the cost of providing roaming services. Further, the Authority also notes that the traffic data (roaming MOU) considered for the analysis for purposes of roaming tariff review in this exercise pertains to the FY 2003-04 and the likely implementation period of the revised roaming tariff structure would begin in the fourth quarter of 2006-07. To that extent, the estimates of incremental cost derived contains a buffer element.

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