Telecom Regulatory Authority of India

Notification

New Delhi, the 29th October 2003

No. 409-5/2003-FN

In exercise of the powers conferred upon it under section 36 read with clauses (ii), (iii) and (iv) of sub section (b) of Section 11 (1) of the Telecom Regulatory Authority of India Act, 1997 as amended by TRAI (Amendment) Act, 2000, to fix the terms and conditions of interconnectivity between Service Providers, to ensure effective interconnection between different service providers and to regulate arrangements amongst service providers of sharing their revenue derived from providing telecommunication services, the Telecom Regulatory Authority of India hereby makes the following Regulation**.**

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THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES REGULATION, 2003 (2 of 2003)

Section I

Title, Extent and Commencement

1. Short title, extent and commencement:

(i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges Regulation 2003" (the Regulation) and supercedes the earlier Regulation dated 24th January 2003 (1 of 2003) and its amendments dated 27th March, 2003 (1st amendment) and 16th June, 2003 (2nd amendment).

(ii) The Regulation shall cover arrangements among service providers for payment of Interconnection Usage Charges, for Telecommunication Services, covering Basic Service that includes WLL (M) services, Cellular Mobile Services, and Long Distance Services (STD/ ISD) throughout the territory of India.

(iii) The Regulation shall be deemed to have come into force from the date of its notification in the official Gazette.

Section II
Definitions

2. In this Regulation, unless the context otherwise requires:

(i) “Act” means the Telecom Regulatory Authority of India, 1997 as amended by TRAI (Amendment) Act, 2000.

(ii) “ADC” means Access Deficit Charge.

(iii) “Authority” means the Telecom Regulatory Authority of India.

(iv) “BSO, CMSP, ILDO and NLDO” respectively mean the Basic Service Operator, Cellular Mobile Service Provider, International Long Distance Operator and National Long Distance Operator.

(v) “Ceiling(s)” mean(s) the upper limit(s) of a charge specified by the Authority from time to time over which such charges may not be offered.

(vi) “Floor” means the lower limit of a charge specified by the Authority from time to time below which such charges may not be offered.

(vii) “Forbearance” means that the Authority has not, for the time being, notified any charge for a particular telecommunication service and the service provider is free to fix any charge for such service. The Authority, however, has a right to intervene at any stage after the introduction of the charge.

(viii) "Interconnection" means the commercial and technical arrangements under which service providers connect their equipment, networks and services to

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enable their customers to have access to the customers, services and networks of other service providers.

(ix) "Interconnection Charge" means the charge for interconnection levied by an interconnection provider on an interconnection seeker.

(x) “Interconnection Usage Charge (IUC)” means the charge payable by one service provider to one or more service providers for usage of the network elements for origination, transit or termination of the calls.

(xi) "Interconnection Provider" means the service provider to whose network an interconnection is sought for providing telecommunication services.

(xii) "Interconnection Seeker" means the service provider who seeks interconnection to the network of the interconnection provider.

(xiii) “International Subscriber Dialing” (ISD) means the facility by which a subscriber can have direct connection between him (in India) with another end user in another country by means of direct dialing through licensed networks. This includes the coverage of the international sector by ILDO and the related national sector by NLDO and/or access provider.

(xiv) “LDCA/ LDCC” respectively mean Long Distance Charging Area/ Long Distance Charging Centre.

(xv) "Order" means the Telecommunication Tariff Order, 1999 as amended from time to time.

(xvi) “Originating Network” means the network to which an originator of a telecommunication message (voice and non-voice) is proximately connected to.

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(xvii) “Originating/ Transit/ Terminating Service Provider” means the service provider whose network is used for originating/ transit/ terminating a telecommunication message (voice and non-voice) respectively.

(xviii) "Regulation" means The Telecommunication Interconnection Usage Charges (IUC) Regulation 2003. (2 of 2003)

(xix) “Reporting Requirement” means the obligation of a service provider to report to the Authority at least 45 working days before implementing any new Interconnection Usage Charge for telecommunication services under ‘this Regulation’ and any changes thereafter.

(xx) “SDCA/ SDCC” respectively mean Short Distance Charging Area/ Short Distance Charging Centre.

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(xxi) "Set Up Costs of Interconnection" means the initial cost of any system up-gradation needed to provide the specific interconnection facilities requested.

(xxii) “Settlement Period” is the period at the end of which the inter-carrier billing IUC/ADC payments among service providers are to be settled, based on the record reconciliation process as may be finalized through mutual arrangements among the service providers.

(xxiii) “Significant Market Power (SMP)” means “A Service Provider holding a share of at least 30% of total activity in a licensed telecommunication service area. These Services are categorized as Basic Service, Cellular Mobile Service, National Long Distance Service and International Long Distance Service.” Where "Activity" would mean and include any one or more of the following:

(a) Subscriber Base
(b) Turnover

(c) Switching Capacity

(d) Volume of Traffic

(xxiv) "Subscriber Trunk Dialing" (STD) means the facility by which a subscriber can have direct connection between him and another end user in another SDCA within India by means of direct dialing through the public long distance networks.

(xxv) "Terminating Network" means the network to which a receiver of a telecommunication message (voice and non-voice) is proximately connected to.

(xxvi) "Transit Network" means the network through which telecommunication messages (voice or non-voice) from originating networks or other transit networks are transmitted and delivered to terminating or other transit networks.

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(xxvii) "Usage Charge" means the charge levied by a service provider for carriage of telecommunication traffic on its network, i.e. for use of its network elements.

(xxviii) "WLL (M)" means limited mobility telephony service using wireless in local loop technology within a Short Distance Charging Area.

(xxix) Words and expressions used in this Regulation and not defined herein but defined in the Act shall have the same meanings assigned to them in the Act.

Section III

3. Interconnection Charges

Interconnection Charges shall continue to be governed by "The Telecommunication Interconnection (Charges and Revenue Sharing) Regulation, 2001(5 of 2001)" and The Telecommunication Interconnection (Port Charges) Regulation 2001 (6 of 2001), except to the extent modified by this Regulation.

Section IV

4. Interconnection Usage Charges (IUC)

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The Interconnection Usage Charges are specified in Schedules hereto.

Schedule I	**–**	**Termination Charges**
Schedule II	**–**	**Carriage Charges**
Schedule III	**–**	**Access Deficit Charge (ADC)**

(i) Unless specifically provided in the Schedules to this Regulation, the Authority forbears with respect to other Interconnection Usage Charges.

(ii) The date of effect for actual implementation of IUC shall be 1st December 2003.

(iii) The existing Interconnection Usage Charges arrangement between the Interconnecting networks in respect of the items as specified in this Regulation shall hold good till the date on which this Regulation comes in force.

(iv) All existing interconnect agreements/ arrangements as on date shall stand amended on the date of actual implementation of this Regulation so as to conform to the present framework of the IUC regime and these shall be

submitted to TRAI for registration within 15 days of implementation of this Regulation, and for subsequent changes as per reporting requirement.

(v) IUC values specified in 'the Regulation' shall also be applicable for all Reference Interconnect Offers by Significant Market Powers (SMPs).

Section V

5. Reporting Requirement

(i) All service providers shall comply with the Reporting Requirement as defined in Section II in respect of Interconnection Usage Charges specified for the first time under 'the Regulation', as also all subsequent changes, subject to the provisions of Section IV above.

(ii) No service provider shall alter any Interconnection Usage Charge or any part thereof, without complying with the Reporting Requirement.

(iii) In respect of matters covered by the provisions of 'the Regulation', they shall have an overriding effect over any Regulation, Direction, Determination and Order of the Authority, Reference Interconnect Offer and existing Interconnect agreement/arrangement between Service Providers.

Section VI

6. Review

(i) The Authority may, from time to time, review and modify Interconnection Usage Charge.

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(ii) The Authority may also at any time, suo-motu, or on reference from any affected party, and for good and sufficient reasons, review and modify any Interconnection Usage Charge.

Section VII

7. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to matters covered under 'the Regulation'.

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Section VIII

8. Interpretation

In case of dispute regarding interpretation of any of the provisions of this Regulation, the decision of the Authority shall be final and binding.

By Order

(DR. HARSHA VARDHANA SINGH)
Secretary-cum-Principal Advisor

Schedule - I

1. Termination Charges

Termination charge for calls to Basic (Fixed, WLL (Fixed), and WLL with limited mobility) and Cellular networks would be **uniform** @ **Rs. 0.30 per minute**. The same termination charge would be applicable for all types of calls viz. Local, National Long Distance and International Long Distance.

2. Origination Charges

Forbearance**.**

The Originating Service Provider shall retain origination charges from the residual after payment of the charges for carriage, termination and access deficit.

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3. Carriage Charges

Carriage charges have been specified in **Schedule II**.

4. Access Deficit Charges

Access Deficit Charge (ADC) has been specified in **Schedule III**.

Schedule - II

Carriage Charges

a) Carriage charges for Long Distance calls within India

Table I

(Amount in Rupees per minute)

Carriage charges per minute for Long Distance calls within India	Distance slab			
	Below 50 Kms	50 – 200 Kms	200 –500 Kms	Above 500 Kms
	0.20	0.65	0.90	1.10

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The service providers are allowed to negotiate a spot value within +/ - 10% of the long distance calls carriage charge beyond 50 Kms. Forbearance for carriage charge for long distance calls will be introduced once carrier selection by customers is implemented.

b) Transit Charges for intra-SDCA calls :

Forbearance, subject to the following condition:

Direct interconnection between Access Providers is mandatory. For exceptional cases of Intra-SDCA transit, operators may decide the charges through mutual negotiation. However this should be lower than Rs. 0.20 per minute.

c) Carriage charges for International Long Distance calls including International termination charge (i.e. International settlement) :

Forbearance, subject to the following condition:

The service providers may mutually agree to the sharing of any surplus, subject to the approval of the Authority.

Notes to Schedule II :

a) The Originating Service Provider shall retain origination charges from the residual after payment of the charges for carriage, termination and access deficit.

b) The Carrier, as shown in **Table II**, would collect the applicable amounts for carriage and termination charge from the Originating Service Provider for various type of calls. The Carrier would pass on the termination charge for terminating the traffic to the Terminating Service Provider as per **Schedule I**. In cases where the access deficit charge amount is to be collected by the terminating network or by BSNL (as per the **Table III** in **Schedule III**) the access deficit charge amount shall be passed on by the Carrier to the relevant service provider who has to be provided the access deficit amounts, as mentioned in **Schedule III**.

c) The call from/ to fixed line to/ from WLL(M) would be treated as a local call, if the call destination is within the SDCA where the call originated. Calls from/ to fixed line to/ from WLL(M) would be treated as long distance calls if the call terminates outside the SDCA from where the call originated.

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Table II

Applicability of Carriage Charge

(F = Fixed or WLL(Fixed); W = WLL(M); C = Cellular Mobile)

Type of Traffic	Carriage Charge	Carrier (Handover at)	
Within SDCA			
F/ W ⟷ F / W	Nil for direct connectivity/ Applicable tandem usage as in Schedule II (b)	BSO1/ BSO2 (Tandem)	
F / W ⟷ C	Nil (Tandem: Metro)/ TAX usage carriage charge (Level II TAX)	BSO (Tandem: Metro)/ BSO (Level II TAX)	
F/ W/ C ⟷ ILD	As above since ILDO handover is at LDCC TAX	BSO (TAX)	
Intra Circle i.e. Inter (SDCA)			
F ⟷ F	Carriage as per details in Schedule II	BSO1/ BSO2	Depending on Near end or Far end Handover
F ⟷ W	Carriage as per details in Schedule II	BSO1/ BSO2	
F/W ⟷ C	Same as Intra SDCA except TAX charge is "applicable" charge since more than one TAX may be involved.	BSO (Level II/ I TAX)	
C ⟷ ILD	No carriage/ tandem in case traffic is picked up or delivered at MSC	MSC (Direct connectivity cases)	
F / W ⟷ ILD	Carriage as per Schedule II	BSO (TAX)	
Inter Circle			
F/ W ⟷ F/ W	Carriage as per Schedule II	NLDO (TAX)	
F ⟷ C	Carriage as per Schedule II	NLDO (TAX)	
W ⟷ C	Carriage as per Schedule II	NLDO (TAX)	
F/W/C ⟷ ILD	Carriage as per Schedule II	NLDO (TAX)	

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Schedule - III

Access Deficit Charge (ADC)

3.1 Access Deficit Charge shall be applicable for the specified category of calls mentioned in **Table III**. The ADC will be payable to Basic Service operators on a per minute basis by the Basic, Cellular, National Long Distance and International Long Distance service providers.

The ADC applicable for different types of calls are mentioned in **Table III**. The rates are shown on a per minute bulk settlement basis.

TABLE III

Access Deficit Charge applicable for various type of Calls

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Access Deficit Charges	Local	Intra circle calls		Inter Circle calls			ILD
in Rs per minute	local	0-50 kms	>50 kms	0-50 kms	50-200 kms	>200 kms	ILD
Fixed - Fixed	0.00	0.00	0.30	0.30	0.50	0.80	4.25
Fixed - WLL(M)	0.30	0.30	0.30	0.30	0.50	0.80	
Fixed - Cellular	0.30	0.30	0.30	0.30	0.50	0.80	
WLL(M) - Fixed	0.30	0.30	0.30	0.30	0.50	0.80	4.25
WLL(M) - WLL(M)	0.00	0.00	0.00	0.30	0.50	0.80	
WLL(M) - Cellular	0.00	0.00	0.00	0.30	0.50	0.80	
Cellular - Fixed	0.30	0.30	0.30	0.30	0.50	0.80	4.25
Cellular - WLL(M)	0.00	0.00	0.00	0.30	0.50	0.80	
Cellular - Cellular	0.00	0.00	0.00	0.30	0.50	0.80	

3.2 Collection and distribution of ADC

The amount given above is to be collected/ paid as follows:

- For all intra-circle calls from cellular mobile/ WLL(M) to fixed line, the terminating service provider to be paid the access deficit amount.

- For all intra-circle calls from fixed to cellular mobile/ WLL(M), the originating service provider to retain the access deficit amount

- For intra-circle calls from fixed line to fixed line, the originating service provider to retain the access deficit amount (local calls and calls within “0 to 50 kms.” do not have any access deficit charge). No access deficit charge is payable to the terminating fixed network.

- For all inter-circle (including ILD) calls from fixed line, the originating service provider to keep the access deficit amount. No access deficit charge is payable to the terminating fixed network.

- For all ILD calls to fixed line, the terminating service provider to be paid the access deficit amount by the ILDO (directly or through NLDO, wherever applicable) together with the termination charge

- For all inter-circle calls from cellular mobile/ WLL(M) to fixed line, the access deficit charge and termination amount is to be collected by the NLDO from the originating service provider and the access deficit charges together with the termination charge should be paid to the terminating service provider.

- For all inter-circle calls from cellular mobile and WLL (M) to cellular mobile/ WLL(M), the access deficit amount is to be collected by the NLDO from the originating service provider and the access deficit charges should be paid to BSNL.

- For all ILD outgoing and incoming calls from/to cellular mobile and WLL (M), the access deficit amount is to be collected by the ILDO and the access deficit charges be paid to BSNL.

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3.3 Reconciliation and Settlement of ADC

ADC, carriage and termination payments would be based on aggregated usage in seconds (on bulk basis). The settlement would be for the aggregate total seconds expressed in terms of minutes, with the figure being rounded off in terms of the nearest minute, over the settlement period as applicable in the Interconnect Agreement. Failing agreement amongst Service Providers on the settlement period, the settlement shall be done on monthly basis on bulk basis.

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ANNEX – A

EXPLANATORY MEMORANDUM

I. IUC Regime in a Multi-Operator scenario : 24th January 2003 Regulation

1. In a Multi-Operator environment, it is important to specify an IUC regime to give greater certainty to the Inter-operator settlements and facilitate interconnection agreements. The Authority notified an Interconnection Usage Charges (IUC) Regulation dated 24th January 2003 which contained inter alia charges for origination, transit and termination of calls in a Multi-Operator environment. This was accompanied by a Tariff Order notified by the Authority on the same date.

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2. The IUC Regulation of 24th January 2003 included origination, carriage and termination charges as well as the access deficit charges to cover the access deficit that arises for basic service operators on account of the access tariffs being below costs. Prior to the opening up of the telecom sector, the loss due to access deficit for basic service operators was being taken care of through a cross-subsidy from profits to BSOs from a share of the domestic and international long distance tariffs. With competition in the domestic and international long distance segments as well as among the fixed line/ WLL(M) and cellular mobile, leading to a sharp decline in the prevailing tariffs, the extent of cross subsidy has decreased in a major way. The competition in long distance markets continues and this will mean that the tariffs are likely to decline further. In such a scenario, since the access deficit for fixed line arises due to tariffs being specified for social reasons, there is a case for providing the access deficit amounts to these service providers. In contrast to the fixed line service providers, the other access providers have tariff forbearance for call charges, and are

allowed to charge higher average amounts for local calls than those charged by fixed line operators.

3. Besides the present Section I, this Explanatory Memorandum contains Sections II to VII. Section II below gives the salient features of the IUC and access deficit charge (ADC) regime notified in January 2003. The estimated amount of ADC was large, and was to be collected only from calls involving fixed line subscribers either at one end or both ends. This meant that the IUC/ ADC charges differed widely for calls from and to fixed line, cellular mobile and wireless in local loop with limited mobility (WLL(M)). Moreover, two kinds of ADC regimes were specified, one with uniform ADC and another with ADC escalating with distance. With ADC being levied only on calls involving fixed line, the cellular mobile and WLL(M) service providers had greater flexibility in offering lower tariffs in comparison to fixed line calls, specially when fixed line was involved at both ends. This would have affected the competitive possibilities available to the three competing services, with the competitive ability of fixed line being restricted to a very large extent. Section III notes that the different IUC charges led to major problems in implementation, and that the actual tariffs that were implemented by the fixed line incumbent were below the IUC plus ADC amounts. Had they been above IUC plus ADC, fixed line would gradually have lost major part of its business thus forcing them to propose tariffs below costs. The Authority had to approve these tariffs, to allow fixed line to continue in business. The sustainability of the notified IUC/ ADC regime therefore became questionable. This as well as a number of other comments justifying a review of the regime led the Authority to begin a Consultation Process for the review. Section IV gives a summary of the main issues arising from the Consultation process. Based on the comments and new data obtained during the consultation process, interaction with experts, and further analysis of the various aspects of the IUC/ ADC regime, the Authority has now completed its review. Section V gives various features of the review, including the

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methodology followed, the funding already available with BSNL, the cost of capital and operating costs used in the review exercise, the changes in the estimates of costs/revenue, and the effect of these changes on the estimates of access deficit obtained under the review. Section V also addresses the issue of who should be paid for the access deficit, who should fund the deficit amount, and a number of other issues that arose during the consultation process. Section VI summarises the main features of the new IUC/ ADC regime following the review, and Section VII gives the main principles that have been emphasised in this review so as to provide a broad policy perspective on the new regime.

II. Some Salient Features of the Prevailing Regime

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4. The access deficit charge (ADC) under the 24th January IUC Regulation was imposed on all long distance calls which involved fixed line subscriber at either or both ends. This facilitated the collection of ADC, and linked it to calls made/received by fixed lines. Two different options for ADC regime were given, one with uniform ADC for most long distance categories, and another with ADC increasing with distance. For domestic long distance calls, an indication of the previous IUC/ADC regime can be obtained from **Tables 1 and 2**. The ADC amounts to fund the access deficit can be seen by deducting Rs. 0.25 per minute as origination/termination charge and the applicable carriage charges from the amounts shown in **Tables 1 and 2** for fixed line calls. Clearly, if the tariffs for different services have to exceed the IUC amounts, it would be evident from a comparison of the figures in **Tables 1 to 4** that fixed services would increasingly lose business due to high tariffs, perhaps later requiring even higher levels of ADC per minute for fixed line calls, making such services even more unviable.

5. The termination charge for fixed line (at Rs. 0.25 per minute) was lower than those applicable to cellular mobile and WLL (M) and these charges

for the latter two services differed among metros and circles, to reflect the differences in costs with the data that was available at that time. These charges for WLL(M) and cellular mobile were Rs. 0.30 per minute for metro and Rs. 0.40 per minute for circle.

TABLE 1

Illustrative IUC plus ADC Charges as applicable under the IUC Regulation of January 2003

(INTRA CIRCLE)								
	> 500 Kms		**200 – 500 Kms**		**50 - 200 KMs**		**0 - 50 KMs**	
	Uniform ADC	**Non uniform ADC**	**Uniform ADC**	**Non uniform ADC**	**Uniform ADC**	**Non uniform ADC**	**Uniform ADC**	**Non uniform ADC**
F – F	5.10	4.60	4.75	4.25	2.45	2.45	0.70	0.70
F – W	3.60	3.35	3.25	3.00	1.95	1.95	0.95	0.95
F – C	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
W – F	3.50	3.25	3.15	2.90	1.85	1.85	0.85	0.85
W – W	2.00	2.00	1.65	1.65	1.35	1.35	1.10	1.10
W – C	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
C – F	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
C – W	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
C – C	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80

Based on the ADC charges specified in January 2003 Regulation for calls involving fixed line and the following:

1. WLL(Termination) = 40 p (For same SDCA) and
   50 p (For inter-SDCA)
1. WLL (Origination) = 40 p
2. Cellular(Origination) = 40 p
3. WLL to Fixed termination charge
   = 60 p (For same SDCA) and
   50 p (For Inter-SDCA)
4. Fixed origination charge for calls to Cellular = 60 p
5. WLL(M) to fixed IUC charges are based on IUC Regulation Schedule-I of the IUC Regulation of January 2003 with Schedule V being applicable only for intra SDCA calls.
6. Applicable carriage charges are: Rs. 0.20 per minute for “0 to 50 kms.”, Rs. 0.45 per minute for “50 to 200 kms.”, Rs. 0.75 per minute for “200 to 500 kms.”, and Rs. 1.10 per minute for “beyond 500 kms.”

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TABLE 2

Illustrative IUC plus ADC Charges as applicable under the IUC Regulation of January 2003

(INTER CIRCLE)								
	> 500 Kms		200 - 500 Kms		50 - 200 KMs		0 - 50 KMs	
	Uniform ADC	Non uniform ADC	Uniform ADC	Non uniform ADC	Uniform ADC	Non uniform ADC	Uniform ADC	Non uniform ADC
F - F	5.10	6.10	4.75	4.25	4.45	2.45	0.50	0.50
F - W	3.60	4.10	3.25	3.00	2.95	1.95	0.85	0.85
F - C	3.50	4.00	3.15	2.90	2.85	1.85	0.75	0.75
W - F	3.60	4.10	3.25	3.00	2.95	1.95	0.85	0.85
W - W	2.10	2.10	1.75	1.75	1.45	1.45	1.20	1.20
W - C	2.00	2.00	1.65	1.65	1.35	1.35	1.10	1.10
C - F	3.50	4.00	3.15	2.90	2.85	1.85	0.75	0.75
C - W	2.10	2.00	1.65	1.65	1.35	1.35	1.10	1.10
C - C	1.90	1.90	1.55	1.55	1.25	1.25	1.00	1.00

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Based on the ADC charges specified in January 2003 Regulation for calls involving fixed line and the following:

1. WLL(Termination) = 50 Paise/ Min
2. WLL(Origination) = 50 Paise/ Min
3 Cellular(Origination) = 40 Paise/ Min
4. Cellular to Fixed termination charge
   = 50 Paise beyond 50 Km and
   15 Paise up to 50 Km
5. Fixed origination for calls to cellular = 50 Paise
6. WLL(M) to fixed IUC charges are based on IUC Regulation Schedule-I of the IUC Regulation of January 2003, with Schedule V being applicable only for intra SDCA calls.
7. Applicable carriage charges are: Rs. 0.20 per minute for “0 to 50 kms.”, Rs. 0.45 per minute for “50 to 200 kms.”, Rs. 0.75 per minute for “200 to 500 kms.”, and Rs. 1.10 per minute for “beyond 500 kms.”

TABLE 3

Comparison of Tariffs and IUC plus ADC Charges as applicable under the IUC Regulation of January 2003

(INTRA CIRCLE)								
	> 500 Kms		**200 – 500 Kms**		**50 - 200 KMs**		**0 - 50 KMs**	
	IUC + ADC under Uniform ADC regime	**Applied tariffs**	**IUC + ADC under Uniform ADC regime**	**Applied tariffs**	**IUC + ADC under Uniform ADC regime**	**Applied tariffs**	**IUC + ADC under Uniform ADC regime**	**Applied tariffs**
F - F	5.10	2.40	4.75	2.40	2.45	1.20/ 2.40	0.70	0.40
F - W	3.60	2.40	3.25	2.40	1.95	1.20/ 2.40	0.95	0.80
F - C	1.20	2.40	1.20	2.40	1.20	2.40	1.20	2.40
W - F	3.50	2.40	3.15	2.40	1.85	1.20/ 2.40	0.85	0.80
W - W	2.00	2.40	1.65	2.40	1.35	1.20/ 2.40	1.10	0.40
W - C	1.00	2.40	1.00	2.40	1.00	2.40	1.00	2.40
C - F	1.20	1.80	1.20	1.80	1.20	1.80	1.20	1.80
C - W	1.00	1.80	1.00	1.80	1.00	1.80	1.00	1.80
C - C	0.80	1.40	0.80	1.40	0.80	1.40	0.80	1.40

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Based on the BSNL tariffs prevailing in June 2003 for fixed line, cellular mobile, and WLL(M), and the ADC charges specified in January 2003 Regulation for calls involving fixed line and the following:

1. WLL(Termination) = 40 p (For same SDCA) and
   50 p (For inter-SDCA)
2. WLL (Origination) = 40 p
   Cellular(Origination) = 40 p
3. WLL to Fixed termination charge
   = 60 p (For same SDCA) and
   50 p (For Inter-SDCA)
4. Fixed origination charge for calls to Cellular = 60 p
5. WLL(M) to fixed IUC charges are based on IUC Regulation Schedule-I of the IUC Regulation of January 2003 with Schedule V being applicable only for intra SDCA calls.
6. Applicable carriage charges are: Rs. 0.20 per minute for “0 to 50 kms.”, Rs. 0.45 per minute for “50 to 200 kms.”, Rs. 0.75 per minute for “200 to 500 kms.”, and Rs. 1.10 per minute for “beyond 500 kms.”
7. Two amounts given as applied tariffs for “50 – 200 kms” are respectively the tariff for “50 – 100 kms.” and “100 – 200 kms.”

TABLE 4

Comparison of Tariffs and IUC plus ADC Charges as applicable under the IUC Regulation of January 2003

(INTER CIRCLE)								
	> 500 Kms		200 - 500 Kms		50 - 200 KMs		0 - 50 KMs	
	IUC + ADC under Uniform ADC regime	Applied tariffs	IUC + ADC under Uniform ADC regime	Applied tariffs	IUC + ADC under Uniform ADC regime	Applied tariffs	IUC + ADC under Uniform ADC regime	Applied tariffs
F - F	5.10	4.80	4.75	4.80	4.45	2.40	0.50	0.80
F - W	3.60	4.80	3.25	4.80	2.95	2.40	0.85	1.20
F - C	3.50	3.60	3.15	3.60	2.85	2.40	0.75	2.40
W - F	3.60	4.80	3.25	4.80	2.95	2.40	0.85	0.80
W - W	2.10	4.80	1.75	4.80	1.45	2.40	1.20	1.20
W - C	2.00	3.60	1.65	3.60	1.35	2.40	1.10	2.40
C - F	3.50	3.60	3.15	2.40	2.85	1.80	0.75	1.80
C - W	2.10	3.60	1.65	2.40	1.35	1.80	1.10	1.80
C - C	1.90	1.80	1.55	1.80	1.25	1.80	1.00	1.80

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Based on the BSNL tariffs prevailing in June 2003 for fixed line, cellular mobile, and WLL(M), and the ADC charges specified in January 2003 Regulation for calls involving fixed line and the following:

1. WLL(Termination) = 50 Paise/ Min
2. WLL(Origination) = 50 Paise/ Min
3 Cellular(Origination) = 40 Paise/ Min
4. Cellular to Fixed termination charge
   = 50 Paise beyond 50 Km and
   16 Paise up to 50 Km
5. Fixed origination for calls to cellular = 50 Paise
6. WLL(M) to fixed IUC charges are based on IUC Regulation Schedule-I of the IUC Regulation of January 2003, with Schedule V being applicable only for intra SDCA calls.
7. Applicable carriage charges are: Rs. 0.20 per minute for “0 to 50 kms.”, Rs. 0.45 per minute for “50 to 200 kms.”, Rs. 0.75 per minute for “200 to 500 kms.”, and Rs. 1.10 per minute for “beyond 500 kms.”

6. The estimated access deficit for the whole fixed line sector was a large amount. This included the deficit arising due to cost based rentals being higher than the applicable rentals, the cost of free calls, and the deficit arising due to the tariffs being below cost for long distance calls which cover "0 to 50 kms." The funding of this amount, which was an estimated total of Rs. 13,000 crores per annum, had to be from the net surplus generated by local call revenues as well as from the long distance call revenues. An important factor to consider in this context is that this access deficit has been calculated with a formula that provides for a reasonable return on the investment made, i.e. a return on capital employed of 13.78%; their actual return for BSNL in 2001-2002 was only 7.53% without any government grant being taken into account. For 2002-2003, the provisional estimate for BSNL's return on capital employed (without any government grant) was 1.06%.

7. The task of funding such a large access deficit is difficult because the amount is a large share of the total revenue of the telecom sector, i.e. this share was about 30 per cent. Compared to this situation, other countries have much smaller access deficit as a share of overall revenues. An example of this can be seen from the estimates shown below

Country	**Share of ADC in Sector Revenue (%)**
Argentina	0.8
Australia	1.5
Bolivia	3.5
Canada	2.3
Chile	0.2
Colombia	2.5
France	3.5
India	30.0
Norway	2.2
Peru	1.0

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South Africa	0.3
Sweden	1.0
Switzerland	2.0
United Kingdom	0.2
United States	6.0

8. The lower ADC in other countries is partly due to tariff re-balancing having been achieved to a substantial degree in several of these countries before liberalization, and the revenues both on local access and rentals and calls being higher on average than those for India. In India's case, tariff re-balancing began in a limited manner after liberalization, and though there was an increase in monthly rentals and decrease in long distance calls, the increased monthly rentals ranged between Rs. 70 to Rs. 250 per month, and the highest domestic long distance call charge per minute after the re-balancing was specified as Rs. 21.60 per minute. Last year, the average monthly rental revenue for BSNL was Rs. 156 and the ARPU was about Rs. 550 per month.

9. While the long distance call charges in India have decreased substantially after introduction of competition in NLD/ILD sectors, the monthly rentals have remained unchanged from these levels. This has had a strong impact on ARPUs decreasing towards Rs. 500 per month. In comparison, the ARPUs in developed countries, which have achieved major tariff re-balancing, are much higher. **Since higher tariffs and ARPUs are not sustainable for India, especially in view of our objective to have a rapid growth in tele-density, it is important to cover the access deficit for some years till a reasonable stable consumer base is developed, which can be sustainable, despite low rentals and tariffs.**

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III. Problems in Implementation of the IUC Regime Notified in January 2003

10. The Authority received for approval, tariff reports from the major basic operators only a few days before the implementation date, and also received comments from the service providers that there were technical problems in implementing the IUC regime. The Authority established a co-ordination Committee to sort out the technical problems, and since the approved tariff plans also required to be widely publicized, the Authority deferred the date of implementation to 1st May 2003. The Authority was able to address the technical problems with the help of the Committee set-up for the purpose.

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11. An examination of the fixed line tariffs reported for approval by the incumbent BSNL showed that these tariffs were below the levels required to cover the IUC plus ADC amounts, i.e. they were in effect below the costs embodied in the IUC/ ADC regime. The Authority was forced to accept tariffs of the incumbent BSOs which were much lower than the IUC plus ADC charges, mainly on the grounds that below cost prices being charged by the incumbent operators were not designed to kill competition, but to survive in business and hence were not predatory in nature. Obviously, such lowering of tariffs in the alternative tariff packages (ATPs) and the acceptance by the Authority has severely impacted the recoveries of ADCs amounts encompassed in the prevailing regime. This would be clear from a comparison of the IUC plus ADC charges with the applied tariffs that are given in **Tables 3 and 4**. Consequently, the other BSOs also had to reduce tariffs to below cost levels, thus necessitating a re-look at the regime.

12. Further, the Authority had received several communications from the service providers who were to implement the IUC regime and they had also pointed out during consultation meetings, a number of issues that required the Authority to review the IUC regime. Issues raised included

inter alia possible consistency of the IUC regime as specified under different Schedules, whether all basic service operators should get the ADC, the sustainability of the IUC regime under which the ADC was loaded only on calls that had fixed subscriber at either or both ends and not on other calls which made the fixed calls less competitive, the tariffs reported by BSNL which showed relatively lower than IUC tariffs for intra-circle calls based on the fact that it could not otherwise compete with cellular mobile, the sustainability of such tariffs, claims that cost of carriage was higher than the carriage charges specified by the Authority for national long distance calls, and that the IUC charge of Rs. 5.50 per minute for termination of international traffic would give rise to grey market operations in international calls.

13. The fact that competition was pressurising operators to give tariffs which would not fully cover the IUC especially for intra-circle calls, became even more evident as the tariffs started declining further. The possibility of the tariff decline especially for cellular mobile and WLL (M) becomes clear if we consider the amounts that would cover the IUC charges for different types of intra- and inter-circle calls (**Tables 1 and 2**) and compare them with the tariffs actually implemented (**Tables 3 and 4**). The conflict between the IUC figures and the various tariffs also becomes clear if we consider the fact that under the alternative tariff packages for intra-circle calls, BSNL had specified peak tariffs of Rs. 2.40 per minute, i.e. substantially higher than the amounts that could be charged by the others (please see **Tables 3 and 4**). Even this tariff, for fixed to fixed calls, is lower than the tariffs that would arise from the IUC consistent amounts but as mentioned above, the Authority had to approve these tariffs because BSNL justified these tariffs as non-predatory on the grounds that it had to offer them in order to compete with cellular mobile and not to eliminate competition.

14. In addition to accepting the below-IUC tariffs, the Authority made an interim change in the IUC regime vide Order No 311-9/2003-Eco dated

1st July 2003. As a result, the originating operator could retain the residual amount after paying for carriage and termination, clearly indicating that if the originator reduced tariffs to remain in business, his margin plus origination charge should get squeezed and not the other charges.

15. Based on comments received, the Authority decided to review the regime.

IV. Consultation Process for the review exercise

16. The Authority issued a Consultation Paper to review the IUC regime, on 15th May, 2003 which sought comments of the stakeholders under four categories of issues:

- Interconnection Usage Charges
- Access Deficit Charges
- Tariffs
- Calling Party Pay Regime

17. During the Consultation process the Authority received several comments, which gave rise to a number of action points that required examination by the Authority. These are summarized below.

18. The issues relating to Access Deficit Charge were:

- Need to reassess the amount of ADC after taking into account various compensations provided;
- Whether MTNL and private BSOs should be given ADC in light of their presence in urban areas and the roll-out obligations remaining mostly unmet by the private BSOs operating in circles;

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- Recovery of ADC from long distance calls would become difficult because the competitive tariffs for long distance calls from Cellular/ WLL networks would lead to a shift of such traffic to these networks;
- Whether funding of ADC should be linked with roll out of BSOs;
- Whether the ADC funding should continue for the foreseeable future or a cut-off date should be specified after some years;
- Should the funding of ADC be also from types of calls not covered under the 24th January 2003 Regulation by imposing access deficit charges over all types of calls;
- Review possible reduction in the amount of ADC for ILD calls to address grey traffic;
- Applicability of ADC for roaming subscribers;

19. The issues relating to termination/ carriage/ origination charges under the IUC regime were:

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- There should be greater clarity in the Schedules of the IUC Regulation, especially the linkages and consistency between the different Schedules;
- Need to streamline the granularity of pulse rate for settlement of interconnect charges amongst operators;
- Clarification as to whether IUC inter-operator settlement should be on call by call basis or gross minutes at the POI;
- Desirability of having identical termination charges to simplify implementation;
- Implementation difficulties of IUC in case of calls from PCOs
- Representation of ISPs, Radio Paging Service Providers for having a termination charge;
- Termination charges for IN calls and SMS;
- IUC for origination to be higher than termination;
- The termination charge for Cellular Mobile Services should be re-examined/ increased

- ILD termination charge for calls terminating in CMSPs need re-examining

20. Tariff related issues were:

- Local call pulse rate for calls from Fixed Line to WLL (M) and Cellular call should be identical since the IUC for such calls is identical.
- There is no justification for providing Port Charges subsequent to IUC implementation.

21. There were other comments too which related to issues such as:

- NLDO to NLDO transit
- Same termination for WLL (M) as cellular
- Off peak IUC charges to be prescribed
- BSNL mandates delivery of calls from other BSOs at SDCA tandem, and it should allow delivery at LEVEL II TAX also;
- Whether the prescribed charges are NLD ceilings or the amounts of charges specified;
- ADC should be adjusted to take into account the fact that operators are offering ATP with lower rentals and local call charges
- Termination charge parity between own network and other networks i.e., Fixed to WLL (M) in own network and Fixed to WLL (M) in other networks

V. Further Analysis and Review of the IUC Regime

22. In its review of the IUC regime notified on 24th January 2003, the Authority considered the methodology used to calculate the ADC, the amount of ADC and who should get the ADC funding, practices adopted in other countries in this regard, the various sources of funding the access deficit, mechanisms for collection and distribution of the ADC

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amounts, overlap between the ADC regime and the USO Funding, more recent and more complete information on costs and traffic, and possibility of phasing out the ADC regime over time and merging it with the USO regime.

(a) The methodology

23. The Authority considered the framework used for calculating the IUC under the previous exercise, and noted that the cost basis used had been historical average costs from audited accounts of BSNL. It noted that for costing purposes, several countries had used Forward Looking Long Run Incremental Costs (FLLRIC), i.e. a methodology under which only a portion of stranded costs (or costs arising due to past high equipment prices or old technologies) is included in the calculation of costs.

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24. The Authority noted that the difference between historical costs and forward looking costs would be large, and relying on costs based only on modern and forward looking technologies would imply a large burden from the stranded costs for BSNL. While the Authority feels that change over to FLLRIC model is imperative, it examined the implications of a sudden changeover against a gradual changeover. Since BSNL is the major supplier of telecom services in the country and has also contributed the maximum for achieving the targets of rural tele-density and in supporting low paying subscribers, a changeover to FLLRIC at present would adversely affect the services provided not only to rural and low paying subscribers but also the telecom industry in the country as a whole. The Authority noted that BSNL is already deploying latest technology and lower cost equipment in its expansion programme. Since wireless technology is being used, it is expected that some of the existing network will also be gradually replaced by such equipment. In short, the approach is to achieve full shift to FLLRIC cost in a gradual manner over a few years rather than a single year change.

The latter would leave heavy stranded cost and would be quite impractical. The Authority therefore, decided to rely on costs for the current year, based on as recent audited costs as possible. For this purpose, it worked with more recent data than was used in the initial IUC exercise. The Authority was of the view that with the changes in technology and a reduction in equipment costs taking place rapidly, the amount of funding required for ADC would decline. Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime. This would be similar to the situation in most other countries, where the ADC regime had been combined with the USO regime, rather than the ADC funding being provided through a separate ADC regime.

25. The Authority decided to use more recent data compared to the previous review because this is now available. For BSNL, this has meant using data from the balance sheet for the year 2002-2003. This has been used together with recent data on minutes of use, effective monthly rental revenue per subscriber in different Circles, call revenue etc obtained from BSNL. Other basic service operators were also asked to submit their cost data and recent information on traffic flows (minutes of use), so that the access deficits applicable to them could also be calculated. Most service providers submitted the information required, but their data was unaudited, while the main cost data used by the Authority for BSNL has been provided after examination by the auditors.

26. The available information was used to obtain the picture for 2003-2004. For BSNL, since the cost attributed to cellular mobile services have been removed by the Authority and the extent of WLL(M) installations are minor, the aggregate costs applicable for fixed line to 2002-2003 were taken to be applicable to 2003-2004 also. For the purpose of ADC, this could be considered as the gradual introduction of forward looking long run incremental costs in calculation of the IUC/ADC.

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(b) Concessions and grants provided by the Government to BSNL

27. The Authority sought clarification from the Government on the financial assistance that it was providing to BSNL for meeting its rural telecom targets. This information was used together with the cost information to estimate the relevant amounts that should be considered for the ADC regime. The details are given in the paragraphs below.

28. Thus, while the general methodology for calculating the access deficit is similar to the one that was used in the IUC Regulation dated 24th January 2003, an important difference is the adjustment from the access deficit amount for the concessions or grants provided by the Government to BSNL. Under the previous methodology, the USO amounts required would have been adjusted taking account of the IUC/ ADC payments for the target phones. In the present exercise the concessions and grants to BSNL are being deducted in the calculation of ADC itself. These concessions and grants affect the calculation of both the weighted average cost of capital (WACC) and the amounts of operational cost deficit that need to be funded through the access deficit charge. Therefore, before we begin with a discussion on the other aspects of the IUC regime, it would be appropriate to consider the recent announcements by the Government on the concessions and grants provided to the BSNL.

29. For calculating access deficit that should be funded through the access deficit charge for the year 2003-04, the Authority considered the financial support provided to the BSNL through the package of concessions provided by the Government. The recent concessions have been communicated to the Authority by the Department of Telecom vide letter number 5-131/2001-LTP dated 18.9.2003. This communication shows that:

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(a) The reimbursement of the license fee and spectrum charges to BSNL is made available beyond 2002-03 for a period of one year. The re-imbursement of license fee to the BSNL would be after deducting the component of USO contribution.

(b) The moratorium on repayment of principal and interest on Government loan to BSNL is to be extended upto 31.3.2005.

(c) The equity included in the capital structure of BSNL should be subject to a dividend of not more than 10% during the 10th plan period.

(d) The concessions have been provided to enable the BSNL to incur additional capital expenditure for rolling out of telecom network in rural areas equivalent to about 10 lakh lines.

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30. Regarding item (a) above, the Authority decided to make suitable adjustments in the BSNL costs for the year 2002-03 as a starting point in the exercise. The amount of reimbursement of licence fee, which is likely to be Rs. 2300 Crores, is being treated as capital grant from the Government to provide additional DELs in the rural areas. Accordingly, the annual cost for capital employed in Access network was recalculated by deducting depreciation and return on capital employed admissible on the amount that has been refunded to BSNL. In addition, for calculating the cost based monthly rental, the Authority has reduced the number of DELs by 10 lakhs, i.e. same as the number of DELs that are to be installed using the capital amount provided to BSNL through the concessions mentioned above.

31. The method of treating the assistance as capital cost is employed because the Government has clarified in its communication that the amount provided to BSNL is for installing additional about 10 lakh lines. If such a requirement were not there, the Authority would have deducted the total amount of assistance from the annual operational costs of BSNL. This would have

reduced the access deficit by a larger amount. However, to the extent that the assistance provided to BSNL is treated as capital expenditure, the benefit from this assistance would continue in the future also. This has been the basis for making the adjustment given below.

32. The provisional balance sheet for 2002-03 of BSNL shows another compensation of Rs 720 crores as capital grant. This amount has also been reduced from the annual cost for incurring capital expenditure in the Access network, by excluding from the overall capital cost and depreciation for the Access network, the depreciation and cost of capital pertaining to this amount (i.e. to Rs. 720 crores). Any additional amount that is to be provided by the Government to BSNL or other BSOs for its USO programme would also need to be adjusted from the estimated ADC amount.

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33. The other above-mentioned items provided under the concession scheme of the Government to BSNL affect the pre-tax WACC and Return on Capital Employed for the access network. With these concessions, the cost of equity (post tax) gets reduced: this cost was calculated as 10%. The moratorium on payment of principal and interest on Government loans means that for the prevailing year, these loans are being provided free of cost to BSNL. Thus, the cost of government loans is 0%. The adjustment made in these cost components were then taken together with the other cost components of the weighted average cost of capital. All the other funds including reserve and surpluses were taken at original cost estimates. With these changes reflecting the concessions, the revised pre-tax WACC estimate becomes 12.21% for the purpose of calculating the return on capital employed for the Access network, in order to give the amount of access deficit that has to be funded for BSNL.

34. Since the above WACC incorporates the concessions given by the Government to BSNL, it is appropriate for calculating the access deficit amounts that remain uncovered even after the provision of concessions by the Government. However, the above WACC is not appropriate for calculating the cost based IUC for carriage and termination, because these estimates have to be

based on full relevant costs without any adjustment for concessions given to BSNL. Thus, for IUC calculations, the WACC without any effect of concessions given to BSNL is the appropriate parameter. For calculating the relevant cost based IUC (i.e. termination and carriage charges), the Authority has thus used the WACC without adjusting for the concessions provided to BSNL. Excluding the adjustment for concessions provided by the Government to BSNL, the WACC is 13.93%.

(c) Cost of capital and Operating Costs for the IUC exercise

35. The distribution of CAPEX is based on the shares in CAPEX of the thirteen different network elements that were provided by BSNL in the context of the Reference Interconnection Offer (RIO) exercise, and were used in the previous calculation of IUC. The OPEX was also distributed across these elements in the same ratios as CAPEX. For the IUC exercise, the cost based monthly rental was determined on the basis of cost of capital employed and depreciation for the year (CAPEX) from end-user up to (but not including) the SDCC (i.e. network elements 1, 2, 3, 6 and 7 in **Table 5**). The cost based rental is calculated after making the adjustments for the compensation given by the Government to BSNL.

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Table 5 Apportionment of CAPEX + Depreciation and OPEX to different network elements based on BSNL Annual Account 2002 - 03			
	Network Element	**Annual Depreciation + Cost of Capital**	**Annual Opex**
		in Rs Crore	**in Rs Crore**
1	Access Loop	7243	4859
2	Local Exchange	3429	1808
3	SDCC Tandem	214	113
4	Intra-LDCA (Level II TAX)	219	111
5	Inter-LDCC Intra Circle + Inter Circle (Level I)	219	111
6	LE-SDCC Transmission Systems	549	290
7	LE-SDCC Transmission Systems Length (Avg 10km)	1024	687
8	SDCC-LDCC Tax Transmission	116	59
9	SDCC-LDCC Tax Transmission Length (Avg 40 km)	538	342
10	Inter-Tax Transmission System (Intra-Circle)	54	27
11	Inter-Tax Transmission Length (Intra-Circle) (SDH Rings)	229	146
12	Inter-Tax Transmission SDH16 System (Inter-Circle)	57	29
13	Inter-Tax Transmission Length (Inter-Circle) (SDH Rings)	456	290
	Total	14348	8870

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36. The Authority also examined the principle, as it had done previously, whether the cost based monthly rental should be based on the allocation of costs attributable to non-traffic sensitive part of the network. This is more in line with the pricing principles under which the cost of local calls should be linked to incremental or traffic sensitive costs. The Authority considered this matter again with the revised cost data and the applicable routing principles. Even now, if the monthly rentals are calculated based only on non-traffic sensitive portion of the network, the cost of local call becomes higher than the amount sustainable under the prevailing tariff regime. Thus, such a cost attribution would imply an increase

in local call charge, which the Authority did not favour imposing. Thus, the Authority decided to continue with its previous methodology of cost allocation for determination of monthly rentals and call charges. The Authority did, nonetheless, feel that by the time the next review of the IUC regime is conducted, the situation may have changed to make such a cost allocation more acceptable.

37. The cost of a local call was determined on the basis of operational costs (OPEX) within the local call area. For this purpose, the operational costs covering the same elements as for cost based rentals, were divided by the total minutes of use that were relevant for each of the corresponding network elements (please see **Table 6**). To derive the relevant minutes of use, the Authority used the routing factors that were determined on the basis of discussions with BSNL as well as experts (Please see **Figure I** for the routing schemes). This process allocates this joint cost among the various types of calls (local/ long distance and intra-network/ inter-network) on the basis of minutes of use.

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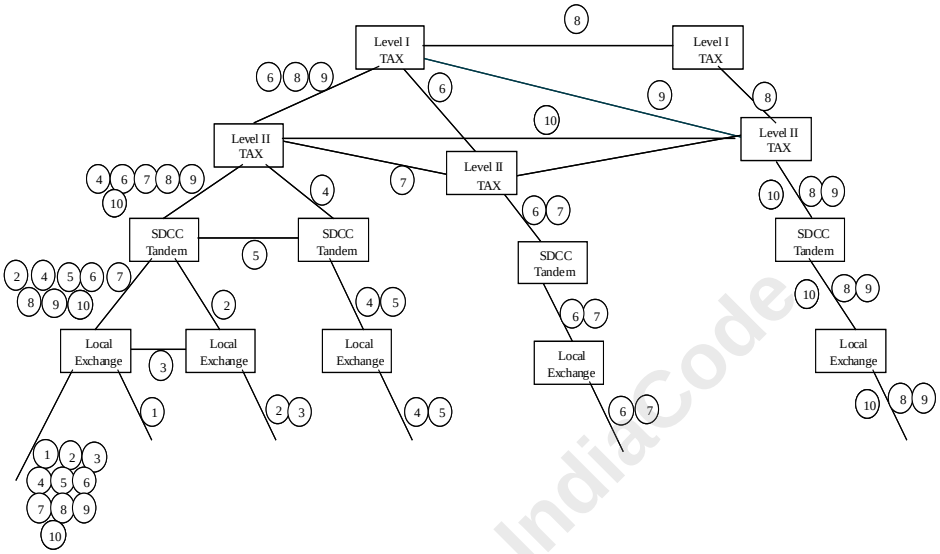
Table 6
Network element wise Minutes of Use (MOU)

	Network Element (N.E.)	MoU per sub per year
1	Access Loop	11405
2	Local Exchange	11011
3	SDCC Tandem	7116
4	Intra-LDCA (Level II TAX)	3043
5	Inter-LDCC Intra Circle + Inter Circle (Level I)	939
6	LE-SDCC Transmission Systems	10618
7	LE-SDCC Transmission Systems Length (Avg 10km)	10618
8	SDCC-LDCC Tax Transmission	3457
9	SDCC-LDCC Tax Transmission Length (Avg 40 km)	3457
10	Inter-Tax Transmission System (Intra-Circle)	1447
11	Inter-Tax Transmission Length (Intra-Circle) (SDH Rings)	1447
12	Inter-Tax Transmission SDH16 System (Inter-Circle)	421
13	Inter-Tax Transmission Length (Inter-Circle) (SDH Rings)	421

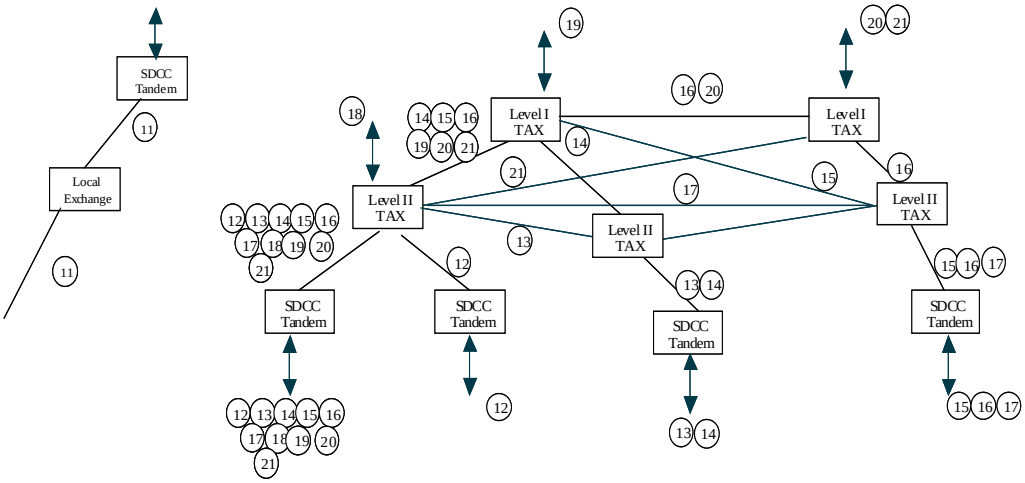
Figure I

Route diagrams

BSNL to BSNL calls



BSNL to and from other network calls



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38. The routing factors and applicable minutes of use were also used for determining the costs attributable for carriage of long distance calls. For this purpose, the Authority considered both the CAPEX and OPEX applicable to long distance, i.e. network elements other than those relevant for cost based rentals in **Table 6**.

39. The starting point for the analysis under the review is the same as in the previous case, namely calculation of the cost of capital, depreciation, and operational cost for BSNL. To assess the proper components of the analysis, the Authority first examined the calculations made in the initial exercise with the data for 2001-2002. Some changes were made in this regard (please see below), based on detailed analysis which included consultations on the network usage pattern etc. with external experts as well as experts from the industry. The Authority first considered these changes with respect to the cost data used in the initial exercise, i.e. the balance sheet information of BSNL for 2001-2002, and then applied them to the more recent data.

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(d) Certain changes in the initial estimates

40. The Authority noted that there was a need to make the following changes, the first two of which had opposite effects on the cost of a local call, when considered together.

i. One, the CAPEX for the Network "LE to SDCC Transmission Length" had been included as part of the cost base for determining the cost of a call. This was to be allocated only for the determination of the cost based monthly rental. This adjustment reduced the cost of a local call.

ii. Second, the routing factors for calls used in the previous exercise were re-examined and refined based on new traffic data and discussions with BSNL and outside experts. This led to a change in the routing factors used and in a reduction in the number of minutes

attributable for calls. This adjustment increased the cost of a local call.

iii. As shown by the estimates given later, the net result of the above two changes was to keep the local call cost unchanged in comparison to the previous estimate, but there was some increase in the cost of carriage for certain long distance calls.

41. The Authority then addressed the weighted average cost of capital (WACC) used for BSNL, based on the recent data provided for 2002-2003. The WACC for BSNL has increased slightly from 13.78% in 2001-2002 to 13.93% in 2002-2003, because of a reduction in the debt of BSNL. As mentioned above, while this estimate has been used for the IUC exercise, a WACC of 12.21% has been used for calculating the access deficit of BSNL that needs to be funded.

42. Regarding depreciation costs, the Authority considered the depreciation amount that had been specified by BSNL in its audited accounts. The Authority noted that in its accounts, BSNL has used the Written Down Value (WDV) method of depreciation. With a WDV method of depreciation, in comparison to the Straight Line Method (SLM), the depreciation amounts are larger in the initial years and lower in the later years. The Authority decided that it would use the SLM for calculating depreciation, as this is also a commonly used method for depreciation in cost analysis, and would bring the costs closer in terms of capturing nominal depreciation costs allocated equally over the life-time of the capital equipment. This was also the method that has been used by the Authority in the context of converting capital fixed costs into recurring costs using a factor of ARE, or annual recurring costs.

43. The Authority then examined the various items given in the details of depreciation in the Schedule of the BSNL balance sheet. The amount of depreciation for each item was converted into a depreciation rate. This depreciation rate in turn gave an indication of the corresponding estimate of life-time for each of the relevant capital cost items, using a framework of straight line

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method for depreciation. Discussions with experts and internal analysis suggested that the corresponding estimates for lifetimes of all the items were within the reasonable ranges, except for cable and buildings. For cables and buildings, the corresponding lifetime with a straight line method, came much less than was reasonable. The Authority took the lifetime of 18 years for cables and 58 years for buildings, which were the same as the life-time for these items used by BSNL in its accounts, but applied an implicit straight line depreciation rate corresponding to these life-times instead of the WDV depreciation rates. The net block was suitably adjusted for revised depreciation expense to calculate the cost of capital. This has led to a substantial reduction in the costs due to depreciation, and thus in the amount of access deficit. The weighted average depreciation rate used, based on the economic life of assets (taking 5% as scrap value), is 9%.

44. In the previous IUC exercise, the Authority had considered only 95% of the cost base on the grounds that the revenues being accounted for by telephone services were 95% of the total revenues. The Authority re-calculated this ratio for 2002-2003, and based on more recent data has revised the estimate to 93.6%, i.e. 93.6% of the costs are applicable to telephony. Thus, of the total CAPEX and OPEX, only 93.6% is taken for the purpose of the IUC exercise. Since cellular mobile is part of the telephony service, further adjustments were made to remove the costs attributable to cellular mobile based on the segmental cost statements submitted by BSNL. These accounts provide a basis to remove the capital employed and operational expenditure relating to cellular mobile from the relevant costs, in order to give the estimates applicable for fixed line service.

(e) Other adjustments to the costs/ revenues for 2002-2003

45. The Authority has noted that in the costs submitted by BSNL, there is a provision of Rs. 1,384.53 crore on account of arrears of salaries and leave encashment. These arrears are for 30 months, including the 12 months of the financial year 2002-2003. An amount should therefore be deducted from this so as to obtain only the costs relevant to 2002-2003. This has been done by making

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a pro-rata correction and reducing the amount by Rs. 830.72 crore for 18 months prior to the period taken under consideration.

46. The above changes provided a basis for the Authority to calculate the cost based monthly rental for BSNL. The cost based rental amount is compared to the monthly rental revenue in order to obtain the deficit on account of rental. The Authority noted that to calculate the amount of deficit that has to be funded from long distance calls, it has to adjust the rental deficit by the net surplus that is available from local calls and calls up to "0 to 50 kms.". For this purpose, a more accurate amount is based on the actual revenue rather than that estimated subject to certain assumptions about the call pattern and average tariffs applicable to different calls (i.e. free calls, calls charged at the medium tariff rate of Re. 1 or Rs. 0.80 per pulse, and calls at Rs. 1.20). The Authority has obtained from BSNL the amount of local call revenue from local calls, for the year 2001-2002. Based on these revenues and minutes of use for local calls, the per minute call revenue comes to Rs. 0.51 if these calls are taken as comprising also the calls for "0 to 50 kms.". According to BSNL, they are not in a position to remove all these calls from the local call revenue (if only local call minutes are taken into account, the call revenue per minute is Rs. 0.55). Instead of using estimated excess of local call revenue as specified in the standard tariff package and calculated based on certain simplifying assumptions, the Authority has decided to use the surplus of local call revenues over local call costs. This amount is a substantial surplus, and reduces the amount of access deficit to be funded from long distance calls. This methodology is a changeover that used in the previous IUC exercise, under which the Authority had used estimates for local call revenues based on certain assumptions for the call revenues that would accrue on account of the different call charges (ranging from free call to Rs. 1.20 per pulse) for the local calls and calls within the "0 to 50 kms." category.

47. Once the actual call revenues over costs for local calls are taken into account, a consistent methodology would be to take the actual monthly rental revenues instead of the notional monthly rentals specified in the standard tariff package. This is justified also because the BSNL has not been allowed to

IndiaCode

increase its monthly rentals from the existing levels. The other BSOs are also forced by the market to adopt tariffs similar to those implemented by BSNL. With this background, the Authority has used the actual average monthly rental amount of Rs. 156 for BSNL instead of the Rs. 200/- per month used earlier based on the standard tariff rentals specified by the Authority but not necessarily implemented by the service provider. Further, the revenue share License Fee applicable to monthly rental is applied to the amount of Rs. 156/- per month and not the cost based rental amount.

48. Another amendment made is to adjust the revenues from, and operating expense with respect to, franchisees. The commission paid on account of franchisee service has been treated as pass through to franchisees, which is not available with the operator. Only a small portion of the costs of commission would be relevant for local calls; this has been taken as 10% of the commissions in case of our exercise. Thus, the revenues for local calls have been decreased by 10% of the franchisee commission. The Authority has not taken any of the cost due to franchisee commission as cost to be recovered from ADC funding, and thus the total operational costs of BSNL have been decreased by the full amount of the franchisee commission.

IndiaCode

(f) The effect on access deficit

49. The implication of taking local call revenue surplus over costs as mentioned above reduces the access deficit not only because of the available surplus to fund the deficit, but also because the costs include the cost of free calls. Thus, this element, i.e. the cost of free calls, is also adjusted out of the estimated access deficit by making the adjustment for the local call revenue surplus. Therefore, the effective deficit that has to be funded from the long distance calls is equal to:

- Deficit due to cost based rental exceeding rental revenue, plus
- Deficit due to costs of “0 to 50 kms.” long distance calls not being covered by the tariffs, minus

- Surplus of local call revenue over local call costs

50. BSNL has provided the Authority with the number of local call minutes for 2002-2003, but has not been able to provide the revenues from local calls. The Authority has used the estimate of revenue per minute of local call in 2001-2002, and multiplied this amount by the local call minutes provided recently by BSNL for the year 2002-2003 for the entire subscriber base. This amount is taken as the revenue from local calls for the year 2002-2003. In the year 2003-2004, the revenue per minute is likely to increase slightly in view of the reduction in the number of free calls and the fact that Rs. 1.20 applies now after 300 metered call units (MCUs) instead of after 500 MCUs as was the case earlier. The estimated increase in call revenue is likely to be about 5 to 6 paise per minute.

51. As mentioned above, the Authority has obtained data on, inter alia, the minutes of use by subscribers of different service providers. Since the data obtained from the service providers is not comprehensive, they do not show consistent estimates. Based on the information submitted by the service providers, the Authority has estimated the minutes of traffic flows among the different services such that these flows are consistent. The data has been made consistent using certain assumptions about traffic flows on different routes, based on discussions with the largest operator, i.e. the BSNL. Based on unaudited data provided by the operators and also by using estimates for BSNL based on their audited data as normated data for other service providers also, the ADC has been calculated for other BSOs. This shows that the BSOs have a high element of reported inefficient costs in comparison to BSNL. The data provided by the BSOs appears to be unreliable because it results in some extreme and even absurd estimates of costs. Their cost based rentals and termination charges are high in comparison to BSNL, in some cases by amounts which do not appear reasonable. The Authority therefore, decided to use the audited BSNL data as a normative.

52. The estimated access deficit for BSNL is shown in **Table 7**, which indicates the impact of various components on the access deficit calculated. The total access deficit amount to be funded for BSNL, after correction for net

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revenues from local calls and including the deficit on account of “0 to 50 kms.”, is **Rs. 5,335 crores**. If we take the other basic service operators also into account, and apply the BSNL access deficit per subscriber without the Government compensation to BSNL, the total access deficit amount increases to **Rs. 6,330 crores**.

Table 7 Size of Access Deficit for BSNL		
Cost based rental per sub per month	in Rs	361
Total cost of rental	in Rs crores	14865
Total Rental revenue	in Rs crores	6425
Total Rental deficit	in Rs crores	8441
0-50 kms call deficit	in Rs Crores	216
Free call deficit (taken into account in local call surplus)	in Rs crores	O
Total deficit	**in Rs crores**	**8657**
Surplus & compensations		
Local call surplus & funding from surplus in termination charge	in Rs crores	1456
Government compensations	in Rs crores	1865
Net Access Deficit	**in Rs crores**	**5335**

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(g) Who should be paid for the access deficit

53. Another policy issue relates to whether all the basic service operators should be provided access deficit. The Authority asked the other service providers to also give their cost estimates and other relevant data for this exercise. This was obtained from most of them. The results showed that the private basic Service Operators have in general a higher cost compared to BSNL. This is also true when MTNL is compared with BSNL. Likewise the cost based rentals that were calculated for these service providers vary considerably and for

some of them are unreasonably high. The quality of data therefore is not adequate to conduct serious analysis with the information.

54. Nonetheless, the Authority has conducted some additional analysis of the situation regarding access deficit payment. For this the Authority normated some cost estimates and then considered the results. The Authority used the following methodology:

- It normated the cost based monthly rentals to be equal to those of the BSNL. Since private BSOs function in individual circles, cost based rentals of BSNL were obtained for the various circles. These rentals were adjusted to reflect the corrections in depreciation made by the Authority to calculate the national average cost based monthly rental of BSNL.

- For the monthly rental revenue, the Authority used the applicable estimates derived from the data submitted by the BSOs and MTNL themselves.

- For operational costs per subscriber relevant to local calls, the Authority used the estimates based on the costs submitted by the private BSOs for these service providers. For MTNL, the Authority used the costs for BSNL on the grounds that these costs for incumbent operators are likely to be similar. The Authority feels that these costs are likely to be higher for new comers. The BSNL operational costs per subscriber were taken as the normated costs for the purpose of incumbent's (i.e. MTNL's) operational costs per subscriber.

55. With this normation, a number of BSOs continue to have some access deficit, but it is much smaller than the amounts calculated for them on the basis of their cost data. The Authority has noted that in certain cases, the costs have not been provided with the level of detail required to make the requisite estimates. The Authority has also noted that in a number of cases the BSOs have not met

IndiaCode

their roll-out obligations, particularly for VPTs that the old BSOs had to install (**Tables 8 and 9 below**). In contrast, most of the rural DELs are provided by BSNL, which also provides connections to a relatively large number of low users. Further, in general if we consider the situation for other countries, the ADC is paid to the incumbent and not to new comers. At the same time, the Authority noted the point made by BSOs that they had been getting access deficit funding since the beginning under their license.

Table 8

Comparison of License Rollout requirement and actual Roll out for six Old BSOs

IndiaCode

Licensee (Effective Date of License)	Roll out under License within 3 years, compared with Actual Roll Out as on 31-08-2003			
	DELs		VPTs	
	Commitment	Actual Rollout	Commitment	Actual Rollout
Tata Teleservices (30-09-1997)- A.P.	300000	313424	9635	1347
Bharti Telenet Ltd. (30-09-1997)- M.P.	150000	218466	16500	607
Shyam Telelink Ltd. (04-03-1998)- Rajasthan	146909	95129	31834	2796
Tata Teleservices (Maharashtra) Ltd. (30-09-1997)- Maharashtra	607900	283526	25760	2399
HFCL Infocomm Ltd. (30-09-1997)- Punjab	525000	112852	5442	* 869
Reliance Telecom Ltd. (30-09-1997)-Gujarat	288000	261158	8635	4114

* Replacement of MARR VPTs
Note: Date in bracket is the Effective Date of License

Table 9

Comparison of coverage of SDCAs under the License and actual coverage for new BSOs in first phase

Licensee (Effective Date of License)	Commitment as per License/ Actual Rollout	Roll out under License under Phase-I (within 2 years), compared with Actual Roll Out as on 31-08-2003		
		Urban	Semi urban	Rural
Tata Teleservices Ltd. (31.08.2001)-Tamil Nadu	As per License	4	16	1
	Actual	**7**	**22**	**1**
Tata Teleservices Ltd. (31.08.2001)-Karnataka	As per License	4	21	4
	Actual	**5**	**27**	**4**
Tata Teleservices Ltd. (31.08.2001)-Gujarat	As per License	4	19	3
	Actual	**4**	**20**	**3**
Tata Teleservices Ltd. (31.08.2001)-Delhi	As per License	1	0	0
	Actual	**1**	**0**	**0**
Bharti Telenet Ltd. (8.10.2001)-Haryana	As per License	5	6	2
	Actual	**5**	**0**	**0**
Bharti Telenet Ltd. (29.10.2001)-Delhi	As per License	1	0	0
	Actual	**1**	**0**	**0**
Bharti Telenet Ltd. (29.10.2001)-Tamil Nadu	As per License	4	16	1
	Actual	**5**	**1**	**0**
Bharti Telenet Ltd. (29.10.2001)-Karnataka	As per License	4	21	4
	Actual	**3**	**0**	**0**

IndiaCode

Continued on next page

Table 9 continued

Licensee (Effective Date of License)	Commitment as per License/ Actual Rollout	Roll out under License under Phase-I (within 2 years), compared with Actual Roll Out as on 31-08-2003		
		Urban	Semi urban	Rural
Reliance Infocomm. Ltd. (20.07.2001)-Andhra Pradesh	As per License	5	21	11
	Actual	**20**	**129**	**45**
Reliance Infocomm. Ltd. (20.07.2001)-Karnataka	As per License	4	21	4
	Actual	**16**	**101**	**16**
Reliance Infocomm. Ltd. (20.07.2001)-Maharashtra	As per License	5	31	12
	Actual	**14**	**141**	**42**
Reliance Infocomm. Ltd. (20.07.2001)-Punjab	As per License	2	7	1
	Actual	**8**	**34**	**2**
Reliance Infocomm. Ltd. (20.07.2001)-Rajasthan	As per License	3	26	12
	Actual	**6**	**78**	**32**
Reliance Infocomm. Ltd. (20.07.2001)-Orissa	As per License	2	14	4
	Actual	**6**	**42**	**#3**
Reliance Infocomm. Ltd. (20.07.2001)-Madhya Pradesh	As per License	4	43	9
	Actual	**10**	**127**	**24**
Reliance Infocomm. Ltd. (26.09.2001)-Tamil Nadu	As per License	4	16	1
	Actual	**23**	**99**	**1**
Reliance Infocomm. Ltd. ((20.07.2001))-Bihar	As per License	3	22	5
	Actual	**6**	**62**	**15**
Reliance Infocomm. Ltd. (20.07.2001)-West Bengal	As per License	3	7	3
	Actual	**10**	**26**	**11**
Reliance Infocomm. Ltd. (20.07.2001)-Kerala	As per License	2	5	3
	Actual	**12**	**29**	**17**
Reliance Infocomm. Ltd. (20.07.2001)-UP (East)	As per License	3	20	3
	Actual	**9**	**63**	**10**
Reliance Infocomm. Ltd. (20.07.2001)-Himachal Pradesh	As per License	1	4	1
	Actual	**0***	**5**	**2**
Reliance Infocomm. Ltd. (20.07.2001)-UP (West)	As per License	4	12	1
	Actual	**14**	**42**	**4**
Reliance Infocomm. Ltd. (20.07.2001)-Haryana	As per License	2	6	2
	Actual	**9**	**31**	**11**
Reliance Infocomm. Ltd. (20.07.2001)-Delhi	As per License	1	0	0
	Actual	**1**	**0**	**0**
Reliance Infocomm. Ltd. (20.07.2001)-A&N Island	As per License	0	1	0
	Actual	**0**	**1**	**0**

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Note: Date in bracket is the Effective Date of License
As per the information given by M/s Reliance Infocomm to TRAI they have since received the approval of DOT for one more SDCA and hence the roll out obligatuion is complete.

* As per the information given by M/s Reliance Infocomm to TRAI they have since received the approval of DOT for Shimla Urban SDCA and hence the roll out obligatuion is complete.

56. Thus there are reasons to reconsider whether the BSOs should be given access deficit support. At the same time, the Authority would not like to disrupt in a major way the existing regime, nor bring about changes in the ADC regime which could create implementation problems due to inadequate data. The Authority has decided to implement a limited form of the IUC regime for the basic service operators other than BSNL, i.e. they would retain the access deficit amount that pertains to the calls from/to these BSOs based on the principles given in **Schedule II** of this Regulation. They would keep the relevant ADC amounts for all calls originating from them. For all calls that terminate in their network and originate in non-fixed network, they would keep the relevant ADC amount together with the termination charge of Rs. 0.30 per minute. These BSOs, including MTNL, would not get any of the ADC amount that relates to calls from cellular mobile/ WLL(M) to cellular mobile/ WLL(M): the ADC amounts from these calls would be provided only to BSNL.

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57. The Authority has also decided that it would obtain more detailed audited cost information to assess the relevant ADC for BSOs, and would also consider phasing it out after the next review. This phasing out may be earlier than the overall phasing out of the access deficit regime that the Authority will consider, merging the ADC regime into the USO regime after a few years. This would require detailed consultation with the Government. Another alternative for the Authority to consider, would be whether the payment of access deficit should be linked to rural roll-out, either based only on such a roll-out, or based on giving greater weight to such roll-out in payment of funds to recover the access deficit.

58. For BSNL and MTNL, to the extent that the amount of ADC does not cover the full amount of the deficit over time, the Authority noted that they have benefited on account of being allowed entry into cellular mobile without any entry fee. The Authority also hopes that the deficit would be made good by the profits that these organizations will earn from their cellular mobile and WLL(M) services, bearing in mind the rapid subscriber growth being experienced by these services. This is important to allow more flexibility to the tariff developments, which are a

major contributory factor in spurring growth, teledensity and commercial activity in the country. The Authority will be examining all these factors in greater detail at the time of the next review of the ADC regime.

(h) Other points

59. The Authority also considered a number of other points, the salient among which are mentioned below.

No origination charge

60. A number of comments were received that the termination charge of a call should be below the origination charge because the originating network does considerable additional work in terms of billing, collection etc. The Authority has noted the developments in the market in the last few months and expects that competition in the market will continue. The Authority recalls its interim decision that the originating network must pay from the tariffs the carriage and termination charge for the calls, and retain the residual, i.e. the originating charge need not be specified for the call. The Authority has decided that it would continue with this principle, and will specify only the carriage and the termination charge. This will help provide flexibility in tariffing and will also ensure that the access network does not pass on the burden of its own tariff decisions to other networks involved in completing the call. While no origination charge is being specified, the collection of ADC amount by the originator, however has been allowed.

Same termination charge for all access networks

61. Regarding termination charge, the Authority has noted the comments made in the context of implementation of IUC that it would be easier for the parties concerned if there were no or few differences in the IUC rates across the distance categories. In addition to the task of implementing diverse termination charges being more difficult to implement per se, the Authority also recalled that problems arising due to a difficulty in distinguishing between calls from/to fixed lines and

WLL(M), which has introduced some arbitrariness in implementing the settlement of the IUC/ADC.

62. The Authority noted that based on previous cost information, it had earlier specified a termination charge of Rs. 0.25 per minute for local fixed to fixed calls, for calls from fixed line (except “0 to 50 kms.”) a termination charge of Rs. 0.50 per minute was specified, and termination charges of Rs. 0.30, Rs. 0.40 and Rs. 0.50 per minute for different types of calls had been specified for calls to cellular mobile and WLL (M). A review of the estimates of termination charge with more recent data shows that the costs per minute for various types of calls are now much closer to each other. The Authority therefore feels that it is possible to have identical termination charges for the access providing services (see below). In addition to simplifying the implementation of the regime, a common amount for termination charge would facilitate moving towards similar tariff levels for calls from/to different access providers, and would reduce imposition of cost items on certain types of calls merely on account of regulatory policy. Bearing this in mind, the Authority has decided that it will have as few rates as possible for the IUC regime, and would specify a common termination charge for all access services. To the extent that the common termination charge results in a surplus over costs for fixed line, the Authority has made adjustments for that amount in its calculation of the ADC.

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Port charges

63. The Authority noted the point made by several stakeholders that since the IUC exercise includes all costs, the charge for ports should be removed. In this regard, the Authority first noted that it is actually not taking account of 6.4% of the costs because they pertain to non-telephony. This ADC amount has been based on the share of revenues for telephony in total revenues of BSNL from various sources, excluding the costs that pertain to non-telephony operations. The Authority also recalled that during the calculation of Port Charges, only the incremental CAPEX for provision of the port was considered although for providing ports, there is a need for not only augmenting the switch capacities but

also other downstream parts of the network to handle the additional traffic entering the network through these ports. The costs required for augmentation of other downstream network elements to handle the additional traffic, were left to be recovered through the IUC.

64. The Authority has accordingly concluded that the port charges as specified in the Port Charges Regulation would continue to prevail.

Transit charges

65. The Authority took account of the fact that it has already mandated direct connectivity among various service providers. However, for exceptional situations where direct connectivity may not be possible or due to emergency breakdown etc., and for overflow traffic, carriage charges may be mutually negotiated but this should be lower than Rs. 0.20 per minute. The Authority will intervene if there is a regulatory concern in this regard.

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66. The Authority also forbears with respect to NLDO to NLDO transit charges.

Method of Settlement of Payment of IUC/ ADC

67. Some of the stakeholders, during the consultation process, had raised the issue whether payment of IUC should be on per minute basis or per second basis. The Authority has examined the issue and would like to clarify that as far as values for IUC in the schedules are concerned, they have been specified in per minute basis considering bulk settlements. These charges are wholesale charges for Inter-Operator settlements for bulk traffic exchange and should not be considered to be on call-to-call retail basis. Therefore, the IUC payments should be based on aggregate of all call duration in seconds, rounded off to the nearest minute for the total during the month.

Termination charges for services such as SMS, IN service, special/ emergency services, Paging, Internet, etc.

68. No separate traffic/ cost data was available with TRAI to ascertain usage charges for resources utilized in transmission of short messaging service (SMS). The Authority is of the view that at present, the service providers should work out mutual arrangements for usage charges for exchange of SMS. The Authority has forborne in respect of IUC for SMS at present, and may re-visit this matter in the near future based on the exercise of collection of additional data in this regard.

69. Similarly, IUC for usage of special/ emergency services, other facilities like. Directory services and Calling Line Identification could not be ascertained due to want of specific information on cost/ traffic for these services/ facilities. The Authority therefore, forbears in respect of IUC for these services for the present and allows Operators to negotiate between themselves for usage of such resources. The same is also true for termination charges for IN services.

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70. Other service providers such as Paging, Internet etc. had raised the issue for provision of termination charges for calls terminating in their network. The Authority has examined the issue and noted that the matter relates more to revenue share than to a termination charge because the connection with them is not treated as interconnection. For this reason, the Authority has not specified any termination charge.

Peak/ Off-peak IUC/ ADC

71. The Authority also considered whether to have different IUC/ADC regimes during peak and off-peak periods. The Authority took note of the relatively low ADC amounts imposed under the revised regime, and the likely implementation problems if these amounts are segmented by time of day, and

decided to impose a relatively simple regime with the same ADC for peak and off-peak periods.

Call handover

72. Some stakeholders raised the issue on the possibility of far-end handover by the fixed line operator to Cellular Mobile operator and one-way POI (Point of Interconnection). This issue is under consideration in TRAI and would be addressed separately, if required through the normal process of consultation. The Authority would emphasise the objective of development of the system in an economically efficient way.

Funding of ADC from all calls

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73. In the previous exercise, the ADC recovery had been provided only to calls originating and/ or terminating in fixed network. Since, ADC was only loaded on calls involving fixed lines, the tariffs for calls from / to cellular mobile and WLL (M) had become much cheaper, with this advantage being most strongly available to calls from cellular mobile to cellular mobile. Further, cellular to cellular calls within a circle do not have a carriage charge component that applies to fixed to fixed line calls, which makes the longer distance fixed line calls more expensive under the IUC regime than cellular to cellular calls. Both these factors would provide an incentive for migration of long distance traffic from Fixed to Fixed towards Cellular to Cellular, making more difficult the recovery of ADC as envisaged in the Regulation. In the current IUC / ADC exercise, the Authority has tried to ensure that the regulatory regime provides as little regulatory incentive as possible for calls to switch from one service to another or for migration of traffic from one network to another network. Therefore, ADC has been made applicable for all access providers, and its level has been kept low as well as similar for the same types of calls.

Implementing IUC for calls from PCOs

74. The Authority noted that two types of issues had been raised with respect to calls from PCOs. One related to the possibility of having a consistent and same pulse rate for calls to different types of access providers. Another was the difficulty that arose with respect to sharing the revenues with franchisees. The implementation of calls to different access services has already been settled. The second matter relates to issues that have to be dealt with between the franchiser and franchisee.

Collection of ADC from Roaming Subscribers

75. Some stakeholders have stated that it is difficult to distinguish between calls from roamers and local calls, and therefore while the former should be paying a higher (long distance ADC inclusive) amount, the ADC paid on these calls is only the amount relevant for local calls. A number of mitigating features are part of the new regime. The ADC for intra circle and inter circle calls has a much smaller difference (Rs. 0.30 and maximum of Rs. 0.80 per minute). Further, the payment of ADC with respect to all NLD calls now has to be done by the NLD operator. Thus, when such a call is delivered by the NLD to the access provider, the additional amount can be charged directly from the NLD operators. The matter can be further addressed through procedures for settlement that limit the extent of loss on account of roaming calls.

ADC calculation after taking net surplus revenue from local calls

76. Calculation of ADC has also been reviewed to account for higher revenue in local calls from higher calling subscribers and the likely developments in the telecom sector. In the present exercise, the total Access deficit has been estimated by reducing surplus from local call revenue from the rental deficit, based on the actual data on local call revenue. This helps to obtain a more accurate estimate of the net surplus from local calls.

Tariff forbearance

77. With the ADC for BSNL, which is providing most of the fixed lines in rural areas, the Authority is proposing to deregulate the tariffs except standard tariffs (rental and call charge) for fixed line in rural areas. The competition in the market as well as the social pressure to maintain reasonable and affordable tariffs is strong enough, and the applied tariffs are invariably the alternative tariff packages rather than the standard tariff packages specified by the Authority. The Authority, however, feels that maintaining a standard tariff package for the rural monthly rentals and call charges would still be desirable. Also, the Authority is of the view that the call charges for different types of calls should be as close as possible under the IUC/ADC regime, and for the case of calls from fixed to cellular mobile, would recommend that the pulse rate for such calls within a LDCA be not below 60 seconds. However, the Authority would leave the issue to the judgement of the operators in the prevailing competitive regime.

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(i) Cost of call termination for fixed line

78. Taking account of the methodology mentioned earlier, the cost based termination charge for BSNL has been estimated as Rs. 0.23. per minute. This is the same estimates as in the previous exercise. In view of the decision for a common termination charge because it will ease implementation and limit the distortions in the competitive regime, the Authority has specified a termination charge of Rs. 0.30 for all calls. As mentioned above, the additional revenue accruing to fixed line (BSNL) on account of revenue exceeding costs has been taken into account in the calculation of access deficit, i.e. the access deficit has been adjusted downwards to account for this revenue. In reaching this decision, the Authority has also noted that the revenue per minute for local calls earlier was about Rs. 0.51 per minute, and this is likely to have gone up under the new tariff regime with lower number of free calls and Rs. 1.20 being charged after 300 MCUs. Though more data is needed to verify the extent of revenue increase, the amount of increase may be about Rs. 0.06 per minute. Thus, the revenue from local calls will be about Rs. 0.57 per minute. With this revenue per minute, a

termination charge of Rs. 0.30 per minute together with a cost of origination of Rs. 0.23 per minute (i.e. a total of Rs. 0.53 per minute) should be sustainable for local calls even if the increase in revenue per minute is slightly below the estimate that we have mentioned above.

(j) Cost of termination for calls to cellular mobile and WLL (M)

79. The IUC exercise also requires estimating the termination charge to be paid for calls to cellular mobile. The Authority has updated the data on the basis of which mobile termination charge (MTC) was estimated in the previous exercise. The MTC has been calculated on the basis of operational costs of year 2000-2001. Based on recent data from some cellular mobile service providers, the Authority observed that the annual increase of these costs was about 20% per year. Accordingly, the Authority has applied this rate of increase (i.e. 20%) per annum to the costs for 2000-2001, and has calculated them for the year 2003-2004. The Authority has taken a subscriber base of 1.7 crore, corresponding to the middle of 2003-2004, which is similar to the period considered for estimating the ADC for basic service operators. The Authority has also considered recent estimates of the total number of minutes, once again similar to the exercise conducted for basic service operators. Based on data submitted by the service providers, the Authority has used 326 minutes per subscriber per month for incoming and outgoing calls; these minutes are more than the expected minutes of use that the Authority had used at the time of the IUC Regulation in January 2003, and reflects the much sharper spurt in usage than anticipated after the introduction of calling party pays. However, they are still conservative estimates when compared with, e.g. the minutes of use by BSNL subscribers. Further, from the total operational costs, the cost components that are not related to call carriage were removed. Thus, in addition to all the cost items that were not considered earlier, 50% of the marketing expenses that was considered earlier, were not allowed in the cost base for calculating the mobile termination charge in this review. This is on the grounds that marketing expense (as in the case of other excluded costs) are not directly linked with cost of termination of call, and the fact that tariff forbearance allows cellular operators much more flexibility to

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recover these cost from other sources of revenues. As in the previous case, value added revenues have been deducted from the relevant cost base, because these are an important revenue source for recovering costs. This would also give an incentive for the service providers to earn more from the value added services in comparison to the estimated costs that have been recovered from these revenues. Over time, with the reduction in costs due to falling equipment prices, and its higher capacity, as well as due to rapid subscriber growth, the Authority may in future consider allocating only a portion of the value added revenues against the costs relevant for call termination.

80. On the basis of the above estimates, the termination charge for cellular mobile comes to Rs. 0.26 per minute for metros and Rs. 0.30 per minute for circles. Thus, a termination charge of Rs. 0.30 can be applied for cellular mobile also.

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81. While cost based termination charges have been calculated for fixed line and cellular mobile, it is not possible to get similar estimates for WLL (M) because recent data on the service is not available in a form that can be used for such calculations. However, since the Authority has decided to have a common termination charge for all calls, this should not be a problem. Also, the WLL (M) under different circumstances can be treated similar to a fixed line, or to a cellular mobile. To that extent, the cost base for WLL (M) can be taken, for simplification, as being similar to either fixed line or cellular mobile under different circumstances, and a termination charge of Rs. 0.30 per minute has been specified for WLL(M) also.

(k) Cost of call carriage

82. The cost based charges for long distance carriage have been calculated as Rs. 0.21, Rs. 0.65, Rs. 0.85 and Rs. 0.94 per minute corresponding to distance slabs of 0 to 50Kms, 50+ to 200 Kms, 200+ to 500 Kms and above 500 KMs respectively. These costs have been calculated based on data for BSNL, which is an integrated operator. The costs relevant for stand alone operators would be

higher. The carriage charges in the IUC regime have been therefore specified as slightly higher amounts for the last two distance categories: they are about 10% higher for the second highest distance category and about 20% higher for the highest distance category (please see below).

83. The Authority has examined the impact of IUC on tariffs, and has noted that the IUC regime can be accommodated within the prevailing tariff regime, leaving some margins for competition to further reduce tariffs. Thus the Authority expects combined effect of cost decreases and the competition in the market to drive tariffs even lower, mainly in the long distance sector. The Authority has compared the prevailing tariffs for different types of intra-circle and inter-circle calls. **Table 10** shows the weighted averages for the tariffs for calls originating from fixed line, cellular mobile, and WLL(M) respectively (these illustrative tariffs are the alternative tariffs of BSNL, which is keenly competing with other operators in the market). These weighted averages show that there is a considerable margin between the prevailing tariffs and the IUC/ ADC regime induced costs that apply to various service providers.

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Table 10
Weighted Average Comparison of existing tariffs & new (IUC + ADC) charges

	Inter-Circle Weighted average service wise	Intra Circle Weighted average	Intra + Inter weighted average	Inter-Circle Weighted average service wise	Intra Circle Weighted average	Intra + Inter weighted average
	Existing tariffs			Revised IUC + ADC charges		
	Rs per min	Rs per min	Rs per min	Rs per min	Rs per min	Rs per min
Fixed originating	3.44	1.70	2.07	2.03	1.21	1.39
WLL(M) originating	4.06	2.27	2.86	2.23	0.99	1.40
Cellular originating	2.26	1.56	1.75	2.24	0.79	1.17

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Note: While determining the weighted average on the basis of sum of IUCs and ADC, the cost of origination, termination and carriage has been taken as follows:

a) Fixed origination 23 Paise
b) Fixed termination 30 Paise
c) Cellular / WLL origination & termination 30 Paise
d) Applicable ADC and carriage charges based on the distance slab and type of call

VI. New IUC regime following the review

84. Based on the above review of the IUC regime, the Authority has decided to specify a revised IUC regime. **The basic principles underlying this regime address ease of collection and transfer of the IUC charges, facilitating the implementation of the IUC regime by the service providers, maintaining affordable tariffs for local calls and short distance calls likely to**

have major community of interest, and reducing the incentives for call bypass. Thus, the IUC regime has the following characteristics:

- The Authority has decided to specify IUC only as termination charge and carriage charge.

- The IUC termination charge is specified as Rs. 0.30 per minute for fixed line, cellular mobile and WLL(M).

- The carriage charge for the distances have been specified as Rs. 0.20 per minute for up to 50 kms, Rs. 0.65 per minute for 50 to 200 kms, Rs. 0.90 per minute for 200 to 500 kms, and Rs. 1.10 per minute for beyond 500 kms.

- Traffic hand-over for or from Cellular Mobile Networks shall normally take place at Level II TAX POIs and a carriage charge of Rs. 0.20 per minute would be applicable. If handover is at any other TAX level, the relevant carriage charge must be paid.

- The calls from fixed line to WLL(M) would be treated as a local call or long distance call, depending upon whether the call is within or outside the SDCA. Similarly, the calls from WLL(M) to fixed line would be treated as a local call or long distance call, depending upon whether the call is within or outside the SDCA.

- In addition to these IUC amounts, the Authority has specified certain Access Deficit Charges (ADC).

85. The ADC has been specified differently for fixed, WLL(M) and cellular mobile calls. In doing so, the Authority has kept in mind the fact that it has specified certain standard tariffs for fixed line calls (local calls, and intra-circle calls upto 50 kms.).

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86. The ADC payment is to be made as per **Schedule III** the relevant part of which is reproduced below.

Table 11. ADC Regime under this Regulation

Access Deficit Charges	Local	Intra circle calls		Inter Circle calls			ILD
in Rs per minute	local	0-50 kms	>50 kms	0-50 kms	50-200 kms	>200 kms	ILD
Fixed - Fixed	0.00	0.00	0.30	0.30	0.50	0.80	4.25
Fixed – WLL(M)	0.30	0.30	0.30	0.30	0.50	0.80	
Fixed - Cellular	0.30	0.30	0.30	0.30	0.50	0.80	
WLL(M) - Fixed	0.30	0.30	0.30	0.30	0.50	0.80	4.25
WLL(M) - WLL(M)	0.00	0.00	0.00	0.30	0.50	0.80	
WLL(M) - Cellular	0.00	0.00	0.00	0.30	0.50	0.80	
Cellular - Fixed	0.30	0.30	0.30	0.30	0.50	0.80	4.25
Cellular - WLL(M)	0.00	0.00	0.00	0.30	0.50	0.80	
Cellular - Cellular	0.00	0.00	0.00	0.30	0.50	0.80	

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Collection and distribution of ADC

The amount given above is to be collected/ paid as follows:

- For all intra-circle calls from cellular mobile/ WLL(M) to fixed line, the terminating service provider to be paid the access deficit amount.

- For all intra-circle calls from fixed to cellular mobile/ WLL(M), the originating service provider to retain the access deficit amount

- For intra-circle calls from fixed line to fixed line, the originating service provider to retain the access deficit amount (local calls and calls within “0 to 50 kms.” do not have any access deficit charge). No access deficit charge is payable to the terminating fixed network.

- For all inter-circle (including ILD) calls from fixed line, the originating service provider to keep the access deficit amount. No access deficit charge is payable to the terminating fixed network.

- For all ILD calls to fixed line, the terminating service provider to be paid the access deficit amount by the ILDO (directly or through NLDO, wherever applicable) together with the termination charge

- For all inter-circle calls from cellular mobile/ WLL(M) to fixed line, the access deficit charge and termination amount is to be collected by the NLDO from the originating service provider and the access deficit charges together with the termination charge should be paid to the terminating service provider.

- For all inter-circle calls from cellular mobile and WLL (M) to cellular mobile/ WLL(M), the access deficit amount is to be collected by the NLDO from the originating service provider and the access deficit charges should be paid to BSNL.

- For all ILD outgoing and incoming calls from/to cellular mobile and WLL (M), the access deficit amount is to be collected by the ILDO and the access deficit charges be paid to BSNL.

87. The Authority considers that the origination/ termination charge for international calls has to serve the objectives of both a reduction of the grey area traffic and provision of revenues for achieving the objectives of New Telecom Policy 1999. The Authority has considered these objectives, and has decided to keep this balance in mind. At present, the revenues available from such calls for the objectives of tele-density have been given greater emphasis in view of a need to specify affordable tariffs in the market along with an ADC regime. The Authority has thus decided to specify an access deficit **charge of Rs. 4.25** per minute for these calls for both outgoing and incoming minutes. **The Authority will consider lowering this amount over time. This amount would be collected by fixed line service providers on their outgoing/incoming calls as mentioned above in the method for collecting the ADC. For ILD calls to/from cellular mobile and WLL (M), the ILDO will collect the relevant access deficit from the**

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access provider for outgoing calls, and pay from its settlement rate for incoming calls, and pass on the ADC amount to BSNL.

88. With the proposed changes above, the Authority is of the firm opinion that most of the concerns get adequately addressed.

89. Since this was only a review exercise of the IUC/ ADC regime notified in January 2003, the Authority has not undertaken any structural changes in the estimation methodology for ADC. Periodic (annual) ADC calculations based on audited results of all service providers are being proposed. The next exercise would consider changes in the ADC regime. In the subsequent years, the Authority would review both the size of the ADC payments as well as who should be the beneficiaries of the ADC regime. It may even consider funding ADC based on a percentage of the Annual Revenues of the operators. Further, the ADC regime should ideally be merged with the USO regime over time, say in about 3 to 5 years. This will also help implement the scheme in terms of a revenue share, and will further reduce any competitive distortions that may be introduced by loading the ADC regime on the minutes of use. However, such a regime can only be introduced after consultations with the Government, which the Authority would initiate. In the post- Accounting Separation scenario, the Authority would also be better equipped for Forward Looking Proxy Models.

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VII. A summary of the principles adopted by the Authority

90. The Authority has decided on a number of principles with respect to the revised IUC regime. The Authority has decided to confirm its interim decision vide Order No.311-9/2003-Eco dated 1st July 2003, under which the Originator had to pay the IUC/ ADC for carriage and termination, and retain the residual amount.

91. The Authority has specified only one type of ADC regime, thus doing away with two different types of regimes (one with ADC escalating with distance, and another with uniform ADC) specified earlier. Technical difficulties in the

implementation of ADC escalating with distance was the main reason for providing an alternate option of uniform ADC. The Authority noted that the existence of two different ADC regimes was causing confusion amongst the service providers, and the incumbent has already implemented the escalating regime. Thus a single ADC regime with ADC escalating with distance has been specified.

92. The Authority has taken into account the financial support provided by the Government to BSNL and has accordingly made adjustments in the estimation of the ADC amounts.

93. The ADC has been reduced further by adjusting the written down value methodology for depreciation by using a straight line depreciation methodology. The net ADC amount to be funded by Long Distance calls has been calculated after accounting for the surpluses available from local calls. This was so in the earlier regime also but based on assumption on the calls which gave revenues above the cost of call taken for this purpose. In the present exercise, the revenue surplus is based on actual data received from BSNL for local call revenues for the year 2001-2002.

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94. The net ADC is much lower than the amount estimated earlier, and this should raise the margins of operators and also put a downward pressure on tariffs.

95. Taking account of the regulatory incentives/disincentives encompassed in the prevailing ADC regime under which the ADC is loaded only on calls involving fixed line, the Authority has decided to distribute the ADC load on all Access Services. This incorporates a more neutral regulatory approach in terms of incentives/disincentives created by the ADC regime.

96. The Authority has decided to reduce the ADC component for the International Long Distance calls for checking increase in grey market. In this regard, the Authority has noted that the ILD tariffs have traditionally been high and the

ADC component for ILD may be higher than that applicable to national Long Distance calls.

97. Further, the Authority noted that with reduced ADC and the prevailing tariff, Service Providers would be earning larger margins. Larger growth in the telecom sector may also bring in larger receipts to the service providers and larger ADC to BSOs including BSNL. ADC amount has thus been kept at about 10 – 12 % of the sectoral revenue, a much more sustainable amount, as against 30% in the earlier regime. Bearing this in mind, the Authority has decided not to fund the entire ADC.

98. The Authority noted that the ideal regime would be a USO type of regime that is both simpler to implement and does not impose regulatory incentives/disincentives based on differential ADC burden for different kinds of calls. The Authority is of the opinion that the prevailing ADC regime should be made to transition within 3 to 5 years towards an USO type of regime.

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99. The ADC for fixed line has been provided both from termination charge as well as from specific ADC on different types of calls. The termination charge has been made the same for calls to all types of Access Services. This will simplify the implementation of the regime and also help address the difficulties of identifying whether calls are to fixed lines or WLL(M) subscribers. For Local Calls from fixed line to fixed line no ADC component is specified. For calls from fixed to Cellular Mobile, it is difficult to distinguish whether a call is a local one, non-local, or intra circle one. In such a situation an ADC component has been specified for both calls from fixed to cellular mobile and for local and intra-circle calls from fixed to WLL(M).

100. The Authority further noted from examples across various countries that the ADC was made available in general only to the incumbent BSOs and not to the new entrants. The Authority would have liked to implement such a regime here also. The Authority sought detailed information from the BSOs and the same was provided by most of them. The Authority considered this data and

based on normated estimates (BSNL monthly rentals for private BSOs and BSNL costs for MTNL), it found that some BSOs would require ADC. A partial implementation of the ADC regime would however, be very difficult and may also generate regulatory incentives/disincentives which the Authority has addressed in another part of this review. The Authority also did not want to disturb the prevailing structure of the Regime at present, without introducing a larger change in methodology. The Authority has, therefore, decided to provide ADC for BSOs also, but the amount collected through ADC by them would in effect be lower than the proportionate ADC correspondingly received by BSNL. Further the Authority will look in greater detail at the data applicable to BSOs and will move to a regime under which the BSOs will not get ADC funding unless it is proved on the basis of data that such funding is eminently desirable in the interim transitional phase.

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101. Summary of the Main Results are as follows:

- Revised estimate has lower total amount of Access Deficit, based on recent financial and traffic data and deduction of compensation/concessions given to BSNL by the Government.

- Access Deficit estimate is being funded to the extent of Rs. 5,340 crores.

- Even developed countries like the U.S., Australia, Canada, France with lesser compulsions of providing low rentals and tariffs for unviable services had to formulate ADC schemes during initial years of liberalization and tariff re-balancing, and in several cases the ADC funding continues even now.

- Same termination charge (Rs. 0.30 per minute) to be paid for all calls to access providers, namely fixed line, cellular mobile, WLL(M). This will help simplify the IUC regime and help its implementation, and prevent disputes in reconciliation between operators.

- No origination charge is specified. Thus origination amount will be residual from tariff after payment of carriage and termination charge, plus the ADC amount.

- For calls originating from fixed line, the originating network will be allowed to collect the ADC amount. For calls originating in non-fixed line and terminating in fixed network, the terminating network will have to be paid the ADC amount.

- Only one type of Access Deficit Charge (ADC) regime has been specified, in place of the two which existed earlier. The Authority had earlier provided a uniform ADC regime in case the other, namely the escalating ADC regime, was found technically difficult to implement. The Authority noted that the two different types of ADC regimes were creating some confusion among the service providers, and the incumbent had already implemented the escalating regime. Thus, a single (escalating) ADC regime has been specified which would make the system more predictable.

- ADC to be funded from all calls, except fixed to fixed local and "0 to 50 kms." intra-circle calls, and intra-circle calls from cellular/WLL(M) to cellular/WLL(M). The Authority would have liked to impose these charges on intra-circle cellular/WLL(M) to cellular/WLL(M) calls also, to eliminate all regulatory disadvantages to any service, but collection of ADC under such a regime would require a fundamental change in the collection mechanism. The Authority would consider these charges at the time of the next review.

- With lower ADC and the amount being collected from all types of calls in general with identical charges, regulatory disincentives/incentives encompassed in the existing ADC regime have been mostly eliminated.

- BSOs other than BSNL also to get ADC funding this year as in the present regime, but on a lower scale. This will be reviewed later with more detailed and audited data, with a perspective of phasing out their ADC funding.

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- ❖ Even the ADC regime that remains for BSNL is to be phased out in general and to be merged with USO regime in 3 to 5 years.

- ❖ For all intra-circle calls subject to ADC, an ADC amount of Rs. 0.30 per minute to be levied.

- ❖ For inter-circle calls, ADC amounts are as follows:
    - Rs. 0.30 per minute for calls up to 50 kms.
    - Rs. 0.50 per minute for calls within 50 to 200 kms.
    - Rs. 0.80 per minute for calls beyond 200 kms.

This constitutes a drastic reduction in per minute ADC compared to the existing regime both on account of lower amounts and the fact that the ADC applies only once for each call, compared to the previous regime which loaded the ADC twice in the case of fixed to fixed calls.

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- ❖ ADC on international calls (outgoing and incoming) reduced to Rs. 4.25 per minute, but levied on all services to eliminate regulatory disadvantage to any service and taking account of the various objectives that are to be addressed by these ADC amounts. Reduced ADC amounts should also reduce grey traffic. The Authority will consider lowering this amount over time.

The access deficit charge per minute of the call is shown in the Table below.

Access Deficit Charges	Local	Intra circle calls		Inter Circle calls			ILD
in Rs per minute	local	0-50 kms	>50 kms	0-50 kms	50-200 kms	>200 kms	ILD
Fixed - Fixed	0.00	0.00	0.30	0.30	0.50	0.80	4.25
Fixed - WLL(M)	0.30	0.30	0.30	0.30	0.50	0.80	
Fixed - Cellular	0.30	0.30	0.30	0.30	0.50	0.80	
WLL(M) - Fixed	0.30	0.30	0.30	0.30	0.50	0.80	4.25
WLL(M) - WLL(M)	0.00	0.00	0.00	0.30	0.50	0.80	
WLL(M) - Cellular	0.00	0.00	0.00	0.30	0.50	0.80	
Cellular - Fixed	0.30	0.30	0.30	0.30	0.50	0.80	4.25
Cellular - WLL(M)	0.00	0.00	0.00	0.30	0.50	0.80	
Cellular - Cellular	0.00	0.00	0.00	0.30	0.50	0.80	

- In the revised scheme, the ADC is not specified at both originating and terminating end. For each minute of a call, a single specified ADC amount is provided.

- Settlement of the IUC/ADC amounts is to be done on bulk basis.

- Carriage charge for long distance remains same for distances up to 50 kms. (Rs. 0.20 per minute), and for more than 500 kms. (Rs. 1.10 per minute). It has been increased for distances “50 to 200 kms.” to Rs. 0.65 per minute, and for “200 to 500 kms.” at Rs. 0.90 per minute on the basis of the capital and operational costs applicable for long distance carriage and the minutes of use based on an established service provider, i.e. BSNL.

- In view of the decrease in the ADC amounts, present tariffs are sustainable, with even a margin for prices to decrease further due to competition because with the proposed IUC regime, and reduction of cross subsidies, operators would be left with higher margins in existing tariffs thus giving them more margins for competition without regulatory disadvantages for any service. Lesser cross subsidies should also put downward pressure on tariffs.

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- Review of ADC to be done annually, and over time a gradual introduction of forward looking long run incremental cost model would be used to calculate the ADC.

- With this IUC/ADC regime, the Authority has also forborne with respect to the tariffs for basic service, except for the rural tariffs.

- Substantial part of this ADC funding will still be generated from within the BSNL network. Despite application of ADC to a number of other call types (such as cell to cell calls, etc.) the ADC funding by fixed services as a proportion of revenues would still be more than the contribution from cellular operators: Under the revised regime, the ADC funding as a proportion of revenues would be about 12 % by fixed operators, about 9% by cellular mobile, and about 16% by WLL(M). The difference between WLL(M) and cellular mobile contributions is due to the differences in the present tariff, traffic and subscriber bases. With the ever increasing growth in the number of wireless subscribers and minutes of usage and the slower growth in fixed lines, the ADC load on various services is likely to converge and come down in subsequent reviews.

- In the earlier regime 92% of the ADC revenues were being contributed by BSOs (primarily BSNL) and the ADC as a percentage of their revenues was about 40%. Instead of helping BSOs, particularly BSNL, the earlier regime could have driven them out of business.

- This IUC/ ADC regime will be implemented from 1st December, 2003.

(DR. HARSHA VARDHANA SINGH)

Secretary-cum-Principal Advisor

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Telecom Regulatory Authority of India

Notification

New Delhi, the 25th November, 2003

No.409-5/2003-FN

In exercise of the powers conferred upon it under section 36 read with clauses (ii), (iii) and (iv) of sub section (b) of Section 11 (1) of the Telecom Regulatory Authority of India Act, 1997 as amended by TRAI (Amendment) Act, 2000, to fix the terms and conditions of interconnectivity between Service Providers, to ensure effective interconnection between different service providers and to regulate arrangements amongst service providers of sharing their revenue derived from providing telecommunication services, the Telecom Regulatory Authority of India hereby makes the following Regulation**.**

IndiaCode

The Telecommunication Interconnection Usage Charges (First Amendment) Regulation, 2003 (5 Of 2003)

Section I

Title, Extent and Commencement

1. Short title, extent and commencement:

(i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges (First Amendment) Regulation 2003" .

(ii) The Regulation shall be deemed to have come into force from the date of its notification in the official Gazette.

Section II

2.1 In clause 4 under Section IV of The Telecommunication Interconnection Usage Charges Regulation, 2003, sub-clause (ii) shall be deleted and substituted by the following:

> "(ii) The date of effect for actual implementation of IUC shall be 15th December, 2003."

Section III

3. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to matters covered under this Regulation.

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BY ORDER

[DR. HARSHA VARDHANA SINGH]
Secretary-cum-Principal Advisor

Annexure– A

EXPLANATORY MEMORANDUM

1. The Telecommunication Interconnection Usage Charges Regulation issued on 29th October, 2003 had initially envisaged the implementation of the revised IUC regime by 1.12.2003. As per this Regulation, all existing interconnect agreements/ arrangements as on date were to stand amended on the date of actual implementation of this Regulation, i.e. 1st December, 2003, so as to conform to the framework of the revised IUC regime and these have to be submitted to TRAI for registration within 15 days of implementation of this Regulation, and for subsequent changes as per reporting requirement.

2. Some of the service providers have now sought clarification on a number of issues relating to

   - IUC applicable for unified access services,
   - Numbering, Routing, Point of Interconnections
   - Carriage Charges
   - Reconciliation issues
   - +/- 10% negotiation in carriage charges beyond 50 Kms
   - Calls between CMSPs (including BSNL) where direct connectivity has not yet been implemented.
   - Implementation details from BSNL

   The clarifications on the issues raised by Service Providers will be issued in the first week of December 2003.

3. In view of the above, the date of implementation for the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003) dated 29th October, 2003 will now be 15th December, 2003 and the service providers have to file with the Authority the amended interconnect agreement, in conformity with this Regulation latest by 31st December, 2003.

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Telecom Regulatory Authority of India

Notification

New Delhi, the 12th December, 2003

No.409-5/2003-FN

In exercise of the powers conferred upon it under section 36 read with clauses (ii), (iii) and (iv) of sub section (b) of Section 11 (1) of the Telecom Regulatory Authority of India Act, 1997 as amended by TRAI (Amendment) Act, 2000, to fix the terms and conditions of interconnectivity between Service Providers, to ensure effective interconnection between different service providers and to regulate arrangements amongst service providers of sharing their revenue derived from providing telecommunication services, the Telecom Regulatory Authority of India hereby makes the following Regulation**.**

IndiaCode

The Telecommunication Interconnection Usage Charges (Second Amendment) Regulation, 2003 (6 Of 2003)

Section I

Title, Extent and Commencement

1. Short title, extent and commencement:

(i) This Regulation shall be called “The Telecommunication Interconnection Usage Charges (Second Amendment) Regulation 2003” .

(ii) The Regulation shall be deemed to have come into force from the date of its notification in the official Gazette.

Section II

2.1 In clause 4 under Section IV of The Telecommunication Interconnection Usage Charges Regulation, 2003, sub-clause (ii) shall be deleted and substituted by the following:

"(ii) The date of effect for actual implementation of IUC shall be 1st January, 2004."

Section III

3. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to matters covered under this Regulation.

IndiaCode

BY ORDER

[DR. HARSHA VARDHANA SINGH]
Secretary-cum-Principal Advisor

Annexure– A

EXPLANATORY MEMORANDUM

1. The Telecommunication Interconnection Usage Charges Regulation issued on 29th October, 2003 had initially envisaged the implementation of the revised IUC regime by 1.12.2003. As per this Regulation, all existing interconnect agreements/ arrangements as on date were to stand amended on the date of actual implementation of this Regulation, i.e. 1st December, 2003, so as to conform to the framework of the revised IUC regime and these have to be submitted to TRAI for registration within 15 days of implementation of this Regulation, and for subsequent changes as per reporting requirement.

2. The Authority received several communications from service providers seeking clarifications on the regime and the date of implementation for the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003) dated 29th October, 2003 was postponed from 1st December 2003 to 15th December, 2003 vide 'The Telecommunication Interconnection Usage Charges (First Amendment) Regulation 2003 (5 of 2003)' dated 25th November, 2003.

3. The Authority has had detailed meetings with the service providers on this matter, and has also clarified a number of issues. The Authority has now received requests from various service providers for postponement of the implementation of the IUC regime. These requests seek postponement from one to up to three weeks to fully implement the IUC regime within a framework of the Unified Access License regime specifically with regard to the numbering aspect, for which the approval of Government is necessary. The Authority is considering recommending to DOT regarding numbering issues as a follow up of Unified Access Service License Migration.

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4. In view of the above, the date of implementation for the Telecommunication Interconnection Usage Charge Regulation, 2003 (4 of 2003) dated 29th October, 2003 will now be 1st January, 2004 and the service providers have to file with the Authority the amended interconnect agreement, in conformity with this Regulation latest by 15th January 2004.

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Telecom Regulatory Authority of India

Notification

New Delhi, the 31st December, 2003

No.409-5/2003-FN

In exercise of the powers conferred upon it under section 36 read with clauses (ii), (iii) and (iv) of sub section (b) of Section 11 (1) of the Telecom Regulatory Authority of India Act, 1997 as amended by TRAI (Amendment) Act, 2000, to fix the terms and conditions of interconnectivity between Service Providers, to ensure effective interconnection between different service providers and to regulate arrangements amongst service providers of sharing their revenue derived from providing telecommunication services, the Telecom Regulatory Authority of India hereby makes the following Regulation**.**

IndiaCode

The Telecommunication Interconnection Usage Charges (Third Amendment) Regulation, 2003 (7 Of 2003)

Section I

Title, Extent and Commencement

1. Short title, extent and commencement:

(i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges (Third Amendment) Regulation 2003".

(ii) The Regulation shall be deemed to have come into force from the date of its notification in the official Gazette.

Section II

2.1 Clause 2.(iv) in Section II Definitions of The Telecommunication Interconnection Usage Charges Regulation, 2003, dated 29th October, 2003 shall be deleted and substituted to read as under:

(iv) "BSO, CMSP, ILDO, NLDO and UASP" respectively mean the Basic Service Operator, Cellular Mobile Service Provider, International Long Distance Operator, National Long Distance Operator and Unified Access Service Provider.

2.2 A new sub-clause (xxx) under clause 2, Section II Definitions of The Telecommunication Interconnection Usage Charges Regulation, 2003, dated 29th October, 2003, shall be added to read as under:

(xxx) "Cellular" means fully mobile service provided by CMSPs and UASPs through GSM, CDMA or any other technology.

2.3 In clause 4 of Section IV of The Telecommunication Interconnection Usage Charges Regulation, 2003, dated 29th October, 2003, sub-clause (ii) shall be deleted and substituted to read as under:

"(ii) The date of effect for actual implementation of IUC shall be 1st February, 2004."

2.4 In Clause 3.1 under Schedule III, of The Telecommunication Interconnection Usage Charges Regulation, 2003, dated 29th October, 2003 the second sentence starting with "The ADC will be payable …." and ending with "…. International Long Distance service providers" shall stand deleted.

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Section III

3. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to matters covered under this Regulation.

BY ORDER

[DR. HARSHA VARDHANA SINGH]
Secretary-cum-Principal Advisor

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Annexure – A

EXPLANATORY MEMORANDUM

1. The Telecommunication Interconnection Usage Charges Regulation issued on 29th October, 2003 had initially envisaged the implementation of the revised IUC regime by 1.12.2003. As some of the service providers had sought clarification on a number of issues relating to implementation of the IUC regime and in order to give the necessary clarifications, the date of implementation of the IUC Regulation was initially extended to 15th December, 2003.

2. Meanwhile, the Authority had received various representations from service providers on the issue of level playing field between CMSPs and the BSOs, who have migrated to the Unified Access Service License in the matter of TAX usage charge/ carriage charge, Point of Interconnection, numbering etc. The Authority has had detailed meetings with the service providers on these issues. There were also requests from various service providers for postponement of the implementation of the IUC regime and date of implementation was revised to 1st January, 2004.

3. The issue of implementation of IUC Regulation dated 29th October, 2003 together with implementation of the Unified Access Service Licence was raised by various Service Providers. The Authority received various representations from service providers on the issue of level playing field between CMSPs and the BSOs, who have migrated to the Unified Access Service License in the matter of TAX usage charge / carriage charge, Point of Interconnection (POI), numbering etc. The Authority has had detailed meetings with the service providers on these issues. During these meetings, the Authority received inter alia suggestions from service providers that in the IUC regime, there should be identical provisions for mobile services provided by both CMSPs and BSOs that have moved to the Unified Access Service Regime and are providing full mobility.

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4. Taking note of the various points raised in these discussions and to maintain the level playing field, a number of decisions have been taken by the Authority.

5. All fully Mobile Cellular Services using any technology are to be treated at par in connection with:

   (a) Numbering Scheme

   (b) Terms and conditions of interconnection, including charges and level of interconnection. The level of interconnection for fully mobile service will normally be at level II TAX, and by mutual agreement at other points i.e. the level of interconnection will be the same as for GSM Cellular service providers.

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6. In regard to the numbering issue, the Authority had forwarded its recommendations in line with the above decision, on 23rd December 2003 to the Department of Telecommunications, who is the Numbering Plan Administrator. TRAI had recommended that Numbering Scheme for full mobility provided by the existing and new Basic Service Operators who have migrated to Unified Access Service Licence should be at the same level as that for GSM Cellular subscribers. In view of the on going consultation process on Unified Licensing for all telecom services, no change in Numbering or Routing was proposed at this stage for Limited Mobility Service.

7. The DOT has accepted the above mentioned recommendations of TRAI and has provided for 30 days from 1st January , 2004 for implementation. Based on the decision of DOT, a period of one month will be allowed to the operators to implement the scheme and the new Numbering arrangements should be functional latest by 1st February 2004.

8. The Authority has decided that the IUC charges for both CDMA and GSM full mobility services shall be the same as specified for cellular mobile services in the IUC Regulation dated 29.10.2003. Implementation of such an IUC regime requires clear distinction between full mobility and limited mobility. The above mentioned decision on Numbering has to be implemented to achieve this objective. Taking note of the fact that the new IUC regime was to be implemented from 1st January, 2004 and date of implementation for the Numbering in case of the Fully Mobile Services has been fixed as 1st February 2004, the Authority has taken a decision that the new IUC Regime also should be implemented from 1st February 2004. Accordingly, the Authority has also decided that identical IUC charges shall apply for both CDMA and GSM full mobility services, irrespective of Point of Interconnection, from February 1st, 2004 i.e. date of implementation of the new IUC regime, because the change-over of the level of interconnection may take a longer time than implementation of the number changes (please see below).

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9. In so far as implementation of change of the Point of Interconnection for full mobility under Unified Access License as per Para 5(b) above is concerned, more work and time is needed, and this change should be progressively completed by March 31, 2004. BSNL is being directed to provide all Interconnection facilities as may be required for the implementation of changes of the POIs.

10. Other Numbering and Interconnection related issues like same level of Numbering for Full Mobile and Limited Mobile subscribers, implementation of limited mobility through Home Zone tariff concept, Interconnect Gateway Exchange etc. will be addressed as part of the Authority's consultation paper on Unified License for all telecom services. It is, however, clarified that for full mobile subscribers using any technology, TRAI's recommendations already given to DOT on December 23, 2003 are not a subject of the above consultation process.

11. The service providers have to file with the Authority, the amended interconnect agreement, in conformity with this Regulation latest by 15th February, 2004.

[DR. HARSHA VARDHANA SINGH]
Secretary-cum-Principal Advisor

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Telecom Regulatory Authority of India

Notification

New Delhi, the 6th January 2005

No.409-8/2004-FN

In exercise of the powers conferred upon it under section 36 read with paragraphs (ii), (iii) and (iv) of clause (b) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India hereby further amends the Telecommunication Interconnection Usage Charges Regulation, 2003, as follows, namely :

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1. Short title, extent and commencement:

   (i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges (Fourth Amendment) Regulation (1 of 2005)"

   (ii) This Regulation shall come into force with effect from 1st February, 2005

2. The following entries shall substitute the existing entries relating to Regulation 8 in Section VIII (Interpretation) of The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003):

   "In case of any doubt regarding any provision of this Regulation, the clarification given by the Authority shall be final."

3. The following entries shall substitute the entries relating to Para 3.1 and 3.2, respectively, of Schedule III of The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003):

3.1 Access Deficit Charge shall be applicable for the specified category of calls as mentioned in **Table III**. The ADC will be payable on a per minute basis, and retained collected and distributed as per section 3.2 of schedule III below.

The ADC applicable for different types of calls are mentioned in **Table III**. The rates are shown on a per minute bulk settlement basis.

TABLE III

Access Deficit Charge in Rs. Per minute applicable for various type of Calls

Access Deficit Charges	Local calls	Intra-Circle calls		Inter-Circle calls	ILD calls	
in Rs per minute		0-50 kms	>50 kms	All Distances	Outgoing	Incoming
Fixed – Fixed	0.00	0.00	0.30	0.30	2.50	3.25
Fixed - WLL(M)	0.30	0.30	0.30	0.30		
Fixed – Cellular	0.30	0.30	0.30	0.30		
WLL(M) – Fixed	0.30	0.30	0.30	0.30	2.50	3.25
WLL(M) – WLL(M)	0.00	0.00	0.00	0.30		
WLL(M) – Cellular	0.00	0.00	0.00	0.30		
Cellular – Fixed	0.30	0.30	0.30	0.30	2.50	3.25
Cellular – WLL(M)	0.00	0.00	0.00	0.30		
Cellular – Cellular	0.00	0.00	0.00	0.30		

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3.2 Collection and distribution of ADC

The amount given above is to be collected/ paid as follows:

a) For all Intra-Circle calls from Cellular Mobile/ WLL(M) to fixed line, BSNL to be paid the access deficit amount.

b) For all Intra-Circle calls from fixed to Cellular Mobile/ WLL(M), the originating service provider to retain the access deficit amount

c) For Intra-Circle calls from fixed line to fixed line, the originating Service Provider to retain the access deficit amount (local calls and calls within “0 to 50 kms.” do not have any access deficit charge). No access deficit charge is payable to the terminating fixed network.

d) For all outgoing Inter-Circle and ILD calls from fixed line, the originating service provider to keep the access deficit amount. No access deficit charge is payable to the terminating fixed network.

e) For all ILD calls to fixed line, BSNL to be paid the access deficit amount by the ILDO (directly or through NLDO, wherever applicable), and the termination charge should be paid to the terminating network.

f) For all Inter-Circle calls from Cellular Mobile/ WLL(M) to fixed line, the access deficit charge and termination amount is to be collected by the NLDO from the originating service provider and the access deficit charges should be paid to BSNL and the termination charge should be paid to the terminating service provider.

g) For all Inter-Circle calls from Cellular Mobile and WLL (M) to Cellular Mobile/ WLL(M), the access deficit amount is to be collected by the NLDO from the originating service provider and paid to BSNL.

h) For all ILD outgoing and incoming calls from/ to Cellular Mobile and WLL (M), the access deficit amount is to be collected by the ILDO and paid to BSNL.

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4. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to matters covered under this Regulation.

BY ORDER

[DR. HARSHA VARDHANA SINGH]

Secretary-cum-Principal Advisor

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ANNEX "A"

EXPLANATORY MEMORANDUM

I. Introduction

1. The ADC regime has evolved over time, notified first in TRAI's Regulation dated 24th January 2003, and reviewed in TRAI's Regulation of 29th October 2003. In that notification, the Authority had emphasized a policy framework, which would promote lower domestic prices and give rise to strong subscriber growth. The expectations of the Authority with respect to both these objectives have been validated in the subsequent period. India at present has among the cheapest mobile call charges in the world, as is shown, for example, in Table 1 below. Likewise, the monthly growth in mobile subscribers base in India, has been among the highest, and the price decline has contributed significantly to such growth.

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2. To have a large effect on growth of demand and subscriber base in India, the price level has to decrease to a level below a certain threshold value beyond which there is a possibility of a huge expansion in the market base. This would become clear from Figure 1, which shows that the tariffs, particularly for Mobile services, have declined sharply over time. Since last year when the effective price of mobile service reached close to that for fixed line, the decline in tariffs was accompanied by an exceptional rise in the subscriber base. This suggests that the price level has now dropped to reach a special threshold level, which results in a fundamental change in the accessibility of the service to the Indian people. Consequently, further price decreases can give rise to additional large increase in subscriber base, and a better possibility of achieving our tele-density objectives much before the target dates.

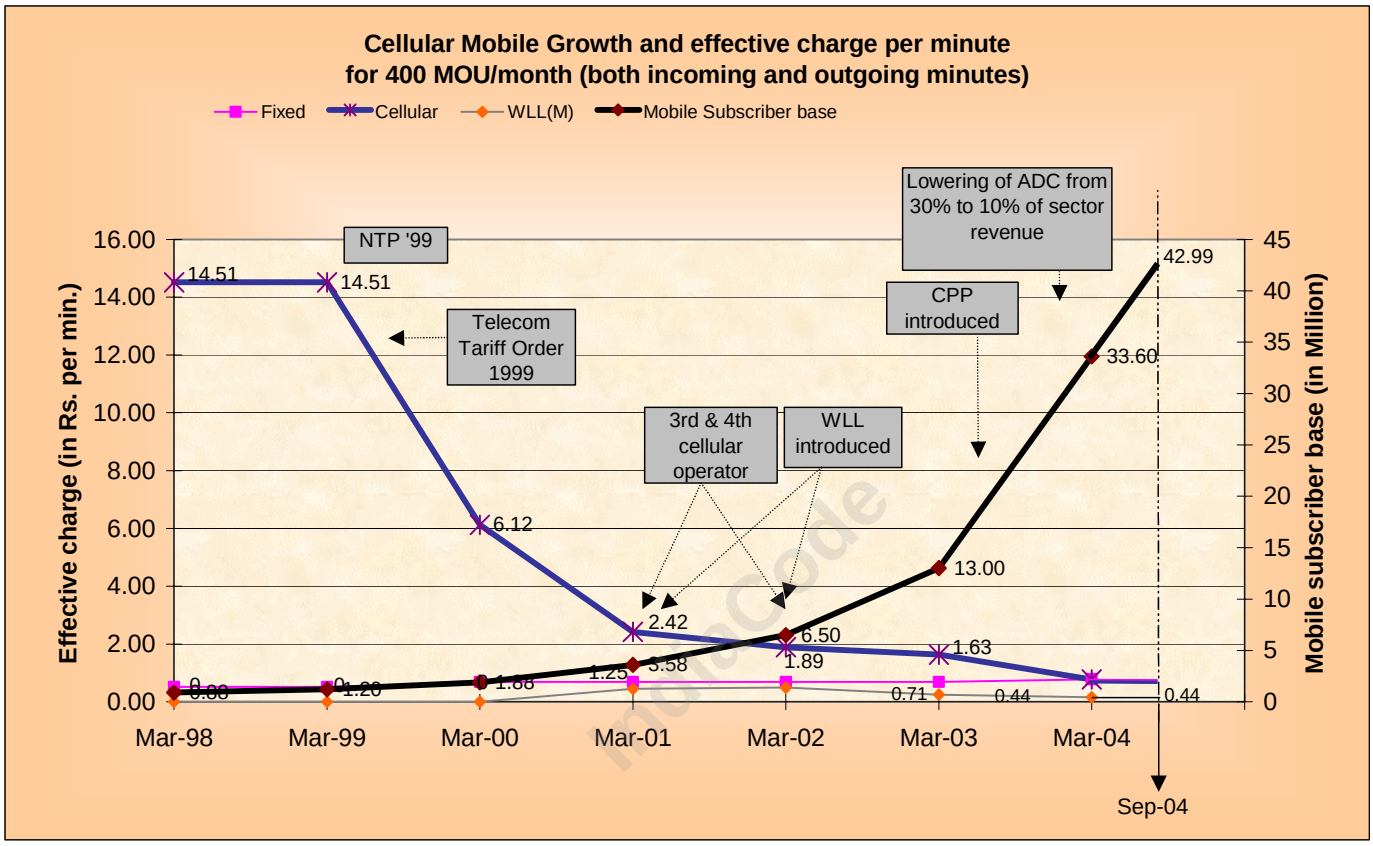
Table 1: Comparison of Call Charge per minute, Minutes of Use and ARPU in different countries and Average Values for countries

The Industry Spanshot – 2 Q 04			
Name of the Country	**ARPU (Average Revenue Per User)**	**Minutes of Use per Subscriber per month**	**Rate per Minute**
	US$	**Minutes**	**US$**
Argentina	**13**	**121**	**0.11**
Australia	**43**	**159**	**0.24**
Austria	**40**	**127**	**0.27**
Belgium	**42**	**108**	**N.A.**
Brazil	**11**	**92**	**0.11**
Canada	**39**	**344**	**0.11**
Chile	**12**	**105**	**0.12**
China	**10**	**261**	**0.04**
Colombia	**11**	**106**	**0.10**
Czech	**21**	**80**	**0.22**
Denmark	**32**	**155**	**0.17**
Egypt	**17**	**167**	**0.10**
Finland	**43**	**247**	**0.15**
France	**40**	**213**	**0.16**
Germany	**28**	**74**	**0.31**
Greece	**34**	**117**	**0.25**
Hong Kong	**27**	**380**	**0.07**
Hungary	**25**	**118**	**0.22**
India	**11**	**309**	**0.04**
Indonesia	**11**	**N.A.**	**N.A.**
Ireland	**54**	**198**	**0.21**
Israel	**36**	**297**	**0.11**
Italy	**32**	**118**	**0.24**
Japan	**63**	**156**	**0.33**
Korea	**35**	**316**	**0.09**
Malaysia	**20**	**185**	**0.11**
Mexico	**18**	**105**	**0.17**
Netherlands	**38**	**137**	**0.24**
New Zealand	**33**	**147**	**0.20**
Nigeria	**48**	**N.A.**	**N.A.**
Norway	**49**	**191**	**0.21**
Philippines	**8**	**N.A.**	**N.A.**
Poland	**19**	**71**	**0.24**
Portugal	**30**	**120**	**0.23**
Russia	**13**	**130**	**0.09**
Singapore	**31**	**277**	**0.09**
South Africa	**27**	**140**	**0.18**
Spain	**37**	**132**	**0.25**
Sweden	**28**	**119**	**0.22**
Switzerland	**59**	**119**	**0.45**
Taiwan	**19**	**193**	**0.09**
Thailand	**9**	**N.A.**	**N.A.**
Turkey	**14**	**66**	**0.19**
UK	**39**	**144**	**0.22**
US	**57**	**619**	**0.09**
Venezuela	**16**	**77**	**0.21**
Total/AVG	**30**	**235**	**0.13**

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Source : Merril Lynch Report of 29th September 2004

Figure 1 : Mobile Growth and TRAI initiatives



3. The exceptional growth in subscriber base has resulted in a substantial change in the situation that was considered for determining the ADC regime notified in the Regulation of 29th October 2003. The large unanticipated increase in Mobile subscriber base has led to a much higher number of total minutes, which fund the overall ADC amount. Thus, even with the same amount of ADC funds to be collected, the per minute ADC charge can be lower due to the increase in minutes on which the ADC charge is applied. Inter alia, taking this important factor into account, the Authority has conducted another review of the ADC regime based on its Consultation Paper of 23rd June 2004.

4. The regime notified in this Regulation takes account of all the inputs provided during the Consultation process, which in a number of cases involved

different stakeholders giving diametrically opposite views on specific issues. The Authority thus had to weigh the various inputs and positions and its attempt has been to provide a revised ADC regime which allows larger benefits to the Indian consumer and rapid growth of telecom services, while taking complementary or supplementary steps to mitigate the factors likely to have adverse effects.

5. The revised ADC regime should also be seen in the context of the overall policy framework being developed by the Authority for improving the availability of modern communication services across the country, with a special focus on rural areas. As part of such initiatives, the Authority has had several discussions with service providers on plans for extension of the network to various parts of the country. These discussions show that with tariffs becoming attractive even for rural consumers, the market is rapidly expanding to such areas and the subscriber base is likely to increase also due to a large rise in the coverage of the mobile network in the near future. Mobile coverage is likely to increase from 1700 towns to about 4900 towns in next two years, and about 60% of rural villages are likely to be covered under Mobile Network during this period (please see Table 2 below).

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Table 2 : New Areas to be brought in Mobile Coverage by Service Providers to further accelerate Mobile Growth

Present Coverage of Mobile Networks (Population Coverage 20%)

	By area	*Population Coverage*
Towns	~1700 out of 5200	~200 Million
Rural areas	Negligible	Negligible

Proposed Network Coverage by 2006 ; operators plan (Population Coverage 75%)

	By area	*Population Coverage*
Towns	~4900 out of 5200	~300 Million
Rural areas	~350,000 out of 607,000 villages	~450 Million

6. As the coverage of service increases to include a larger area in the country, the contribution of lower domestic tariffs becomes crucial for expanding subscriber base and providing the benefits of accessible communications service to our population in general. **The Authority is of the view that the domestic tariffs need to consistently decline below the threshold level that has been reached, in order to provide a sustained boost to subscriber growth and tele-density in the country.**

7. **In specifying its revised ADC regime, the Authority has given particular emphasis to provide a strong basis for a further decrease in domestic prices and boosting subscriber growth, as well as to pave the way towards as much similarity in long distance charges as possible (i.e. working towards a "death of distance" which the technological change is bringing about). Thus, the Authority expects that the regime notified under this Regulation will be followed by a competitive market response resulting in a reduction in call charges, which in turn should add to the subscriber growth and greater availability of telecom services. The Authority will be monitoring the prices, including through the special Software that it is developing for comparison of tariff packages.**

8. The large expected increase in subscriber base will also provide a substantial rise in the minutes that will fund the ADC for fixed service providers. Further, these minutes will, to a significant extent, be external to the BSNL, i.e. the ADC funding by the BSNL itself will increasingly become a smaller portion. These major developments will give us with an additional basis to further decrease the ADC per minute charges, or if the ADC is funded through a revenue share regime then for a decrease in the revenue share imposed for funding ADC. As already stated earlier by the Authority, the ADC regime will ultimately merge with the USO regime.

9. **In the present review, the Authority's assessment is based mainly on the increased minutes available to fund the ADC. The main focus of the**

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ADC regime has been BSNL, and in the revised regime, the Authority has provided BSNL with the same ADC funds as were specified under the regime notified in the Regulation of 29th October, 2003. However, even with the same amount of ADC funding, the per minute ADC charge would go down due to the larger base of subscribers and consequently of the relevant minutes of use.

10. In reviewing the ADC regime, the Authority also examined the ADC regime that should apply to all fixed line service providers other than BSNL. The Authority recalled that even in the ADC regime notified in October 2003, these service providers were not treated at par with BSNL because under that regime only BSNL received the ADC from mobile to mobile calls and international calls to/from mobile. In the revised ADC regime too, the other fixed line service providers are not treated in the same manner as BSNL. The Authority feels that there is good basis for this dissimilar treatment, if one takes account of the lower cost of access involved with fixed lines with wireless terminals, i.e. fixed line with radio link in the last mile and the spread of subscribers in urban and rural areas (please see Table 3 below).

11. However, BSNL and the other fixed service providers are being treated in a similar way by the Authority if we consider that in the revised scheme, the Authority is providing to BSNL the same overall amount of ADC as in the regime notified in October 2003 and all other fixed operators also, are being given overall similar ADC values as was specified in that Regulation.

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Table 3

Percentage distribution of FWT lines in the total Fixed Subscriber Base of Fixed Operators and Percentage of Rural lines in total Fixed Lines provided by Fixed Operators as on 30th September 2004

Service Provider	Name of the Circle/ Service Area	% of Fixed Wireless lines in Operator's Fixed Lines	% of Rural lines in Operator's Fixed Subscriber Lines
BSNL	All India (except Delhi and Mumbai)	2.60	35.20
MTNL	Delhi & Mumbai	1.09	0.00
Bharti	Delhi, Madhya Pradesh, , Tamil Nadu, Karnataka, Haryana, Chennai	3.46	0.08
TATA	Maharashtra, Mumbai, Andhra Pradesh, Tamil Nadu, Chennai, Karnataka, Delhi, Gujarat	77.39	0.23
Shyam	Rajasthan	18.49	3.37
HFCL	Punjab	24.53	0.45
Reliance	All Circles except Assam and North East	97.27	0.66
TOTAL		7.70	28.93

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Source : Operators' Submission to TRAI

12. Based on the above, the Authority has decided that operators other than BSNL should be treated differently from BSNL in terms of the ADC support provided to them. In this background, and keeping also the objective of providing the same overall ADC funding to BSNL as in the estimation provided in the Regulation of 29th October 2003, the Authority has conducted further calculations and has decided that **all the operators other than BSNL should get ADC funding only from their outgoing calls. The ADC generated by all the incoming calls that were earlier provided to these (non-BSNL) operators, would now be provided to BSNL.** This is required to keep the incidence of the ADC charge low, to make the ADC regime

sustainable, and to obtain the requisite funds for the ADC being provided to the operator who is presently providing virtually the entire rural telephony.

13. The Authority has also noted that in the future there will be greater disbursement of the USO funds from the Government to the USF Administrator, who in turn will implement its USO schemes that will be in the pipeline. With smooth and early disbursement of USO funds, the amount of ADC funding required will keep going down, because the methodology used by the Authority is such that as the USO funding increases, the amount of ADC funding requirement decreases. Thus it is extremely important that the amount of USO funds collected by the Government should be disbursed for this purpose by providing the amounts to the USF Administrator. Otherwise while the USO funds would be collected by the Government from the License Fee, but due to their non-disbursement, it will not be possible to reduce the ADC charge by the maximum amount possible, and the consumer will continue to bear a relatively higher ADC burden.

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14. In addition to its main objectives of sustained price decline and rapid subscriber growth, the Authority has also emphasized greater certainty in the telecom market, and strengthening the mechanisms for addressing grey traffic in international calls. The issue of certainty arose when BSNL and the cellular mobile operators sought flexibility to negotiate termination charges for international calls with the International Long Distance Operators functioning in India. A number of other stakeholders were of the opinion that this would give rise, inter alia, to greater chaos in the market and also to the dominant operator getting a preferred position in the market. Based on its overall analysis of the situation, the Authority has decided in favour of specifying the ADC charges and not allowing negotiations for termination charges. The Authority has also taken note of the fact that TRAI's Consultation Paper dated 23rd June 2004 was reviewing only Access Deficit and not Interconnection Usage Charges (which include termination charges).

15. With respect to the grey traffic in international calls, the Authority recalled that in its Regulation of October 2003, it had taken account of the Report of the Committee on Grey Traffic with members from TRAI, several service providers (including BSNL, MTNL) and DOT, TEC, etc. The Authority recalled a number of relevant points in that context, namely that:

- BSNL and a number of others in the Committee were of the view that grey traffic would be addressed not by changing the arbitrage opportunity available to illegal international call providers, but by stronger monitoring and penalty mechanisms;
- Vide its letters of 23rd and 24th June, 2003 the DOT had established mechanisms to monitor illegal international traffic, with its Vigilance Department acting as a nodal point;
- Any attempt to address the arbitrage opportunity must not overlook the objectives of affordability of local calls in particular and higher telecom growth as contained in NTP 1999;
- The Authority had in paragraph 87 of its 29th October 2003 Regulation stated that: "*At present, the revenues available from such calls for the objectives of tele-density have been given greater emphasis in view of the need to specify affordable tariffs in the market along with an ADC regime*."

16. As mentioned above, the Authority has in its review again emphasized low prices and consequent subscriber growth. The ADC regime notified in this Regulation has been specified taking into account the view re-iterated by BSNL that grey market can be addressed only through monitoring and not by reducing the arbitrage opportunity that arises due to the margin between the ADC on domestic and international calls. BSNL has also emphasized in its meetings with the Authority that the established monitoring mechanism of the DOT has started showing results. Furthermore, the Authority has already established an expert group so that a set of recommendations are available covering a new monitoring and vigilance mechanism that can ensure that the traffic of legitimate international call providers is not under-reported and grey

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market calls on this count are kept in check. In this context, it is noteworthy that under the revised proposed regime, ADC from all incoming international calls is to be given to BSNL. The Authority has nonetheless also reduced the arbitrage margin for Incoming and Outgoing International Long Distance calls (please see Tables 4A and 4B below). The situation with respect to the number of Outgoing and Incoming International Long Distance minutes is shown in Table 5 below.

TABLE 4A

Potential Arbitrage Margin (on ADC + Termination Charge) per minute for Incoming ILD calls

Sr. No.	IUC Regime	ADC + Termination Charge per minute on Incoming International Call (Rs.)	ADC + Termination Charge per minute on Local/ NLD Call (Rs.)	Potential Arbitrage Margin if Incoming ILD call is converted to Local/ NLD (Rs.)
1	29th October 2003	4.55	0.30 to 1.10	3.45 to 4.25
2	Regime notified under this Regulation	3.55	0.30 to 0.60	2.95 to 3.25

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TABLE 4B

Potential Arbitrage Margin (on ADC + Origination) per minute for outgoing ILD calls with Origination Charge taken same as Termination Charge

Sr. No.	IUC Regime	ADC + Origination Charge per minute on Outgoing International Call (Rs.)	ADC + origination Charge per minute on Local/ NLD Call (Rs.)	Potential Arbitrage Margin if outgoing ILD call is shown as Local/ NLD call (Rs.)
1	29th October 2003	4.55	0.30 to 1.10	3.45 to 4.25
2	Regime notified under this Regulation	2.80	0.30 to 0.60	2.20 to 2.50

TABLE 5

INTERNATIONAL LONG DISTANCE MINUTES

Minutes in Million							
Sector	Based on data reported by ILDOs						Reported for 6 months + Forecast 6 months
International	Minutes	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05
	Outgoing	473	527	575	764	1176	1720
	Incoming	1769	2167	2546	3110	4043	4843
	Total	2242	2694	3120	3875	5219	6564

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17. To specify the revised ADC regime, the Authority has conducted detailed analysis of the data submitted to it on traffic flows and subscriber base. The Authority noted gaps and inconsistencies in the data provided, and gave the service providers an opportunity to make relevant corrections. However, instead of being subject to regulatory capture due to provision of late, incomplete or inconsistent data by operators, the Authority has used reasonable normated estimates wherever required. The Authority has also noted that ADC payments to BSNL including those from its internal traffic are likely to be higher than anticipated as the current cycle gets completed in January 2005. **The new regime will be implemented from 1st February 2005, which implies that the present regime will continue till 31st January 2005. The revised regime is based on forecasted data for the period beyond September 2004.** The Authority will be conducting a review of the ADC rates within 3 to 6 months of its implementation and consider whether the underlying data used by it in the present set of calculations including forecasts has been robust and matches with the subsequent monthly long distance traffic minutes and ADC submissions. The Authority will review the ADC rates without going in for any consultation process in case new figures of data suggest that revision of ADC values is justified for the last two quarters of the new annual cycle of ADC.

18. Section II gives the background, Section III gives a summary of the main comments, Section IV addresses a key point made repeatedly that the ADC regime should be merged with the USO regime and should not be in place as a separate regime. Section V summarizes the examination of the issues by the Authority, and Section VI gives the main decisions of the Authority.

II. BACKGROUND

19. The Authority notified on 24th January 2003, its first Regulation on Interconnect Usage Charge (IUC) and Access Deficit Charge (ADC). This regime came into effect from 1st May, 2003. The implementation followed an agreement among all operators on the method for assessing the IUC/ ADC amounts, based on the results of a special Committee that had been established by TRAI to address this matter, with BSNL as the convenor of the Committee. That meeting decided the method of implementing the IUC regime, but treated it as an interim one. It was further decided at the meeting that the interim phase will end by 31st March 2004 with implementation of CDR based billing system by all operators including BSNL. However, CDR based billing system has still not been implemented by BSNL.

20. Even at the time of implementing the first IUC/ ADC regime notified on 24th January 2003, the TRAI was looking further into the various comments on that regime's shortcomings, particularly regarding the sustainability of the regime and the underlying calculations of IUC/ ADC. The estimated amount of ADC was large and was to be collected only from calls involving fixed line subscribers either at one end or both ends. This meant that the IUC/ ADC charges differed widely for calls from and to fixed and mobile networks. Moreover two ADC regimes were specified, one uniform and another escalating with distance. With ADC being levied only on calls involving fixed line, the mobile service providers had greater flexibility in offering lower tariffs in comparison to fixed lines especially when fixed lines were involved at both

ends. This would have adversely affected the competitive ability of fixed line to a very large extent. The sustainability of the notified IUC/ ADC regime had become questionable. This as well as a number of other comments justified a review of the regime (please see below).

21. The results of the review were encompassed in the second IUC regime notified in a Regulation dated 29th October, 2003. The Authority at that stage, had taken note of the fact that even developed countries like the US, Australia, Canada, France with lesser compulsions of providing low rentals and tariffs for unviable services had to formulate ADC during initial years of liberalization and tariff re-balancing. The Authority had further noted that in the initial regime, ADC was about 30% of total Telecom Sector revenue. The total ADC was mostly for BSNL. BSNL's contribution in this total ADC was about 81% from itself and 19% from others. In the new regime of 29th October 2003, the ADC amount was kept at about 10 % of the sectoral revenue, a much more sustainable amount, as against 30% in the initial regime. In the revised (second IUC) regime with Authority deciding to give a total ADC of Rs. 5340 Crores, BSNL was expected to get about Rs. 1152 Crores from Mobile Service Providers covering all outgoing long distance traffic including Outgoing ILD traffic, Rs. 1376 Crores from ILDOs for incoming international long distance traffic, and fund the rest of ADC of around Rs. 2264 Crores from its fixed line operations. All other Fixed Service Providers taken together were likely to get Rs. 81 Crores from Mobile Service Providers, Rs. 168 Crores from ILD incoming traffic and Rs. 300 Crores from their outgoing traffic. Table 6 below gives a summary. The Authority also had taken note of the tariffs reported by the incumbent in comparison to the IUC / ADC amounts and concluded that the earlier regime was not sustainable and therefore on a request from BSNL in its tariff report had allowed BSNL to operate tariffs, which were below cost (including IUC and ADC), and hence in one way would have been predatory. Similar decisions for this reason were taken in respect of tariff requests received from other fixed line service providers. The revised regime was to be implemented from 1st December,

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2003 but this was delayed on account of requests from Service providers while seeking clarification on certain issues. The revised (second IUC) regime became effective from 1st February 2004.

TABLE 6

IUC Regime Applicable	Total Amount of ADC (in Rs. Crores)	Amount of ADC Funded to BSNL (in Rs . Crores)	Amount of self funding by BSNL Fixed (in Rs . Crores)	Net Amount of ADC to BSNL fixed funded by others (in Rs . Crores)
As per 24th Jan 2003 Regulation calculations	13518	12381	10084	2298
As per 29th October 2003 Regulation calculations	5340	4792	2264	2528

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22. The revised IUC/ ADC regime was based on, inter alia, an underlying mobile subscriber base in September, 2003 which was 21 Million only (17 Million Cellular and 4 Million WLL(M) which became CDMA Mobile subsequently)***;*** top down estimates of costs of BSNL which need to be adjusted over time for depreciation; costs allocated to non-fixed line items covered by the accounts (including mobile telephony); and USO amounts given to BSNL by the Government. A major development has been an unprecedented increase in the overall mobile subscriber base including the subscriber base of BSNL mobile. For example, the Mobile subscriber base has reached about 46 million as on 30th November 2004. This has provided a much larger base of total minutes contributing to ADC. In addition, the Authority had received reports of implementation difficulties, which would need to be addressed. For these reasons, there was a need to review and revise the prevailing *ADC* regime.

23. Taking all these aspects into account, the Authority released a Consultation Paper, dated 23rd June 2004 to review the ADC regime and implement the ADC regime as revenue share of Adjusted Gross Revenue. In this paper, the

Authority noted certain salient points made in its Regulation of 29th October, 2003, and the difficulties that were reportedly arising in implementing the ADC regime**.**

24. The Consultation Paper recalled in particular that the Regulation of 29th October, 2003 had mentioned factors such as the principle of gradual implementation of forward looking long run incremental costs (FLLRIC) in the ADC regime, accounting for benefits arising from the incumbent being allowed entry into cellular market, and that the ADC regime should ideally be merged with USO regime in about 3 to 5 years time. The Consultation Paper had proposed a revised ADC regime to be implemented from 1st October, 2004. Based on its approximate calculations, and forecasting the situation likely in March 2005 (i.e. the mid-point of the period October, 2004 to September, 2005), the Paper had provided a range of revenue share for ADC, namely 2.2% (with average monthly rental revenue of Rs. 200/-) and 5.3% (with average monthly rental revenue of Rs. 156/-). The Authority has received comments in writing as well as in the Open Houses and other meetings on this issue. The issues relating to ADC regime being based on Revenue Share is addressed in Section V below. The Authority has also taken note of the fact that most of the new Fixed lines being added by BSNL are in the Rural Area and as such BSNL's average monthly fixed services rental as Rs. 200/- may not be achievable in the near future. The Authority has further noted that Audited Results of BSNL and other Service Providers have just been announced. It will take some time to examine the issues like admissibility and quantum of ADC for Fixed Service Providers as detailed analysis of the relevant network elements data, including the verification of the cost items presented in the annual reports of service providers will be required. As discussed in detail, the Authority proposes to address these issues through a Consultation Paper when related issues like implementation of the USO regime, differential termination charges for International and national long distance charges are also addressed. In this background adequacy of a uniform percentage related to AGR vs higher percentages of revenue share percentage

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for National Long Distance and International Long Distance traffic streams may also be relevant.

25. The extensive comments cover the entire range from there being no need or basis to provide ADC, to a need to continue with the ADC regime and even consider higher provision of the ADC amount. In this regard, it is important to recall the Authority's statement in its IUC Regulation of 29th October, 2003 that it will be gradually reducing the ADC, merging it with the USO regime in due time. The reduction of ADC is also implied by increasing implementation of FLLRIC costs because the new technologies that are employable as substitutes for the fixed line network in place, have a much lower average cost. Likewise, the reasons for continuing with the ADC regime for some time were still relevant, and the Authority is of the view that it will continue with the ADC regime for certain number of years. With reference to these issues, it is pertinent to note, for example, the statement of the Authority in paragraph 24 of its Explanatory Memorandum to the IUC Regulation of 29th October, 2003.

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"*The Authority noted that the difference between historical costs and forward looking costs would be large, and relying on costs based only on modern and forward looking technologies would imply a large burden from the stranded costs for BSNL. While the Authority feels that change over to FLLRIC model is imperative, it examined the implications of a sudden changeover against a gradual changeover. Since BSNL is the major supplier of telecom services in the country and has also contributed the maximum for achieving the targets of rural tele-density and in supporting low paying subscribers, a changeover to FLLRIC at present would adversely affect the services provided not only to rural and low paying subscribers but also the telecom industry in the country as a whole. The Authority noted that BSNL is already deploying latest technology and lower cost equipment in its expansion programme. Since wireless technology is being used,* it *is expected that some of the existing network will also be gradually replaced by such equipment. In short, the approach is to achieve full shift to FLLRIC cost in a gradual manner over a few years rather than a single year change. The latter*

would leave heavy stranded cost and would be quite impractical. The Authority therefore, decided to rely on costs for the current year, based on as recent audited costs as possible. For this purpose, it worked with more recent data than was used in the initial IUC exercise. The Authority was of the view that with the changes in technology and a reduction in equipment costs taking place rapidly, the amount of funding required for ADC would decline. Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime. This would be similar to the situation in most other countries, where the ADC regime had been combined with the USO regime, rather than the ADC funding being provided through a separate ADC regime."

26. Thus we need to bear a number of factors in mind in the context of a revision of the ADC regime. The net effect of depreciation in the gross CAPEX and allocation of costs to non-fixed line items is likely to decrease the overall costs per subscriber over a period of couple of years. Issues relating to BSNL being given Mobile Licenses without entry fees, increasing application of Forward Looking Long Run Incremental Costs to estimate the ADC and an increase in the disbursements made through USO are also needed to be taken into consideration. These factors will be considered in greater detail in the Authority's forthcoming Consultation Paper. In the current exercise, the Authority has focussed mainly on the change in overall minutes funding the ADC amount with the ADC amount being the same as that used for the regime notified on 29th October, 2003.

III. Summary of the main comments

27. The various comments received are summarized below:

(a) **<u>ADC regime should be done away with or its scope should be reduced:</u>**

- A number of operators said that the amount of ADC had been grossly over-estimated. BSNL on the other hand stated that the correct ADC amount should be much higher.

- Several comments, including from most private operators, were that when USO is in place for rural telephony, then ADC is not justified and it should not be given at all.
- One view was that BSNL is not a deserving candidate for the suggested ADC. It noted that BSNL is concentrating now only on GSM, and that no significant increase has been proposed by it in its switching capacity for the year 2004-2005.
- The ADC regime could be changed in such a way that ADC is:
    - provided only for rural fixed telephone line (where regulated tariffs are in place).
    - implemented as a percentage share of the NLD and ILD revenues only.
    - recovered from commercial subscribers who can afford it.
    - abolished from the cell to cell calls so that one does not have two levies on the service providers. i.e. ADC as well as USO.
    - charged as a fixed amount of cess per month subscriber from all subscribers except the Rural fixed subscribers.
    - linked with a TRAI specified rollout of rural lines and for better implementation should be merged with USO regime.
    - calculated so that un-utilised funds already available with the USO fund should be taken into account.

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- Current regime is unfair as a fixed line phone used by a rich / commercial fixed urban consumer should not be subsidized by a poor pre-paid mobile user.
- There is no private FSP at present. All have migrated to Unified Access Service Regime. If required, BSNL only could be funded for Rural fixed lines.

(b) **<u>Revenue share ADC regime should be put in place:</u>**

- If ADC is to be given, it should be on the basis of revenue share as it would help operators to settle their accounts with BSNL. The proposed

revenue regime is a far superior regime than the earlier regime as it is transparent, easy to calculate, easy to identify and administer.

- Since the Authority has already implemented USO as a Revenue Share regime, it should be possible for it to also implement ADC as a revenue Share regime.

(c) **Revenue Share ADC regime could result in increase in local call charge:**

- If at all any ADC is given, it should be structured in such a way that it does not affect the call charges for the poor.
- Removing ADC from the international calls would lead to charges for local calls etc. being raised, especially due to competition in the long distance and international call segment pushing down the possibility of keeping a buffer in the prices for these calls.
- If the ADC on incoming ILD calls is removed, then the benefit will go towards the International Operators (Carriers) and the domestic call charge will increase.

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(d) **Grey Market traffic:**

- Revenue Share ADC regime would also address the issue of ILD grey market .
- The issue of grey traffic is not new and in no way related to the present ADC regime. The traffic being terminated into BSNL's network also does not indicate any decline in the incoming ILD minutes. Some variation in minutes over previous year is a seasonal fluctuation and does not give rise to grey market traffic.
- Another view was that the difference between overall charges imposed on international and national calls provides an arbitrage opportunity, and promotes grey international traffic.

(e) **All Basic Service Operators should get ADC:**

- BSNL and private basic operators bear the same cost. Therefore, all the private operators who are providing the services at prices at which BSNL is also providing services, should be given ADC.

(f) **Present regime should continue:**

- The comments under this category are earlier submissions by BSNL, which stated that there is no need for change in present ADC regime, only a proper recovery mechanism is required to be put in place by the regulator so that reporting and accounting of the traffic is done accurately and transparently and the share of BSNL is transferred in a timely manner. It is also stated that there is practically no increase in the urban DELs. In fact there has been negative growth in such DELs. The DELs added by BSNL during the year 2003-04 have been primarily in semi urban and rural areas where the per line capital required is undoubtedly higher than capital required in the urban area.

- Other comments include:
    - it is just four months since the new IUC regulation along with the ADC recovery mechanism has been implemented. The process has just started getting stabilized and it should not be disturbed. Any teething problem in this process can be attended to in due course.
    - the present regime may be allowed to continue for at least one year. The revised regime, if any, may be implemented only after 1st February preferably from 1st April 2005 so as to coincide with the financial year.
    - the calculation sheet for ADC amount, termination charges, carriage charges etc. was not provided for scrutiny. This made the entire exercise non-transparent and clearly in conflict with the

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statutory mandate on TRAI to ensure transparency in its functioning.

- TRAI has stated that due to substantial variation of the ADC for domestic and international calls, the underlying data required for collections is detailed and that TRAI's experience has shown that problems are being faced in reconciliation on this account. This is purely an arbitrary assumption.
- No comparison of revenue share vis a vis ADC on call by call regime has been done.

(g) **Access providers should be allowed to negotiate with ILDOs the termination charge on incoming international calls**

- This comment was made primarily by BSNL and subsequently by cellular mobile operators, in the last part of the process. It was stated that termination charges in other countries were high, were going up, and by limiting the termination charge that can be received for incoming international calls, the Authority was denying revenues to access providers which were legitimate business revenues and would contribute to spread of the network in rural areas.
- By allowing the access providers to negotiate with ILDOs, the regime would provide adequate revenues to pay for the high termination charges that apply in other countries. Otherwise, the Indian consumers would be burdened in a major way.
- Such a negotiating possibility should be given to mobile operators because the higher termination charges obtained through negotiation would give them an incentive to curb those who use their facilities to carry grey market traffic.
- A contrary view of ILDOs and some access providers, was that negotiation should not be allowed because it would lead to chaos in the market, would give rise to undue benefits to the dominant operators, and would continue

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to encourage grey traffic. This view was that certainty was very important in the market, and allowing negotiations would take away such certainty.

(h) **Other:**

- ADC amount applicable for ILD services should be in two slabs. These slabs could be between Rs 1 and Rs. 2. This will also remove the incentive to Grey Market operators.
- The costing details, traffic and revenue pattern could be studied based upon detailed and audited data of the various operators as envisaged in the IUC Regulation dated 29th October 2003 for review of the ADC regime.
- There should not be any ADC. Instead, the relevant assistance should be provided through the USO regime.

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IV. A Key Clarification Regarding Merging of the ADC and USO Regimes

28. An important comment made above is that the ADC regime should be replaced by or merged with the USO regime, and that the concurrent implementation of these two different regimes is not appropriate. While there is a considerable overlap among the objectives of the USO and ADC regimes, these regimes do not have identical objectives. But overtime, with the USO regime being implemented in terms of net cost SDCAs as was notified by the USF Administrator in early 2004, the overlap between the ADC and USO will in effect increase. Two points are worth noting in this context. First, the Authority has already stated that the ADC regime will be phased out over time and will be merged with the USO regime. Second, the framework used by the Authority to calculate the ADC amounts integrally links the USO and the ADC regimes in a way that as the USO disbursements increase, the ADC amounts will decrease, taking account of the assistance received from the Universal Service Fund (USF).

29. Presently, the Government is collecting the USO amount as 5% of Adjusted Gross Revenue as part of revenue share License Fee, but virtually the whole

amount is not being given to the USF Administrator as yet for disbursement. Over time, there would be increasingly large amounts of funds, available from the levy for USO. For instance, in the next couple of years, the amount collected for USO would be more than Rs. 3,000 crores per year. With bulk of the funding under USO for projects linked to access being likely to be completed by 2005, the USO amounts focusing on DELs in net cost SDCA's would have a corresponding impact in terms of reducing the ADC amounts calculated by the Authority.

30. The Authority expects that in the near future the USF will be fully functional, that it will receive the relevant amounts for disbursement under the USF, and that these funds will be disbursed to the service providers as per the procedures decided in that regard. In the methodology used by the Authority to calculate ADC, these disbursed USO amounts would be reflected in a fall in the ADC estimates. Conversely, if the USO amount, which is being collected every year, is not disbursed, the ADC estimate would be higher and due to such non-disbursement the ADC regime will impose an avoidable burden on the consumer, which would involve higher prices, lower overall growth and below potential achievement of the Universal Service objectives.

31. Under the framework used by TRAI, at least five factors can lead to a merger of the ADC and USO regimes.

- As the USO funding increases it will cover more and more of the ADC amounts estimated, thus contributing to a decrease in the ADC amount to be funded through a regime other than the USO.
- The amount available for USO funding will increase over time as the revenue base providing the USF rises.
- If net capital employed per subscriber continues to decrease in the manner that it has declined in 2003-2004 compared to 2002-2003 (due to a large depreciation on existing assets and relatively small increase in new subscriber base), the cost based monthly rental will decrease. This will contribute to a reduced ADC per subscriber.

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- As the ratio of mobile subscribers increases, the joint and common costs in the overall costs that will be allocated for the ADC purposes will be a lower proportion of the overall costs.
- The Authority has already stated that it will be gradually using more of the Forward Looking Long Run Incremental Costs (FLLRIC) to estimate the ADC.

32. With these factors, the framework used by the Authority for estimating ADC already provides a basis for merging of this regime into the USO regime. Of course, the extent of USO funding necessary would depend on the scope and coverage of the USO programme, which may in future include additional services that may require compensation of access deficit.

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V. Further Examination of the Issues

33. In addition to the comments on merger of USO and ADC regimes, the Authority has also taken the various other comments and inputs into consideration, and analysed the matter further. The views of the Authority on the main issues are as follows:

(a) Whether ADC should be provided

34. The Authority considered the existing situation, taking account of the latest balance sheet of BSNL, the prevailing tariffs, and other relevant likely developments. The Authority recalled that even with certain optimistic assumptions in its Consultation Paper on ADC, there was a sizable amount of ADC which remained. In view of this background, and its above explanation relating to the ADC and USO regime, the Authority is of the view that at present ADC should continue to be provided.

(b) How much ADC should be provided

35. The Authority has decided that since the present review is in the nature of an interim review based on the limited data, the revised regime should result in providing the same amount of ADC as specified under its Regulation of 29th October, 2003. This was about Rs. 5,300 crores in aggregate, with about Rs. 4,800 crores for BSNL and about Rs. 550 crores for other fixed line operators. This would be appropriate in the Authority's view, based on its assessment of the underlying costs and revenues, as well as the various other relevant factors mentioned in this Explanatory Memorandum, that relate to inter alia the structure and growth of the networks of the operators and the pattern of investment undertaken by them.

36. In the above context, the Authority recalled that in its October 2003 Regulation, it had decided that the full ADC amounts estimated would not be provided to the service providers, and the overall ADC amounts were specified at a reduced level for several reasons. These included, inter alia, that there would be an increase in the subscriber base in the period when the ADC regime would be implemented compared to the subscriber base actually used in the calculations. Traffic minutes reported suggest that overall annual ADC collections by 31st January 2005 are expected to be higher than the ADC amount allowed in the regulation.

37. The revised ADC regime too would be subject to the factors underlying some of these reasons, such as those mentioned earlier on the basis of which the Authority expects the ADC to become lower over time. These include, for example, the Authority's observation from BSNL's balance sheet that its capital cost base for determining the cost based rental has been declining over time. The effect of such a decrease presently has been mitigated because of the combined effect of an increase in tax rate applicable to BSNL and a decrease in the overall long distance minutes per subscriber. The tax rate for BSNL has been increased from its earlier preferential status rate, and results in a large effect on the capital cost base (BSNL is appealing the change in tax rate). This

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effect of a tax rate, however, is a one time effect and will not occur in subsequent years. Hence, the overall trend of lower cost based rental will continue, with obvious implications for reducing the access deficit. In the background of these several factors, the Authority is providing the same amount of ADC funding as given under the IUC Regulation of 29th November, 2003. The total amount of ADC was Rs. 5,341 crore, of which BSNL's share was about 90% i.e. about Rs. 4800 Crores.

38. Thus, the regime notified under this Regulation is continuing with the present mechanism for ADC collection in such a way that the overall amount of ADC funding estimated for BSNL is the same as that was the basis of the regime notified in the IUC Regulation of 29th October, 2003. **The total amount of ADC is hence not being changed by the Authority.**

(c) Should Private fixed line operators continue to get ADC and if so, should they get it on the same basis as BSNL?

39. The Authority recalled that BSNL and the other fixed line operators were not treated in the same way even under the existing ADC regime notified in the Regulation of 29th October, 2003. In the existing regime, therefore, all the ADC arising from mobile/ WLL(M) to mobile/ WLL(M) calls, as well as from international calls to or from mobile/ WLL(M), was being given only to BSNL. The other fixed line operators did not receive any ADC from these calls.

40. However, if we consider the Authority's decision that in the revised ADC regime, BSNL and the rest of the fixed line operators will respectively get the same ADC amounts as specified for the existing ADC regime, both BSNL and the other operators are being treated similarly. The Authority also noted that with the same ADC amounts to be funded and the minutes of use having gone up, the ADC charge per minute can be reduced.

41. The issue of whether the ADC regime applicable for BSNL and other fixed line operators should be the same can also be seen in terms of two important criteria,

namely the distribution of subscriber base for which access deficit would arise, and second the distribution of subscribers in urban and rural areas. As shown by Table 3 given earlier in this Explanatory Memorandum, the position of BSNL and the other fixed line operators is very different when they are compared on the basis of these criteria.

42. The first criteria is linked to the fact that ADC funds have been provided to fixed line service providers to cover the shortfall in revenues for access (i.e. the deficit), and in a situation of incomplete tariff re-balancing, sustain the service even with intense competition in the long distance market. The Authority recalled in this context that either due to the Regulator or the Government, an upper limit was imposed on the fixed line rental charged by BSNL, and the other fixed line service providers were also constrained since BSNL has been the market leader in this regard. Consequently an access deficit arises because the revenues from rental charged are much below the cost based rental, with the latter being calculated based on the capital cost for the local call portion of the network (please see the Regulations of 24th January and 29th October, 2003 for more detail). A major portion, i.e. about three-fifths of the cost base for estimating the cost based rental is accounted for by the capital expenditure in the last mile portion of the network. Thus, when fixed line service providers give last mile connections through radio, there is a major decrease in the capital costs for the last mile, and hence in the overall costs used to calculate the cost based rental. In this regard, the Authority does not agree with the point that consumer equipment cost should be included for estimating overall Access Deficit.

43. The second criteria is linked to provision of rural services, and the likely average monthly rental revenue received by various operators. Table 3 also shows the relative presence of the subscriber base of various operators in rural and urban areas, and it is evident that compared to BSNL, the other operators are based in relatively lucrative areas. This also implies relatively higher monthly rentals, and even ARPUs, for the other fixed line operators compared to BSNL.

44. Based on the above, the Authority has decided that operators other than BSNL should continue to be treated differently from BSNL in terms of the ADC regime applicable to them. This implies preferential treatment in terms of ADC funds for the operator who is presently providing virtually the entire rural telephony. As mentioned earlier, when the USO regime becomes operational and the USO funds collected are disbursed for the net cost SDCAs, the ADC amounts estimated will correspondingly become lower.

45. In this background, and keeping also the objective of providing the same overall ADC funding to BSNL as in the estimation provided in the Regulation of 29th October 2003, the Authority has conducted further calculations and has decided that all the operators other than BSNL should get ADC funding only from their outgoing calls. The ADC generated by all the incoming calls that earlier provided them with ADC funding, would now be provided to BSNL. The calculations of the Authority show that such a regime would be more than adequate to provide the other fixed line operators with the relevant ADC funds.

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46. The Authority did consider whether the other fixed line operators should not be provided any ADC at all, but reached the conclusion that till some method is implemented for distinguishing calls to/ from WLL(F) from other fixed lines, it is important that for maintaining the sustainability of the ADC regime the "other fixed line operators" should continue to retain the relevant ADC charge for their outgoing calls. The Authority will soon conduct a review of the regime and then consider any further changes that may be required in the regime.

47. The Consultation Paper will cover issues such as

a) Admissibility and extent of ADC to BSNL after review of data,
b) Allowing other fixed line operators to retain ADC out of outgoing call tariff,
c) Admissibility of ADC for WLL(F),
d) Stage at which ADC can be charged as Revenue Share,

e) IUC (carriage and termination issues) including those for Incoming International calls.

48. Within 3 to 6 months of the implementation of the new ADC regime from 1st February 2005, the Authority will review and adjust ADC rates for the subsequent quarters based on new minutes of usage and ADC collection data. This review will not call for any new consultation process.

(d) What should be the shape of the new revised ADC regime consequent to the growth in subscriber numbers and the call minutes

49. The issues which arise as a result of increased subscriber numbers and call minutes while retaining the same quantum of ADC are (i) whether the ADC regime should be a revenue share regime or per minute rate regime and (ii) if the per minute regime is retained whether the international call ADC rates should be reduced more or the domestic call ADC rates should be reduced more, keeping in mind the three associated factors viz. (a) impact on Grey market traffic, (b) reduction in domestic call rates which benefit the national consumers more and (c) benefit to foreign carriers and customers instead of domestic customers. These aspects have been discussed in the following two sections d(i)) and d(ii).

(d(i)) Should the revised ADC regime move to Revenue Share Regime ?

50. In its assessment of whether it is appropriate to move at present to a revenue share ADC, the Authority took note in particular of the comment that such a transition could create problems of adverse impact on local call tariffs. Currently a large component of ADC is collected from the revenues of the International and National Long Distance calls. In order to maintain the same quantum of ADC receipts to BSNL and other Access Providers in a uniform revenue share regime, the contribution of International and National Long Distance traffic revenues will fall and that of local calls will increase which will impact local call tariffs upward. For the other possibility of unequal revenue share for different segments of the

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traffic, it was found that much more information on traffic and revenue generated and its separation in the accounts of various service providers is necessary, which is currently not available. The Authority has also taken note of BSNL's submission dated 14th July 2004 wherein it had stated that

"*The impact of changeover from call based ADC to revenue share based ADC on long distance call revenue has not been considered by the regulator. For example, currently the IUC compliant NLD tariff is minimum Rs. 2.50 and ADC component of this is Rs. 0.80. This represents ADC as 32% of the revenue. In case the ADC is prescribed as percentage of revenue, this 32% share cannot be maintained and as per TRAI's own calculation and may fall down to 2% to 5%. This will amount to a free fall in the long distance tariff. In case the tariff for this segment falls by 25% to 30%, the entire surplus in the sector will vanish. This surplus has been effectively used in the past for financing the growth of telecom sector by BSNL. This will not only affect the BSNL's capability to expand the telecom network but will also adversely affect all other access providers.*"

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The Authority has further noted that since the charges for shorter distance calls in general are higher for mobile, and these operators have additional sources of revenues from value added and supplementary services, they have greater flexibility than fixed service providers for adjusting to a situation when the present regime for ADC is changed to a revenue share regime. An important factor in this context is also that even though the Authority has given tariff forbearance with respect to urban monthly rentals and local call charges, the incumbent operator is not really in a position to take advantage of such flexibility because of the limits imposed by the Government on its rental and local call charge for reasons of affordability and social objectives.

51. In moving to the ADC regime based on revenue share, a crucial factor is the large transition that would be required if the ADC amount charged per minute for the international calls is converted into a revenue share. At present, this amount is Rs. 4.25 per minute. The transition will become easier if the corresponding

ADC per minute amount is lower and can be distributed more easily on a larger base of minutes and revenues that will generate ADC funds. Over time, this will become possible as the increase in subscriber base results in much larger number of minutes that generate the ADC funds, and as the ADC amounts themselves decrease due to the reasons mentioned in the previous section. This would help us to avoid the "large transition" that would be presently required, and the Authority could consider moving to a revenue share regime with the ADC per minute charge for ILD calls being substantially below the Rs.4.25 presently in place.

52. The Authority also noted that further unbundled Network Element data would be required to fully address the matter of allocation of common costs etc. to different services provided by any service provider, with primary focus on the incumbent. Such information would be important to determine the relevant revenue share. In this context, implementation of Accounting Separation by the Service Providers including BSNL is a positive signal. Of course, one possibility when there is paucity of adequate information is to decide an appropriate ADC amount, with any residual amount being notionally covered by the fact that the Authority is increasingly introducing Forward Looking Long Run Incremental Costs (FLLRIC) for estimating ADC, and has also decided that the ADC will be progressively decreased to be phased out in a few years time. Nonetheless, it would be useful to obtain more updated and detailed unbundled network element costing data for an exercise which would facilitate making a transition to a new methodology for collecting/ disseminating the ADC.

53. With respect to the point that USO has been implemented as Revenue Share and hence, it should be possible to also introduce ADC as Revenue Share, the Authority noted that the USO regime is designed to re-allocate a portion of the current License Fee Revenue Share for the USO funds. Thus, with USO there is no additional funding involved, only re-allocation of the existing funds. In the case of ADC, additional funding is involved and all the points mentioned above with respect to Revenue Share become relevant.

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54. The Authority, therefore, decided that it would not presently implement ADC Regime as a percentage of Revenue Share. It would continue with the Per Minute Charge based regime.

(d(ii)) With Per Minute Rate ADC regime, how should the rate of adjustments be handled?

55. Availability of relevant traffic data and actual ADC collections including notional collections from calls originating in Fixed Line Operators is pertinent to this issue also. Data issues are addressed in a subsequent section separately. The Authority has taken note of the fact that BSNL is a major party from which full data as per the prescribed formats has not been received. BSNL has submitted that it is not in a position to give the requisite data on traffic parameters because it does not have CDR based system. The Authority recalls in this context the TRAI Press Release 2/2003 dated 19th April 2003 which had, on the basis of BSNL's input, stated that: "The interim phase will end by 31st March 2004 with implementation of CDR based billing system, by all operators including BSNL".

56. The Authority also recalls the complaints from service providers that BSNL is using the revenues from ADC to cross-subsidize its tariffs in lucrative segments and out-compete the others. The Authority had examined the international call tariffs of BSNL, and had found that the BSNL tariffs covered costs. This matter, however, does continue to be a concern with the industry and the Authority will be examining situations where tariffs are specified resulting in an anti-competitive situation.

57. Further, Authority has received a letter dated 30th August, 2004 from COAI stating:

"*it would be very severe blow on the Indian domestic telecom industry providing an advantage only to the international carriers – who have no stake in creating infrastructure or obligation to increase tele-density in our country…..*

… We need to first and foremost protect Indian subscribers and consumers from the burden of ADC rather than giving such relief to foreign carriers and consumers…

… Reduction of ADC on international calls without a corresponding removal from the domestic segment would be to the detriment of Indian consumers and operators".

58. A similar communication has been received from AUSPI on 1.9.2004. The Authority asked both the parties to substantiate their points with facts and figures. They had a meeting with the Authority on 2.9.2004. The main point that emerged from the meeting was that while these operators were in general against the imposition of ADC, they were of the view that reduction in ADC should take place not only for ILD calls but also for national calls.

59. The Authority recalled in this context that its primary emphasis has been to reduce domestic market prices and boost domestic growth. The Authority is of the view that a reduction in the ADC charge on domestic calls would meet such objectives, and thus the Authority is in favour of taking such action, while balancing the achievement of its other objectives (e.g., grey market traffic). In this regard, the Authority has also continued to focus on its general thrust to simplify the regulatory regime and to create conditions, which facilitate the ongoing convergence and "death of distance" that is increasingly taking place due to technological and market developments. The decisions of the Authority in the revised ADC regime reflect all these considerations.

60. The Authority also noted the statement of Chairman, BSNL in a recent meeting (24th December 2004) with the Authority that BSNL would begin implementing CDR based system for Interconnect arrangements in the near future.

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(e) Relative considerations of Grey market International calls and lowering of domestic call ADC rates

61. The issue of grey market international calls continues to be relevant, as is indicated by anecdotal evidence and complaints submitted to the Authority, and possibly also by the decline in the incoming international call minutes per subscriber. The Authority has now seen that a more focused attempt to introduce incoming grey traffic may have begun in the market, and this needs to be addressed both by decreasing the incentive provided by the arbitrage margin and increasing disincentives through monitoring and penalties. The Authority has already provided the relevant complaints from service providers (which submitted information on grey traffic), to the Licensor to further examine the matter utilizing its established mechanism that was already in place. In the Authority's opinion this was the quickest way to address the matter, given the existing set-up of the Regulator in comparison to that of the Licensor, the existing legal framework within which the Regulator has to operate, and the fact that the Licensor has powers to quickly impose penalty, if it so desires. The Authority's assessment has been shown to be valid, as the licensor has already begun to take certain preventive and corrective actions in this regard and this should be reflected in the Minutes of usage (MOUs) for International calls and ADC collections.

62. A major point made in the context of the recent complaints regarding grey market traffic has been that the Authority's ADC regime has resulted in a large arbitrage opportunity, because of the large difference between the ADC on international and national calls. It has even been stated that in comparison to the ADC regime notified in January 2003, the revised ADC regime notified in October 2003 made the grey market situation worse because it increased the arbitrage margin, particularly for cellular mobile calls.

63. In this context, the Authority noted that in its revised ADC regime notified in October 2003, it had emphasized the sustainability of the regime and reducing

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prices to spur growth. Sustainability required a reduction in the overall ADC amount and collecting it from both fixed line and cellular mobile calls, rather than imposing it only on calls involving fixed line. Thus, if the ADC charge would not have been imposed on mobile calls, the survival of fixed line networks, for whom the ADC regime had been put in place, would have been jeopardized, due to the ability of mobile operator's to substantially reduce tariffs to levels which would require competitive fixed line tariffs to be less than those required to sustain ADC earnings.

64. Moreover, the initial ADC regime, which was revised through the October 2003 notification, had relatively high ADC charges for domestic calls, which would imply correspondingly high domestic prices. The Authority recalls that in its revised ADC regime it had emphasized a reduction in domestic call charges and consequent growth. It had also ascertained that while the revised regime imposed ADC on mobile operators, it was possible for these operators to sustain their non-ADC prices even after the new regime. This implied keeping the domestic component of ADC as low as possible. To fund a given amount of overall ADC, reducing the arbitrage margin by imposing a lower ADC charge on international calls would have meant having higher ADC charge and increased prices for domestic calls. The Authority had to choose between its various objectives, and in this context the Authority recalls its statement in paragraph 87 of the Explanatory Memorandum to its IUC Regulation of 29th October, 2003, i.e.:

"*The Authority considers that the origination/ termination charge for international calls has to serve the objectives of both a reduction of the grey area traffic and provision of revenues for achieving the objectives of New Telecom Policy 1999. The Authority has considered these objectives, and has decided to keep this balance in mind. At present, the revenues available from such calls for the objectives of tele-density have been given greater emphasis in view of a need to specify affordable tariffs in the market along with an ADC regime. The Authority has thus decided to specify an access deficit charge of Rs. 4.25 per minute for these calls for both outgoing and incoming minutes.* ***The Authority will consider***

lowering this amount over time. This amount would be collected by fixed line service providers on their outgoing/incoming calls as mentioned above in the method for collecting the ADC. For ILD calls to/from cellular mobile and WLL (M), the ILDO will collect the relevant access deficit from the access provider for outgoing calls, and pay from its settlement rate for incoming calls, and pass on the ADC amount to BSNL**."*** (emphasis in original)

65. The above-mentioned decision of the Authority also took into account the views of a number of participants that were expressed in the Committee on Grey Market Traffic that had been established by the Authority. According to BSNL, supported by MTNL, TEC, DOT and Vigilance Cell of DOT which had participated in the Committee, grey traffic had been around even prior to any ADC regime (in fact, even VSNL's submission to the Committee shows this), that grey traffic was not increasing according to the data on international traffic received by BSNL, and a change in the arbitrage margin would not address the issue of grey market traffic. According to this view, grey traffic would be addressed through a monitoring and penalty mechanism. The Authority had also noted that a major new monitoring mechanism had been put in place by the DOT vide its letter of 23rd and 24th June, 2003. Moreover, in the context of reducing the arbitrage margin, an important point emphasized by the Committee was that the objectives of affordability and growth of tele-density encompassed in NTP 1999 should not be lost sight of.

66. Thus, the decision of the Authority on the ADC regime has involved a balancing of the different objectives, while taking account of supplementary measures that could address the achievement of any objective (e.g. grey market traffic) that are not addressed with equal emphasis in the revision of the ADC regime. It is noteworthy that even now, the view of BSNL has not changed, and in its recent submissions to the Authority, both BSNL and the mobile operators are seeking changes in the ADC regime that may increase the arbitrage margin even further. This last aspect will be discussed in greater detail in the following section.

67. The Authority now has had to again face similar questions as it did in the context of its previous review of ADC. **Once again, the relative emphasis of the Authority is much greater on reducing domestic prices and encouraging growth. In addition, the supplementary monitoring process is already in place, as seen for example from the recent actions of the DOT. In its submissions to the Authority, BSNL has also emphasized this fact, and has re-affirmed that it is monitoring and penalty mechanism and not the reduction of the arbitrage margin which will address grey traffic.** It is noteworthy that under the revised scheme all the ADC from incoming international calls will be provided to BSNL, and any loss of ADC due to grey traffic will be incurred by BSNL alone.

68. The Authority has kept these points in mind, but at the same time, the Authority will continue to decrease the ADC on international calls and ultimately impose a revenue share regime, so that incentives for arbitrage generated in the regime will be reduced. Meanwhile, in addition to the DOT's existing monitoring mechanism, which has been further strengthened by DOT in recent months, the Authority has established an Expert Group to put in place a system which will allow examination of the possibility of under-reporting of international call minutes by ILDOs.

69. The ADC on international calls needs to be reduced for another reason, which at present is not as important as it may become in a few years time, namely use of ISPs for making outgoing international calls due to their price advantage. The Authority has seen that the outgoing minutes reported by all the four licensed ILDOs, for the year 2003-04 are 1176 million, while the ISPs have reported 70 million outgoing ILD minutes (for internet telephony), i.e. about 6 % of the outgoing minutes of ILDOs. The Authority has further noted that this level of traffic was being carried by ISPs when their tariff rates for internet telephony calls were around Rs. 5 per minute. The Authority has been informed that the tariffs per minute have subsequently declined even further. Further the quality of

IndiaCode

service offered by ISPs has improved and as a result more minutes are likely to flow through the ISP network in the coming months. The Authority noted that ADC is not applicable on such calls at present, and therefore there is a possibility of ISPs attracting calls away from the access providers. At present, however, the overall outgoing international call minutes are growing relatively rapidly at more than 3 per cent per month, and there may be some scope of having a transition period before establishing a regime which could address these aspects also. The Authority is bringing in higher reduction in ADC for outgoing ILD calls as compared to incoming ILD calls.

(f) Allow access provider to negotiate termination charge with ILDO

70. A proposition was made by BSNL and later supported by COAI that on incoming international calls the rate could be reduced but the Access Providers be permitted to negotiate the termination charges with the ILDOs. The Authority took account of all the points made in favour and against allowing the access provider to negotiate the termination charge with ILDOs. The Authority considered ITU-T Recommendation D-140 and its subsequent information notes, and discussed the matter with relevant ITU experts also. It was noted that these documents provided ceilings for the rates negotiated between the ILDOs of two countries, akin to a settlement rate. To begin with, it was clarified with BSNL that it was not seeking for negotiations being allowed between the ILDOs of two countries. Such negotiations already take place. Rather, BSNL as Access Provider is seeking the possibility of negotiating with the ILDOs which bring international calls to India, so as to obtain a larger amount as termination charge from those operators.

71. The Authority recalled the situation a few years ago, when such negotiation was allowed and the uncertainty and dispute that had marked the market at that time. In this context, the Authority noted that the moment the negotiation process becomes a dispute, which is likely, the prevailing legal framework is such that the Authority will not be in a position to take steps to address the matter. This will

IndiaCode

imply lack of certainty and increased possibility of discord in the market, which possibility may get further enhanced as BSNL has already entered the market as an ILDO itself.

72. For incoming calls, since the end user is specified by the number on which the call comes, the access provider effectively has a monopoly position. In such a situation, the Authority is of the view that there is a major likelihood of the dominant operator exercising undue advantage through the negotiation process. **The Authority further noted that allowing negotiations would permit a reduction of the ADC charge on international calls, but the total arbitrage margin would still remain high due to an increase in the termination amount retained by the access provider.** As explained earlier, the lower ADC on international charge would result in a correspondingly higher ADC charge for the domestic calls, making them more expensive. The Authority also noted that BSNL was already being provided adequate funding for ADC and there was a USO regime in place for funding investment in rural and other net cost areas. Hence additional funding through negotiations would have certain adverse effects and would be over and above the amounts already being provided. The Authority noted that these points were relevant also in the context of the submission made by BSNL with respect to the ceiling given in ITU-T Recommendation D-140 and its information notes.

73. The Authority then considered in detail BSNL's submission that mobile termination charge in other countries was much higher than in India, and that in particular in Italy these charges were being increased. It is evident, as shown for example from Table 1 given earlier, that compared to India, these higher termination charges (which are also similar or same as the domestic mobile termination charges), result in much higher tariffs for the mobile service in these countries. The tariffs for India are substantially below the levels for these countries, and in fact in Table 1, they emerge as the lowest among the countries covered there. Moreover, the minutes of use by Indian customers are relatively high compared to the other countries. A major reason for this situation is the

IndiaCode

effort by the Authority to devise a regime which results in low domestic tariffs, and also paves the way for convergence that is approaching fast. In addition, the Authority has checked further on some of the specific points made by BSNL about the termination charges increasing, and there is evidence which contradicts these submissions.

74. The Authority then examined the argument that if mobile operators received higher termination charges from ILDOs, they would have greater incentive to curb the grey market traffic. The Authority recalled that under the DOT letter of 23rd June 2003, mobile operators had already been directed to monitor and take requisite measures, in co-ordination with DOT's Vigilance Department, to address the illegal international traffic. The present argument appeared to suggest that the mobile operators should be paid an incentive in order to follow the aforesaid Direction from DOT. This argument cannot be accepted by the Authority. In fact, as BSNL has strongly stated in a related context that monitoring and penalty are adequate for addressing grey traffic, such monitoring and penalty should also be effectively put in place for the mobile operators. It is incorrect to pick and discard one's principles and factual positions depending on which objectives they meet in specific cases. Moreover, the Authority has examined the proposition further and it does not appear that the incentive so provided to mobile operators will effectively address grey traffic as such.

75. In this background, allowing BSNL or any other access provider to negotiate termination charges with ILDOs would not be appropriate. **The Authority foresees the reduction in the arbitrage margin along with better monitoring and vigilant action, to result in growth of international long distance calls through the legal channels.** The Authority has taken note of the fact that reduction in Mobile tariffs and decrease in excise duties on Mobile handsets has led to a major increase in the demand for mobile segment. The Authority will keep a close watch on the developments and hopes that reduction in ADC rates will bring in more minutes through licensed ILDOs.

76. The Authority did, however, consider that as part of its next Consultation process ,it would later consider whether to use a differential (and even flexible) termination charge as a regulatory policy tool within a framework which included the objectives of higher domestic growth and addressing international grey market traffic.

(g) Summary

77. In summary, while the Authority has addressed all the relevant issues in deciding its revised ADC regime, it had to balance the achievement of various objectives. This can be seen in the context of certain key objectives emphasised during the consultation process, for example:

(1) Reducing the domestic call charges for the general benefit of our consumers.

(2) Addressing grey international calls through a combination of policies relating to incentives (arbitrage margin) and disincentives (monitoring and penalty) for such calls.

(3) Ensuring that benefit not passed on to foreign carriers and consumers at the cost of domestic consumers and operators. (A number of stakeholders have said that if ADC on incoming International calls is reduced, this would imply lower charges and hence greater benefits for foreign operators and consumers.)

78. A crucial factor in the assessment was that for funding a given ADC amount, any reduction in the per minute ADC charge on International calls would require an increase in ADC charge on domestic calls. Likewise, any increase in per minute ADC charge on International calls would result in a lower ADC charge on domestic calls. This means that a change in ADC charge to meet objective (1) or objective (3) would compromise achievement of objective (2). In this situation of a trade-off among these

IndiaCode

objectives, the Authority has to choose the appropriate balance while specifying the new ADC.

79. As in its previous review, the Authority has given the highest priority or emphasis to the objective of reducing domestic tariffs to meet domestic consumer interest, and spurring sustained growth. While doing so, it has also kept in mind certain supplementary measures (monitoring and penalty) that will address the objectives, which have been given relatively lower emphasis.

80. The Authority further noted that changeover to Revenue Share Regime and its merger with USO is indeed the final solution for taking care of all anomalies and issues associated with ADC. However, till such time as contribution of ILD and NLD traffic to fund ADC continues to be disproportionate compared to the contribution from the other traffic, this solution is difficult to implement. This will be possible when disbursement from USO reach their full proportions for Rural telecommunication and as a result the total ADC amount reaches much lower values because of cost reduction or tariff rebalancing and necessary segmented data is available.

81. Taking account of the increase in the overall minutes since the previous ADC exercise, the Authority has decided that:

- **The method of collecting the ADC amounts will be same as before,**
- **Amount of ADC for the BSNL and other fixed line operators will be the same as specified in October 2003 Regulation, i.e. the ADC amount has not been changed,**
- **ADC charges per minute for domestic long distance calls should be reduced,**
- **All ADC from Mobile Networks to be paid to BSNL irrespective of terminating network,**

IndiaCode

- **Fixed service providers to retain ADC only from their outgoing traffic including ILD segment,**
- **ADC on International calls will be reduced to lower the margin which encourages arbitrage through grey market traffic,**
- **All ADC from incoming International Long distance calls irrespective of terminating network to be paid by ILDOs to BSNL only,**
- **ADC on outgoing international long distance calls to be kept lower than ADC applicable on incoming ILD calls so that advantage of ADC reduction benefits Indian consumers more,**
- **It will simplify the ADC regime, and bring in greater convergence across different distance categories,**
- **A new consultation paper will be brought out on admissibility and quantum of ADC for Fixed Service Providers based on an examination of the relevant network elements data, including the verification of the cost items that are presented in the annual reports of service providers, the implementation of the USO regime, and other factors which have been mentioned above as affecting the ADC estimates.**

82. The Authority will review the ADC rates within three to six months of its implementations on the basis of examination of new data. This will be done without a new consultation paper.

(h) The quality of data used by TRAI

83. For its ADC review, the Authority had asked service providers to give relevant data covering ADC collections and traffic minutes along with distribution into various distance slabs covering intra and inter circle, the overall subscriber base and revenues/ costs. Data was collected for the period February to September, 2004, i.e. the first eight months for which the ADC regime notified in October 2003 has been in place. Traffic data and subscriber data was available for fixed as well as mobile services corresponding for the following six categories covering a period of eight months:

(a) Traffic minutes with no ADC.

(b) Traffic minutes with ADC (Intra circle).

(c) Inter circle (distance upto 50 Kms.) traffic minutes

(d) Inter circle (distance slab 50 to 200 Kms.) traffic minutes

(e) Inter circle (distance 200+ Kms.) traffic minutes

(f) International Long Distance.

84. The Authority has also sought information under Section 12 of the Act to obtain authentic data quickly. The Authority has been provided substantial data, but there have been gaps and even inconsistent data in certain cases. It was noted that for international call traffic, the data provided by ILDOs to DOT was comparable to that provided by them to TRAI. In a number of cases, the problems with the data were pointed out to service providers in order to get better data. The response of MTNL was far from satisfactory. Many of the traffic streams contributing towards ADC were shown with data not available or with abnormally low values. If MTNL's representative tariffs were applied on the reported minutes, computed ARPUs were also abnormally low. MTNL in its communication dated 3rd December 2004 has stated that

"… data can be supplied in the prescribed format only after completion of CDR based billing, which is likely to be completed by Jan, 2005."

BSNL was also not able to provide data as per TRAI requirements (please see below for more detail. Since the data submitted from different operators was collected separately, it was necessary to examine the information for consistency including with respect to outgoing / incoming minutes and the estimates of ADC based on these minutes. The Authority could have tried to get more detailed data through recourse to legal action against the operators, but this process would have resulted in more delay in the finalisation of new ADC regime and would have denied the consumers the advantage of lower tariffs as a result of reduction in ADC charges for National and International long distance services. The Authority has weighed the different options and reached the conclusion that it has adequate basis to take the decision notified here.

IndiaCode

85. In situations where adequate information was not provided by the service provider, the Authority has applied the well-known technique of using normated data, using reasonable checks to consider that the results are robust. Normated estimates are used both to ensure that there is no regulatory capture by the service providers in terms of misleading the Regulatory Body by delaying data or giving data without proper examination, and that the framework for data collection includes an incentive to service providers to take the requisite steps in a timely manner. Such a practice also involves a reasonable presumption that if the service provider is not giving certain information, especially if it has submitted similar information earlier in some other context, then it is deliberately trying to affect the results to be in its own favour by not providing data. The Regulator had informed all the Service Providers on 23rd December 2003 to re-examine their data on traffic and ADC furnished on monthly basis from February 2004 onwards and make necessary corrections, if any, or explain the consistencies of their traffic vis-à-vis ADC data. TRAI had further stated that in case correct and reconciled data is not received, the Authority would be constrained to use normated data, which may be to the disadvantage of the operators. The regulator has to resort to normation in such cases; and the estimate used in the regulatory exercise may be one which is to the disadvantage of the operator so that it does not have an incentive to not hide its information in the future. If such a policy is not adopted, the regulatory policy can be easily hijacked by the service providers and the regulatory progress can be hindered immensely.

86. The Authority has been provided traffic data by access providers and ILD operators separately, which were examined and it was observed that data furnished by Access Providers was comparable though lower than the one furnished by ILDOs. The Authority has combined actual data with normated data and conducted consistency analysis for reaching reasonable estimates with respect to National Long Distance minutes.

87. BSNL was not able to provide data at circle level covering all the eight months as it stated that this was technically not feasible in the absence of CDR based billing

system in their Network. In its letter dated 11th November 2004 BSNL has stated *"…. In BSNL, where we have 36,852 telephone exchanges spread across the country having interconnections with multiple operators at 2647 SDCA locations, 301 Level_II TAX locations and 21 Level-I TAX locations, it is simply not feasible to generate, collect and submit the traffic details service-wise, segment-wise for each component of the IUC on monthly basis for each service area…. BSNL, therefore, proposed that it will take some sample observation at selected POIs wherever it is technically feasible to generate and analyse the CDRs. Based upon this sample observation, the traffic information has already been submitted to TRAI on 11th October 2004 itself……* ". An important point in our context is that BSNL in its letter dated 21st October 2004 has stated that the data sent by them on 11th October 2004 may be treated as representative data of BSNL from February 2004 onwards. As such BSNL data for IUC/ADC exercise calculation, (out-going traffic per subscriber) is taken as identical for all the months from February 2004. BSNL was also not able to provide any data on notional ADC collections from the outgoing long distance minutes from its fixed line network. The Authority in its letter dated 20th January 2004 had clearly asked BSNL to measure all traffic streams so that complete data is available for ADC calculations including those originating from its Network.

88. Some of the steps taken for estimating reasonable data, where gaps existed, include:

a. For MTNL, a usage pattern similar to other Access Providers providing services in Metro areas and in certain distance slabs with BSNL was used.

b. For some mobile operators who had not given their incoming traffic data, two methods were used for estimating the incoming minutes. For mobile to mobile intra-circle traffic, incoming minutes were taken to be same as outgoing minutes (data on this was available). For other traffic categories, the traffic pattern for incoming and outgoing calls shown by the average representative values of other operators for the same month was applied on outgoing minutes to derive incoming minutes.

IndiaCode

c. BSNL did not provide incoming traffic data, with the exception of ILD traffic data. This was addressed based on the overall, i.e. total for all operators, domestic outgoing call minutes being taken as equal to the incoming call minutes. The results were found to be reasonable and consistent.

d. Further, it may be noted that once we have information on all outgoing minutes and ILD incoming minutes (both of which for which we have data), these minutes are sufficient for calculating the ADC amounts. Other minutes are not required for such calculation, as they do not contribute to the ADC amount funded. However, data on incoming minutes will be relevant for BSNL's reconciliation for ADC payments for calls originating in Mobile Networks. These minutes shall also be relevant for IUC exercise when carriage and termination rates are to be determined the next consultation process.

89. The Authority also checked for data consistency by comparing different sources for particular information. For instance,

- Total Outgoing and Incoming minutes in each month to or from all Access Providers as reported by International Long Distance (ILD) minutes were matched with the ILD minutes reported by access providers.
- For each operator in his service area, there are 6 type of traffic streams corresponding to Intra-Circle with no ADC, Intra-Circle with ADC, Inter-Circle upto 50 Kms, Inter-Circle 50 KMs+ to 200 Kms , Inter-Circle 200+ Kms and International Long Distance and there are 8 data entries for 8 months from February to September, 2004. In cases where one or two values were found to be not consistent with the other values, the values were changed so that they reflect the pattern as shown by other values.
- The consistency of data on minutes etc. was also checked by considering the implied average revenues per user.

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- Similar consistency analysis was carried out in other ways to verify the robustness of the results, including estimates based on information for each month, as well as using the averages during period.

90. The Authority considered the estimates for each month and also examined whether any estimates showed an inconsistent behaviour, and conducted an analysis to see the impact of such estimates. Together with its other exercise on consistency of the information used, the Authority examined the robustness of the results taking account of several different scenarios. Based on this examination, the Authority has used the estimates for each month of the period concerned, and reached the conclusions given in section VI.

IndiaCode

(i) ADC calculated on data forecast for the period when regime would be in place (Details are included in Annexure B Tables I to XXII)

91. For the ADC review, the Authority has noted that after the previous exercise, which resulted in the notification of the IUC Regulation on 29th October, 2003, there has been a major and more than anticipated increase in the subscriber base. Taking for comparison the subscriber base of mobile in September, 2003 as a reference point, i.e. the month for which the subscriber base was considered in the October 2003 Regulation, the mobile subscriber base has increased by 100% in September 2004, and is likely to increase by about 230% by September 2005. Basing the ADC regime on a period prior to that for which the regime is actually implemented, therefore, introduces a major bias if growth rates of the underlying estimates are high. Tables in Annex B I, VI, XI and XVI provide subscriber base for Fixed and Mobile (active subscribers) for the periods February 2004 to January 2005 and February 2005 to January 2006 respectively.

92. A much higher total number of minutes will be available for funding the ADC during the period February 2005 to January 2006, as compared to the period covered by the previous exercise. For instance, calculations by the Authority show that within the first six months of the period for the new ADC regime, the

ADC amount for BSNL would be about half the requisite amount (with the minutes continuing to increase thereafter), and the other fixed line operators would have much more than half the amount due to them. The Authority has decided to calculate the new ADC per minute amounts taking account of the increase in minutes, based on the relevant minutes as forecast for the period beyond September 2004. In view of the estimates of likely ADC received by BSNL and the other fixed line operators, the Authority will be reviewing the regime within six months of its implementation, for making corrections in rates.

93. To obtain the forecast, the data from February to September, 2004 was analysed and the average monthly percentage change for the period was worked out for traffic and subscriber base. Applying these estimates, these variables were forecast over the period up to January 2006. The results show an increase in mobile subscriber base and total minutes of usage, but a decrease in the minutes of use per subscriber.

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94. As mentioned above, the consistency of the results obtained from these forecasts was further examined, and estimations were made for reasonable variations in these estimates. This exercise showed the robustness of the results, taking account of various scenarios including lower growth in subscriber base and minutes of use.

95. Minutes data covering all subscribers for the period February 2004 to January 2005 is given in Annex B Tables II to V and VII to X as below. Minutes data covering all subscribers for the period February 2005 to January 2006 is given in Annex B Tables XII to XV and XVII to XX.

(j) Period of application of the revised ADC regime

96. The Authority had earlier considered implementing a revised ADC regime from October, 2004 onwards. Collection, examination and consistent treatment of data has taken additional time. The Authority has decided that the present ADC

regime will continue till 31st January 2005 i.e the existing regime will complete a period of one year. The regime notified under this Regulation will thus be implemented from 1st February 2005.

(k) Other issues

97. A number of other issues raised, e.g. that ADC should be applied only for calls by the rich or only on rural calls, and that the ADC be applicable on National and International calls, etc. have been dealt with in the course of the above discussion on other points. The Authority's decision in the following Section is based on due consideration of various submissions and the points made in the various sections.

IndiaCode

VI. Decision of the Authority:

98. The Authority has examined the various alternative ADC per minute charges that would give rise to the requisite total ADC amounts. In examining the different possibilities for revising the ADC per minute amounts, the Authority has kept in mind the points mentioned above, including the need to reduce domestic call charge and the arbitrage margin, simplify the ADC regime, prepare it for convergence and signal the ongoing "death of distance", and facilitate the transition towards a revenue share regime. In this process, the Authority has reduced ADC charge per minute for those calls, which account for most of the ADC funding.

99. In view of the above, the Authority has decided as follows:

(a) The amount of ADC to be provided to BSNL is estimated to be around **Rs. 2348 crores for a period of 6 months** from February 2005 to July 2005 and the aggregate ADC from other fixed line operators for their outgoing long distance traffic minutes is estimated as being above Rs. 330 Crores which is higher than Rs. 275 Crores in the last ADC calculations as per details contained in Table

XXII. ADC Forecast figures for the full year including next two quarters as contained in Table XXIII, gives BSNL's ADC as Rs. are Rs. 4954 Crores for BSNL and Rs. 715 Crores for non-BSNL Fixed Line Operators provided there is no change as a result of proposed Consultation Process and review. Actual results will be reviewed by the Authority for the subsequent quarters after mid-year review is carried out. If justified ADC corrections will be made based on differences between forecasts made for traffic and actual subsequently reported traffic inputs.

(b) This implies that the ADC amount will be similar to that specified in the Regulation of 29th October, 2003.

(c) The present methodology of charging ADC in per minute terms on the calls subject to ADC, will also remain unchanged.

IndiaCode

(d) The ADC charge per minute to be collected will be revised downwards, in view of the higher number of minutes available. In comparison to the regime notified under the IUC Regulation of 29th October, 2003, the ADC amounts will be collected as per the following charges,

- The ADC charge of Rs. 0.30 per minute will remain Rs. 0.30 per minute.
- The ADC charge of Rs. 0.50 per minute will be Rs.0.30 per minute.
- The ADC charge of Rs. 0.80 per minute will be Rs.0.30 per minute
- The ADC charge of Rs. 4.25 per minute applicable for International Long Distance services will be Rs. 2.50 per minute for outgoing calls and Rs. 3.25 per minute for ILD incoming calls.

(e) The distribution of ADC collected will change. The "other fixed line operators" will retain ADC only generated by them their outgoing calls. BSNL will get the ADC from all other relevant calls (i.e. calls subject to ADC charge), including from all incoming international calls and all calls made by mobile.

(f) The revised regime will be implemented from 1st February, 2005.

(g) The Authority will review the regime within six months of its implementation.

(h) Per minute ADC applicable for different type of calls is given below in Table 7.

TABLE 7

ADC CHARGES PER MINUTE

Access Deficit Charges	Local calls	Intra Circle calls		Inter Circle calls	ILD calls	
in Rs per minute		0-50 kms	>50 kms	All distances	Outgoing	Incoming
Fixed – Fixed	0.00	0.00	0.30	0.30	2.50	3.25
Fixed – WLL(M)	0.30	0.30	0.30	0.30		
Fixed – Cellular	0.30	0.30	0.30	0.30		
WLL(M) – Fixed	0.30	0.30	0.30	0.30	2.50	3.25
WLL(M) – WLL(M)	0.00	0.00	0.00	0.30		
WLL(M) – Cellular	0.00	0.00	0.00	0.30		
Cellular – Fixed	0.30	0.30	0.30	0.30	2.50	3.25
Cellular – WLL(M)	0.00	0.00	0.00	0.30		
Cellular – Cellular	0.00	0.00	0.00	0.30		

IndiaCode

100. Collection and distribution of ADC

The amount given above is to be collected/ paid as follows:

- For all Intra-Circle calls from Cellular Mobile/ WLL(M) to fixed line, BSNL to be paid the access deficit amount.

- For all Intra-Circle calls from fixed to Cellular Mobile/ WLL(M), the originating service provider to retain the access deficit amount

- For Intra-Circle calls from fixed line to fixed line, the originating Service Provider to retain the access deficit amount (local calls and calls within “0 to 50 kms.” do not have any access deficit charge). No access deficit charge is payable to the terminating fixed network.

- For all outgoing Inter-Circle and ILD calls from fixed line, the originating service provider to keep the access deficit amount. No access deficit charge is payable to the terminating fixed network.

- For all ILD calls to fixed line, BSNL to be paid the access deficit amount by the ILDO (directly or through NLDO, wherever applicable), and the termination charge should be paid to the terminating network.

- For all Inter-Circle calls from Cellular Mobile/ WLL(M) to fixed line, the access deficit charge and termination amount is to be collected by the NLDO from the originating service provider and the access deficit charges to be paid to BSNL and the termination charge should be paid to the terminating service provider.

- For all Inter-Circle calls from Cellular Mobile and WLL (M) to Cellular Mobile/ WLL(M), the access deficit amount is to be collected by the NLDO from the originating service provider and paid to BSNL.

- For all ILD outgoing and incoming calls from/ to Cellular Mobile and WLL (M), the access deficit amount is to be collected by the ILDO and paid to BSNL.

101. The Authority's decision on ADC rates and its payment is summarized in Table 8 as below.

IndiaCode

TABLE 8

SUMMARY OF ADC RATES and PAYMENT RECIPIENTS

Sr.No.	Traffic Category	ADC Rate per minute	ADC Payable to or retained by
	Local/National Long Distance Calls		
1	i) Fixed to Fixed Local and Fixed to Fixed Intra Circle within 50 Km. ii) Intra Circle Mobile to Mobile	0.00	Not Applicable
2	i) All calls from Fixed Line to Cellular Mobile/WLL(M) ii) All Intra Circle above 50 Km and all Inter Circle calls from Fixed to Fixed	0.30	Originating Fixed Service Provider
3	i) All calls from Cellular Mobile/WLL(M) to Fixed Line ii) All Inter Circle Calls from Cellular Mobile/WLL(M) to Cellular Mobile/WLL(M)	0.30	BSNL Fixed
	International Long Distance Calls		
1	All Outgoing ILD Calls originated from Fixed Line	2.50	Originating Fixed Service Provider
2	All Outgoing ILD Calls originated from Cellular Mobile/WLL(M)	2.50	BSNL Fixed
3	All Incoming ILD calls	3.25	BSNL Fixed

IndiaCode

INDEX

ANNEX B :
DATA and ADC TABLES

Table No.	Description	Page No.
I	Fixed Subscribers for the period Feb'04 to Jan'05	61
II	Outgoing minutes from all fixed subscribers for the period Feb'04 to Jan'05	61
III	Outgoing minutes from BSNL's fixed subscribers for the period Feb'04 to Jan'05	61
IV	Incoming minutes from all fixed subscribers for the period Feb'04 to Jan'05	62
V	Incoming minutes from BSNL's fixed subscribers for the period Feb'04 to Jan'05	62
VI	Mobile Subscribers for the period Feb'04 to Jan'05	63
VII	Outgoing minutes from all Mobile subscribers for the period Feb'04 to Jan'05	63
VIII	Outgoing minutes from BSNL's Mobile subscribers for the period Feb'04 to Jan'05	63
IX	Incoming minutes from all Mobile subscribers for the period Feb'04 to Jan'05	64
X	Incoming minutes from BSNL's Mobile subscribers for the period Feb'04 to Jan'05	64

IndiaCode

DATA and ADC TABLES

Table No.	Description	Page No.
XI	Fixed Subscribers for the period Feb'05 to Jan'06	65
XII	Outgoing minutes from all fixed subscribers for the period Feb'05 to Jan'06	65
XIII	Outgoing minutes from BSNL's fixed subscribers for the period Feb'05 to Jan'06	65
XIV	Incoming minutes from all fixed subscribers for the period Feb'05 to Jan'06	66
XV	Incoming minutes from BSNL's fixed subscribers for the period Feb'05 to Jan'06	66
XVI	Mobile Subscribers for the period Feb'05 to Jan'06	67
XVII	Outgoing minutes from all Mobile subscribers for the period Feb'05 to Jan'06	67
XVIII	Outgoing minutes from BSNL's Mobile subscribers for the period Feb'05 to Jan'06	67
XIX	Incoming minutes from all Mobile subscribers for the period Feb'05 to Jan'06	68
XX	Incoming minutes from BSNL's Mobile subscribers for the period Feb'05 to Jan'06	68
XXI	Summary of ADC Calculated for the six month period Feb'05 to July'05	69
XXII	Summary of ADC Calculated for the period Feb'05 to Jan'06	69

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TABLE I

FIXED SUBSCRIBERS (Active) as Reported by Service Providers for the period Feb'04 to Sep'04 and forecasts upto Jan'05

All Fixed	Fixed subscribers per month in Crores											
Month	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05
All Fixed Subscribers	4.19	4.23	4.24	4.24	4.26	4.27	4.28	4.29	4.31	4.32	4.34	4.36
BSNL Fixed	3.58	3.61	3.61	3.60	3.60	3.61	3.61	3.61	3.62	3.63	3.63	3.64

TABLE II

OUTGOING MINUTES from ALL FIXED SUBSCRIBERS FROM FEB'04 TO JAN'05

All Fixed Subscribers	Outgoing Fixed Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	1027.6	1043.4	1042.0	1042.7	1044.2	1046.0	1047.8	1049.3	1052.4	1055.6	1058.8	1062.0	12571.8
Intra with ADC	337.6	347.6	348.4	349.8	352.5	359.2	360.5	363.3	367.1	371.0	374.9	378.9	4310.7
Inter upto 50 Kms	21.1	21.8	21.4	21.6	21.7	22.0	21.9	21.9	22.0	22.1	22.3	22.4	262.3
Inter_50-200 Kms	50.9	51.5	51.5	51.4	51.4	51.7	51.8	51.9	52.0	52.2	52.3	52.5	621.0
Inter_200+ Kms	81.1	82.6	82.7	83.2	83.9	84.9	85.6	85.8	86.5	87.2	87.9	88.6	1020.1
ILD	8.5	8.7	8.6	8.8	8.8	8.9	8.9	9.0	9.0	9.1	9.2	9.3	106.7

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TABLE III

OUTGOING MINUTES from BSNL's FIXED SUBSCRIBERS FROM FEB'04 TO JAN'05

BSNL Fixed Subscribers	Outgoing Fixed Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	805.1	812.9	812.5	811.3	811.1	811.5	812.0	813.7	814.9	816.1	817.4	818.6	9757.2
Intra with ADC	304.4	307.4	307.2	306.8	306.7	306.9	307.1	307.7	308.2	308.7	309.2	309.7	3689.8
Inter upto 50 Kms	8.3	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.5	8.5	8.5	101.1
Inter_50-200 Kms	37.9	38.3	38.3	38.2	38.2	38.2	38.2	38.3	38.4	38.4	38.5	38.6	459.5
Inter_200+ Kms	45.5	46.0	46.0	45.9	45.9	45.9	45.9	46.0	46.1	46.2	46.2	46.3	552.0
ILD	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.1	6.1	72.2

TABLE IV

INCOMING MINUTES to ALL FIXED SUBSCRIBERS FROM FEB'04 TO JAN'05

All Fixed Subscribers	Incoming Fixed Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	1028.2	1044.2	1043.9	1044.1	1045.4	1048.1	1050.7	1056.9	1061.1	1065.3	1069.5	1073.8	12631.2
Intra with ADC	264.5	272.1	281.1	282.4	287.5	282.3	282.5	281.0	283.5	286.0	288.5	291.1	3382.7
Inter upto 50 Kms	21.1	21.8	21.3	21.5	21.5	21.9	21.8	21.7	21.8	21.9	22.0	22.1	260.2
Inter_50-200 Kms	52.7	53.6	54.5	53.7	53.5	53.0	52.8	53.2	53.3	53.4	53.5	53.5	640.8
Inter_200+ Kms	76.8	77.9	78.9	78.8	75.5	76.5	76.8	76.4	76.4	76.4	76.3	76.3	923.1
ILD	28.9	29.3	29.2	29.2	29.3	29.4	29.5	29.7	29.8	29.9	30.0	30.1	354.3

TABLE V

INCOMING MINUTES to BSNL's FIXED SUBSCRIBERS FROM FEB'04 TO JAN'05

BSNL Fixed Subscribers	Incoming Fixed Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	820.4	832.0	833.8	833.2	833.2	835.7	836.9	845.6	849.3	853.0	856.7	860.4	10090.2
Intra with ADC	238.5	243.2	251.2	254.3	258.4	252.5	259.0	258.2	261.1	264.2	267.2	270.3	3078.1
Inter upto 50 Kms	10.7	11.2	11.0	11.2	11.1	11.5	11.5	11.5	11.6	11.8	11.9	12.0	137.1
Inter_50-200 Kms	46.6	47.9	49.0	48.6	48.3	47.6	47.3	47.8	47.3	46.8	46.3	45.9	569.5
Inter_200+ Kms	53.7	53.2	57.1	57.5	53.8	54.6	54.7	54.4	54.5	54.7	54.8	54.9	658.0
ILD	23.8	24.1	24.1	24.0	24.0	24.0	24.0	24.1	24.1	24.2	24.2	24.2	289.0

TABLE VI

MOBILE SUBSCRIBERS (Active) as Reported by Service Providers for the period Feb'04 to Sep'04 and forecasts upto Jan'05

All Mobile	Mobile subscribers per month in Crores (active)											
Month	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05
All Mobile Subscribers	3.1	3.3	3.4	3.6	3.7	3.9	4.0	4.2	4.4	4.6	4.8	5.0
BSNL Mobile	0.50	0.53	0.54	0.55	0.58	0.62	0.69	0.75	0.80	0.85	0.90	0.96

TABLE VII

OUTGOING MINUTES from ALL MOBILE SUBSCRIBERS FROM FEB'04 TO JAN'05

All Mobile Subscribers	Outgoing Mobile Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	114.5	122.3	129.0	141.4	150.7	158.0	156.2	167.3	176.7	186.6	197.1	208.1	1907.7
Intra with ADC	118.9	128.2	143.0	142.0	142.1	149.4	147.7	155.0	161.1	167.5	174.1	181.0	1810.0
Inter upto 50 Kms	4.2	4.4	5.0	5.3	5.7	4.8	4.8	5.0	5.2	5.3	5.5	5.7	60.9
Inter_50-200 Kms	13.8	14.8	15.6	16.3	16.6	16.4	16.6	17.3	17.9	18.5	19.1	19.8	202.7
Inter_200+ Kms	66.8	71.7	74.2	78.2	76.7	81.8	87.2	90.9	95.0	99.3	103.8	108.5	1034.1
ILD	3.8	4.0	3.8	3.8	3.9	4.0	4.0	4.2	4.3	4.4	4.5	4.6	49.3

TABLE VIII

OUTGOING MINUTES from BSNL's MOBILE SUBSCRIBERS FROM FEB'04 TO JAN'05

BSNL Mobile Subscribers	Outgoing Mobile Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	35.1	37.3	38.0	39.2	41.1	44.2	48.7	53.4	56.7	60.2	63.9	67.9	585.6
Intra with ADC	21.8	23.1	23.6	24.3	25.5	27.4	30.2	33.1	35.1	37.3	39.6	42.1	363.2
Inter upto 50 Kms	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	14.7
Inter_50-200 Kms	1.1	1.2	1.2	1.3	1.3	1.4	1.6	1.7	1.9	2.0	2.1	2.2	19.1
Inter_200+ Kms	18.0	19.1	19.5	20.1	21.1	22.7	25.0	27.4	29.1	30.9	32.8	34.8	300.6
ILD	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	4.1

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TABLE IX

INCOMING MINUTES to ALL MOBILE SUBSCRIBERS FROM FEB'04 TO JAN'05

All Mobile Subscribers	Incoming Mobile Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	113.9	121.5	127.1	140.0	149.5	155.9	153.4	159.6	167.6	176.0	184.8	194.0	1843.3
Intra with ADC	191.9	203.7	210.3	209.4	207.2	226.4	225.7	237.2	244.6	252.3	260.2	268.4	2737.2
Inter upto 50 Kms	4.2	4.5	5.1	5.3	5.9	4.9	5.0	5.3	5.4	5.6	5.8	6.1	63.1
Inter_50-200 Kms	12.0	12.7	12.6	14.0	14.5	15.1	15.6	16.0	16.7	17.4	18.1	18.9	183.4
Inter_200+ Kms	71.2	76.3	78.1	82.6	85.1	90.2	96.0	100.2	105.3	110.6	116.1	122.0	1133.8
ILD	6.3	7.0	6.9	7.0	7.0	7.4	7.5	8.0	8.3	8.6	8.9	9.2	92.1

TABLE X

INCOMING MINUTES to BSNL's MOBILE SUBSCRIBERS FROM FEB'04 TO JAN'05

BSNL Mobile Subscribers	Incoming Mobile Minutes per month in Crores												
Traffic Category	Feb'04	Mar'04	Apr'04	May'04	Jun'04	July'04	Aug'04	Sep'04	Oct'04	Nov'04	Dec'04	Jan'05	Total
No_ADC	25.2	26.8	27.8	32.1	32.2	33.7	38.0	39.7	42.5	45.4	48.5	51.8	443.4
Intra with ADC	21.8	23.1	23.6	24.3	25.5	27.4	30.2	33.1	35.1	37.3	39.6	42.1	363.2
Inter upto 50 Kms	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	14.7
Inter_50-200 Kms	1.1	1.2	1.2	1.3	1.3	1.4	1.6	1.7	1.8	1.8	1.9	1.9	18.5
Inter_200+ Kms	18.0	19.1	19.5	20.1	21.1	22.7	25.0	27.4	29.1	30.9	32.8	34.8	300.6
ILD	0.6	0.7	0.7	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	10.3

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TABLE XI

FIXED SUBSCRIBERS (Active) Forecast for the period Feb'05 to Jan'06

All Fixed	Fixed subscribers per month in Crores											
Month	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06
All Fixed Subscribers	4.37	4.39	4.40	4.42	4.44	4.45	4.47	4.49	4.50	4.52	4.53	4.55
BSNL Fixed	3.64	3.65	3.66	3.66	3.67	3.67	3.68	3.69	3.69	3.70	3.70	3.71

TABLE XII

OUTGOING MINUTES forecast from ALL Fixed SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

All Fixed Subscribers	Outgoing Fixed Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	1065.1	1068.3	1071.6	1074.8	1078.0	1081.2	1084.5	1087.8	1091.0	1094.3	1097.6	1100.9	6439.1	12995.2	0	0	0	0
Intra with ADC	382.9	386.9	391.0	395.2	399.3	403.6	407.8	412.1	416.5	420.9	425.4	429.9	2358.9	4871.4	0.3	708	0.3	1461
Inter upto 50 Kms	22.5	22.6	22.7	22.9	23.0	23.1	23.2	23.4	23.5	23.6	23.7	23.9	136.8	278.1	0.3	41	0.3	83
Inter_50-200 Kms	52.6	52.8	52.9	53.1	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	317.9	641.0	0.3	95	0.3	192
Inter_200+ Kms	89.3	90.1	90.8	91.5	92.3	93.0	93.8	94.5	95.3	96.0	96.8	97.6	546.9	1120.9	0.3	164	0.3	336
ILD	9.3	9.4	9.5	9.5	9.6	9.7	9.8	9.8	9.9	10.0	10.1	10.1	57.1	116.8	2.5	143	2.5	292

TABLE XIII

OUTGOING MINUTES forecast from BSNL's Fixed SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

BSNL Fixed Subscribers	Outgoing Fixed Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	819.9	821.1	822.4	823.6	824.9	826.2	827.4	828.7	829.9	831.2	832.5	833.8	4938.1	9921.7	0	0	0	0
Intra with ADC	310.2	310.7	311.2	311.7	312.2	312.7	313.2	313.7	314.2	314.7	315.2	315.7	1868.4	3754.9	0.3	561	0.3	1126
Inter upto 50 Kms	8.5	8.5	8.5	8.5	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.7	51.2	102.9	0.3	15	0.3	31
Inter_50-200 Kms	38.6	38.7	38.7	38.8	38.9	38.9	39.0	39.1	39.1	39.2	39.3	39.3	232.7	467.6	0.3	70	0.3	140
Inter_200+ Kms	46.4	46.5	46.5	46.6	46.7	46.8	46.8	46.9	47.0	47.1	47.2	47.2	279.5	561.7	0.3	84	0.3	169
ILD	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.2	6.2	6.2	36.6	73.5	2.5	91	2.5	184
Total																821		1650

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TABLE XIV

INCOMING MINUTES forecast from ALL Fixed SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

All Fixed Subscribers	Incoming Fixed Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	1078.0	1082.3	1086.6	1090.9	1095.2	1099.5	1103.9	1108.3	1112.7	1117.1	1121.5	1125.9	6532.5	13221.8	0	0	0	0
Intra with ADC	293.7	296.3	298.9	301.5	304.2	306.9	309.6	312.3	315.1	317.8	320.6	323.5	1801.3	3700.2	0	0	0	0
Inter upto 50 Kms	22.2	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	23.0	23.1	23.2	134.3	272.2	0	0	0	0
Inter_50-200 Kms	53.6	53.7	53.8	53.8	53.9	54.0	54.1	54.1	54.2	54.3	54.4	54.4	322.8	648.3	0	0	0	0
Inter_200+ Kms	76.3	76.2	76.2	76.2	76.1	76.1	76.1	76.0	76.0	76.0	75.9	75.9	457.1	913.0	0	0	0	0
ILD	30.2	30.4	30.5	30.6	30.7	30.8	30.9	31.1	31.2	31.3	31.4	31.5	183.2	370.6	3.25	595	3.25	1205
Total																595		1205

TABLE XV

INCOMING MINUTES forecast from BSNL's Fixed SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

BSNL Fixed Subscribers	Incoming Fixed Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	864.2	867.9	871.7	875.5	879.3	883.1	886.9	890.8	894.7	898.5	902.4	906.4	5241.6	10621.3	0	0	0	0
Intra with ADC	270.7	271.1	271.5	272.0	272.4	272.8	273.2	273.6	274.0	274.5	275.6	276.8	1630.5	3278.3	0	0	0	0
Inter upto 50 Kms	12.1	12.1	12.2	12.2	12.3	12.3	12.4	12.4	12.5	12.5	12.6	12.7	73.2	148.3	0	0	0	0
Inter_50-200 Kms	45.4	45.0	44.5	44.1	43.6	43.2	42.7	42.3	41.9	41.5	41.0	40.6	265.7	515.8	0	0	0	0
Inter_200+ Kms	55.1	55.2	55.3	55.5	55.6	55.7	55.9	56.0	56.2	56.3	56.4	56.6	332.4	669.8	0	0	0	0
ILD	24.3	24.3	24.4	24.4	24.4	24.5	24.5	24.5	24.6	24.6	24.7	24.7	146.3	293.8	3.25	475	3.25	955
Total																475		955

Internet Archive

TABLE XVI

MOBILE SUBSCRIBERS (Active) Forecast for the period Feb'05 to Jan'06

All Mobile	Mobile subscribers per month in Crores (active)											
Month	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06
All Mobile Subscribers	5.2	5.4	5.6	5.9	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.3
BSNL Mobile	0.96	1.02	1.08	1.15	1.22	1.29	1.37	1.46	1.55	1.64	1.75	1.85

TABLE XVII

OUTGOING MINUTES forecast from ALL MOBILE SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

All Mobile Subscribers	Outgoing Mobile Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	219.8	232.2	245.2	259.0	273.5	288.9	305.1	322.2	340.3	359.4	379.6	400.9	1518.6	3626.2	0	0	0	0
Intra with ADC	188.2	195.6	203.3	211.4	219.8	228.5	237.5	246.9	256.7	266.8	277.4	288.4	1246.7	2820.3	0.3	374	0.3	846
Inter upto 50 Kms	5.9	6.0	6.2	6.4	6.6	6.8	7.0	7.3	7.5	7.7	8.0	8.2	38.0	83.7	0.3	11	0.3	25
Inter_50-200 Kms	20.4	21.1	21.8	22.6	23.3	24.1	24.9	25.7	26.6	27.5	28.4	29.3	133.3	295.7	0.3	40	0.3	89
Inter_200+ Kms	113.4	118.6	124.0	129.6	135.4	141.6	148.0	154.7	161.7	169.1	176.7	184.7	762.6	1757.5	0.3	229	0.3	527
ILD	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	29.2	61.6	2.5	73	2.5	154
Total																727		1641

TABLE XVIII

OUTGOING MINUTES forecast from BSNL's MOBILE SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

BSNL Mobile Subscribers	Outgoing Mobile Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	72.1	76.5	81.3	86.3	91.7	97.3	103.4	109.8	116.6	123.8	131.5	139.6	505.2	1229.9	0	0	0	0
Intra with ADC	44.7	47.5	50.4	53.5	56.8	60.4	64.1	68.1	72.3	76.8	81.5	86.6	313.3	762.7	0.3	94	0.3	229
Inter upto 50 Kms	1.8	1.9	2.0	2.2	2.3	2.4	2.6	2.8	2.9	3.1	3.3	3.5	12.7	30.8	0.3	4	0.3	9
Inter_50-200 Kms	2.4	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.3	4.6	16.5	40.2	0.3	5	0.3	12
Inter_200+ Kms	37.0	39.3	41.7	44.3	47.1	50.0	53.1	56.4	59.8	63.6	67.5	71.7	259.4	631.4	0.5	130	0.3	189
ILD	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0	3.6	8.7	2.5	9	2.0	17
Total																241		457

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TABLE XIX

INCOMING MINUTES forecast from ALL MOBILE SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

All Mobile Subscribers	Incoming Mobile Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	203.7	213.9	224.6	235.9	247.6	260.0	273.0	286.7	301.0	316.1	331.9	348.4	1385.8	3242.9	0	0	0	0
Intra with ADC	276.8	285.5	294.5	303.7	313.3	323.1	333.2	343.7	354.5	365.6	377.1	388.9	1796.9	3959.9	0	0	0	0
Inter upto 50 Kms	6.3	6.5	6.7	7.0	7.2	7.5	7.8	8.0	8.3	8.6	8.9	9.3	41.2	92.1	0	0	0	0
Inter_50-200 Kms	19.7	20.6	21.5	22.4	23.3	24.3	25.4	26.5	27.6	28.8	30.0	31.3	131.8	301.4	0	0	0	0
Inter_200+ Kms	128.1	134.6	141.3	148.5	155.9	163.8	172.0	180.7	189.8	199.3	209.3	219.9	872.2	2043.2	0	0	0	0
ILD	9.6	9.9	10.3	10.7	11.0	11.4	11.9	12.3	12.7	13.2	13.7	14.2	62.9	140.9	3.25	205	3.25	458
Total																205		458

TABLE XX

INCOMING MINUTES forecast from BSNL's MOBILE SUBSCRIBERS for the period Feb'05 to Jan'06 and ADC calculated in Rs. Crores

BSNL Mobile Subscribers	Incoming Mobile Minutes per month in Crores														Feb-July 2005		Feb-Jan 2006	
Traffic Category	Feb'05	Mar'05	Apr'05	May'05	Jun'05	July'05	Aug'05	Sep'05	Oct'05	Nov'05	Dec'05	Jan'06	Feb-Jul'05	Feb-Jan'06	ADC Rate	ADC in Cr	ADC Rate	ADC in Cr
No_ADC	55.4	59.2	63.2	67.6	72.2	77.1	82.4	88.1	94.1	100.6	107.5	114.9	394.6	982.2	0	0	0	0
Intra with ADC	44.7	47.5	50.4	53.5	56.8	60.4	64.1	68.1	72.3	76.8	82.0	87.7	313.3	764.3	0	0	0	0
Inter upto 50 Kms	1.8	1.9	2.0	2.2	2.3	2.4	2.6	2.8	2.9	3.1	3.3	3.5	12.7	30.8	0	0	0	0
Inter_50-200 Kms	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.5	2.6	12.7	27.4	0	0	0	0
Inter_200+ Kms	37.0	39.3	41.7	44.3	47.1	50.0	53.1	56.4	59.8	63.6	67.5	71.7	259.4	631.4	0	0	0	0
ILD	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.5	8.9	21.7	3.25	29	3.25	70
Total																29		70

Invoice

TABLE XXI

SUMMARY OF ADC CALCULATIONS FOR PERIOD February 2005 to July 2005 in Rs. Crores

Traffic Stream	BSNL Fixed	Non-BSNL Fixed	Total
Non-BSNL Outgoing including ILD Outgoing	0	330	330
BSNL Outgoing including ILD Outgoing	821	0	821
Mobile Outgoing	595	0	595
ILD Incoming	932	0	932
Total	2348	330	2678

TABLE XXII

SUMMARY OF ADC CALCULATIONS FOR PERIOD February 2005 to January 2006 in Rs. Crores

Traffic Stream	BSNL Fixed	Non-BSNL Fixed (if no change after Consultation Process/ Review)	Total (If no change after Consultation Process/ Review)
Non-BSNL Outgoing including ILD Outgoing	0	715	715
BSNL Outgoing including ILD Outgoing	1650	0	1650
Mobile Outgoing	1205	0	1205
ILD Incoming	2099	0	2099
Total	4954	715	5669

Indicative

Telecom Regulatory Authority of India

Notification

New Delhi, the 11th April, 2005

No.409-8/2004-FN

In exercise of the powers conferred upon it under section 36 read with paragraphs (ii), (iii) and (iv) of clause (b) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India hereby further amends the Telecommunication Interconnection Usage Charges Regulation, 2003(4 of 2003) , as follows, namely:

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1. Short title, extent and commencement:

(i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges (Fifth Amendment) Regulation (7 of 2005)"

(ii) This Regulation shall come into force with effect from the date of its publication in the Official Gazette.

2. In regulation 2 under Section II of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003) the following para and entries shall be inserted, after para and entries (xxviii) namely:

(xxix) Roaming means the ability for a cellular subscriber to automatically make and receive voice calls, data and to access other services while travelling outside the geographical coverage area of the home network, by using the visited network. It is national roaming when visited network and the home network of the subscriber are in the same country and it is international roaming when visited network and home network of the subscriber are in different countries.

The existing (xxix) will be renumbered as (xxx).

3. The following paras and entries relating thereto shall be inserted in Schedule III of The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003) after Para 3.3 and entries relating thereto, namely:

" 3.4 All calls from the National Roaming subscribers shall be treated as Long Distance calls and all calls from International Roaming subscribers shall be treated as incoming international call for ADC purposes. As such for all calls from National roaming subscribers while in a different Service Area, ADC charge as applicable for National Long Distance calls shall be applicable at the rate of Rs 0.30 per minute. For International Roaming Subscriber while making any call while in India, an ADC of Rs 3.25 per minute shall be applicable.

3.5 For all calls from Roaming subscriber, the access deficit amount is to be collected by the visited network operator and paid to BSNL."

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4. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to matters covered under this Regulation.

BY ORDER

[RAJENDRA SINGH]
Acting Secretary

Annexure– A

EXPLANATORY MEMORANDUM

1. Authority vide its notification dated 6th January 2005 had issued IUC Regulation (1 of 2005), which has been implemented from 1st February 2005. BSNL forwarded a copy of its implementation circular to TRAI., In this circular BSNL has made some changes in the call routing arrangements wherein new trunk groups have been added for CMTS POI at Level I TAX for National and International roaming subscribers traffic. BSNL has also indicated that proposed charges at Level I TAX Trunk group are provisional. BSNL has mentioned in its implementation plan that since CMSPs are charging approximately Rs. 100/- per minute from the international roaming subscribers in their network, therefore CMSPs should share revenue in 50: 50 basis with BSNL.

2. COAI submitted a representation to the Authority stating that the above mentioned action of BSNL would adversely impact the business of Cellular Operators both in terms of revenue and costs. Moreover, even physical implementation of separate trunk group is almost impossible in the extremely short time given. It was also stated that the implementation of such a scheme for ADC did not require trunk groups, and could be done on the basis of CDR. Authority also received representation from AUSPI stating that separate trunk group is not required and sharing of 50% of the retail charges from the international roaming subscriber has no relation to IUC payments and hence be dispensed with.

3. The Authority has had detailed meetings with the BSNL,COAI, AUSPAI and switch manufactures on these issues.

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4. BSNL had stated in its submission that roaming calls are premium in nature. CMSPs themselves are treating roaming calls differently from local calls in terms of charges. They are charging National roaming customers a higher charge varying from Rs. 3/- to Rs. 5/- per minute. The cellular operators are charging approximately Rs. 100/- per minute from international roaming subscribers, and BSNL gets paid for termination and carriage charges only. The licences for cellular services are issued for specific service areas. The Interconnect Agreements are signed by BSNL with CMSPs for the concerned service area. Roaming customers are from a different Service Area and are not covered for the general treatment provided in the Interconnect Agreements. BSNL stated that it is ready to accept this traffic, provided BSNL gets paid for ADC and share in higher profit from such calls. BSNL thus had proposed an equitable revenue share arrangement between CMSPs and BSNL. BSNL also stated that there is a possibility of misuse in case no ADC is applicable on roaming calls, as the integrated operator would bypass the ADC regime by showing even their National/International calls as call from a roaming subscriber (i.e. by showing the call as not being subject to ADC). BSNL has also informed that they have CDR at Level-I and will have CDR based system at Level-II within 2 months.

5. COAI in its representation stated that although some of its members have signed the Interconnect agreement but still they are unable to implement the agreement due to technical difficulties. BSNL's circular for different trunk groups for calls originated by in-roamers has not taken into account all the call scenarios. Normally routing of traffic is decided on the basis of dialled number (B number), and to implement the routing as proposed by BSNL in its IUC implementation plan A number has to be seen before routing. This will create lot of processor load on the Switch. This arrangement will also reduce trunking efficiency. To implement such routing, the MSC dimensioning will change resulting in higher CAPEX. COAI further added that whatever the arrangement, which it was of the view should be based on CDR, the same

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arrangement should be applied in toto for CELL-ONE also. COAI apprehended that roaming rates will go up due to BSNL's circular.

6. AUSPI in its representation submitted that there is no need for separate trunk group when operators are ready to provide their CDRs for reconciliation to BSNL. BSNL can verify from the CDR whether the call is from roaming subscriber or not. AUSPI had emphasised that BSNL have CDR based billing at level I TAX so the need to create separate trunk group at Level I TAX does not arise.

7. Several equipment manufacturers and equipment suppliers informed that due to routing based on 'A' number, additional processor load will be of the order of 10% or more. This will also reduce Circuit Utilisation and trunking efficiency.

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8. Authority has examined the various issue raised during the meetings and written submissions by BSNL, COAI and AUSPI, and its discussions with Equipment Manufacturers. The Authority observed that formation of separate trunk group will reduce the traffic handling capacity at the POI and would therefore be inefficient arrangement. Further, since the matter can be addressed without resorting to formation of separate trunk groups for national and international roaming subscribers and BSNL is already in the process of implementing CDR based billing system, an arrangement based on CDR system should be used. In the mean time, till CDR based systems are put in place ,operators could supply the complete Call Data Records(CDR) separately to BSNL for the calls made by their national and international subscribers.

9. The Authority has also observed that private cellular operators are themselves treating calls originated by their home network customers separately from the calls originated by the roaming customers belonging to their own network in

other service area. The Authority has also observed that the possibilities of misuse of POIs by cellular operators exist if they hand over incoming international calls as well as incoming inter-circle calls as local calls to BSNL. **To avoid such misuse of POI, all calls from the national roaming subscribers should be treated as long distance calls and all calls from the international roaming subscribers should be treated as incoming international call. As such for all calls from National Inroamers while in a different Service Area, ADC charge for national calls with ADC will be applicable. For International Roamers while making any call while in India, an ADC of Rs 3.25 per minute should be applicable.** A letter in this regard was issued by Authority to all service providers on 11-03-05 seeking their final comments. Comments had been received from COAI and BPL only, and Authority found that issues raised by COAI and BPL had already been discussed and considered.

10. The Authority has noted the point that BSNL has raised the issue of sharing revenue from cellular operators on the ground that they are charging higher rate from national and international roaming subscribers as compared to the calls from their home network subscribers. The Authority has already issued a consultation paper on 17th March 2005 which will address issues like revenue share arrangement between terminating network and visiting network.

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To be published in PART III – Section 4 of the Gazette of India (Extraordinary)
(along with Hindi Version)

Telecom Regulatory Authority of India
Notification
New Delhi, the 23rd February 2006

No.409-5-2005-FN

In exercise of the powers conferred upon it under section 36 read with paragraphs (ii), (iii) and (iv) of clause (b) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India hereby makes the following regulation to further amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

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1. Short title, extent and commencement:

(i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006)"

(ii) This Regulation shall come into force with effect from 1st March, 2006

2. In Schedule II of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003) -

(i) the following entries shall substitute the existing entries relating to paragraph (a), namely:-

"(a) Carriage charges for Long Distance calls within India

Table – I

(Amount in Rupees per minute)

Carriage charges per minute for Long Distance Calls within India	As per mutual agreement between the service providers subject to a ceiling of Rupees 0.65 per minute irrespective of the distance.

"

(ii) The following entries shall substitute the existing entries relating to paragraph (b) under the heading 'Notes to Schedule II' of the Telecommunication Usage Charges Regulation, 2003 (4 of 2003), namely:-

"The Carrier, as shown in Table II, would collect the applicable amounts for carriage and termination charge from the Originating Service Provider for various type of calls. The Carrier would pass on the termination charge for terminating the traffic to the Terminating Service Provider as per Schedule-I."

3. In Schedule III of The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), the following entries shall substitute the existing entries relating to paragraphs 3.1 and 3.2, respectively:-

"3.1 The Access Deficit Charges for International Outgoing and Incoming Calls shall be as per Table III.

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Table III

Access Deficit Charge for International Long Distance Calls

Sl.No.	**Type of Call**	**ADC per minute (in rupees)**	**ADC to be paid to / retained by**
1.	All Outgoing ILD calls originated from Fixed wireline subscribers.	Rs.0.80	To be retained by originating Fixed wireline Service Provider.
2.	All Outgoing ILD calls originated from Cellular Mobile / Wireless including WLL (F) subscribers	Rs.0.80	To be paid to BSNL by originating access provider through ILDO
3.	All Incoming ILD calls	Rs.1.60	To be paid to BSNL by ILDO or NLDO

3.2 **ADC as a percentage of Revenue.**

3.2.1 In addition to the payment of ADC on international outgoing and incoming calls in terms of Clause 3.1, all licensees of Unified Access Service, Cellular Mobile Telephone Service, National Long Distance Service and International Long Distance Service and Basic Service Operators shall pay

1.5% of their Adjusted Gross Revenue as ADC to the BSNL. BSNL shall retain ADC chargeable as percentage of its Adjusted Gross Revenue.

Provided that if a service provider has Unified Access Service License/Basic Service Licence, it shall retain ADC as percentage of Adjusted Gross Revenue of Fixed wireline subscribers and the balance shall be paid to the BSNL. MTNL shall also retain ADC as percentage of Adjusted Gross Revenue for its Fixed Wireline subscribers and shall pay the balance to BSNL.

3.2.2. For calculating ADC , Adjusted Gross Revenue shall have the same meaning as given in the respective licences;

PROVIDED that in calculating the ADC as a percentage of Adjusted Gross Revenue (AGR) of a Universal Access Service Licensee/Basic Service Operator, the revenue from rural subscribers shall be excluded.

3.2.3 Adjusted Gross Revenue of Fixed Wireline subscribers for purpose of retention of ADC shall be calculated as given in Table IV.

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Table IV

Calculation of AGR for Fixed Wireline Subscribers for retention of ADC

S.No	Particulars	Amount in rupees
	Revenue from Fixed Wireline subscribers: (i) Rentals (ii) Call revenue within service area (iii) National LONG DISTANCE CALL revenue (iv) International LONG DISTANCE CALL revenue (v) Pass thru revenue for usage of other networks	

	(vi) Service tax (vii) Service charges (viii) Charges on account of any other value added services, Supplementary Services etc. (ix) Any other income / miscellaneous receipt from Fixed Wireline subscribers. (x) Revenue from other OPERATORs on account of pass through call charges on fixed wireline subscribers (xi) Any other revenue for provisioning of Fixed Wireline subscribers	
A	**GROSS REVENUE from Fixed Wireline Subscribers**	
	DEDUCT: 1. Charges actually paid to other SERVICE PROVIDER for Fixed Wireline subscribers 2. Service Tax paid to the Government on Fixed wireline subscribers 3. Sales Tax paid to the Government on Fixed Wireline subscribers 4. Revenue from Rural subscribers.	

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B	TOTAL DEDUCTIBLE REVENUE	
C	ADJUSTED GROSS REVENUE for Fixed Wireline Service on which ADC retention is admissible (A-B)	

3.2.4 Since this Regulation shall come into force with effect from 1st March, 2006, therefore, after payment of ADC in terms of percentage of AGR up to 31-3-2006, the subsequent payments shall be on quarterly basis so that it matches with the payments of annual licence fee. The ADC to be paid on the basis of revenue share between 1st March, 2006 and 31st March, 2006 shall be determined on the pro-rata basis of Adjusted Gross Revenue for the last quarter of year 2005-2006.

4. In Section (V) of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), in Regulation 5, after paragraph (iii) and the entries relating thereto, the following paragraphs and entries relating thereto shall be inserted, namely:- .

"iv. Each service provider shall report to the Authority on quarterly basis, the ADC retained by it, wherever applicable, and also ADC paid by it to BSNL. In addition, BSNL shall report, on quarterly basis, ADC payments received by it from each operator. This shall include both the components of ADC, namely ADC paid in the form of percentage of Adjusted Gross Revenue and ADC on per minute basis for international incoming and outgoing calls. This quarterly report shall reach the Authority within 30 days of the end of the previous quarter."

5. In Section VI of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), in Regulation 6, the following paragraphs and entries relating thereto shall substitute the existing paragraphs and entries relating thereto:-

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"(i) The Authority may, from time to time, review and modify interconnection Usage Charge and Access Deficit Charge."

(ii) "The Authority may also at any time, suo-motu, or on the basis of reported information in terms of clause (iv) of Regulation (5) above or on reference from any affected party, and for good and sufficient reasons, review and modify any Interconnection Usage Charge and Access Deficit Charge."

6. **Explanatory Memorandum**

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to mattes covered under this Regulation.

BY ORDER

[RAJENDRA SINGH]
Secretary

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ANNEX "A"

EXPLANATORY MEMORANDUM

I. Introduction

1. TRAI in its Regulation of 24th January, 2003 had put in place an IUC & ADC Regime which included origination, carriage and termination charges as well as the access deficit charges to cover the access deficit arising due to access tariffs being below costs. This Regime was reviewed in TRAI's Regulation of 29th October, 2003 and further amended vide Notification of 6th January, 2005. The Authority had enunciated this framework to promote lower domestic prices and give a greater impetus to subscriber growth. The subsequent growth in subscriber base and the fall in call charges has confirmed this stand. The monthly growth in mobile subscribers' base in India, has been among the highest and various Government policy decisions, regulatory initiatives and the competition have mainly contributed significantly to such growth. The number of mobile subscribers in the last five years are given in the table below :-

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Table-1 : Annual Growth of Mobile Subscribers

Financial Year	No. of subscribers (in million)
March, 2002	6.54
March, 2003	13.00
March, 2004	33.69
March, 2005	52.22
December, 2005	75.92
January, 2006	81.00

2. The exceptional growth in Mobile subscriber base has resulted in substantial change in the situation which existed at the time of determining the ADC regime notified in the Regulation of 6th January 2005. In its Regulation dated January 6, 2005, the Authority had

examined the possibility of implementation of ADC recovery in terms of percentage of revenue of the service providers (Para-50 to 54 of Explanatory Memorandum). Due to its adverse impact on local calls tariffs and implementation problems discussed therein, the Authority at that time had decided to continue with per minute charging of ADC. The Authority considered that various issues including implementation of revenue share ADC Regime, review of carriage charge and termination charge could be addressed through a consultative process. The Authority in its above referred Regulations had mentioned that there is an overlap between the disbursed USO Fund and the ADC amount due. It had further proposed to address in the next Consultation Paper, the greater application of the Forward Looking Long Run Incremental Costs(FLLRIC) for ADC computation in the face of greater use of newer and less expensive technologies. It had noted the need to account for factors such as the net effect of depreciation in the gross CAPEX and allocation of costs to non-fixed line items, which are likely to decrease the overall costs per subscriber over time. Thus, the Authority has conducted another review of IUC / ADC based on its consultation paper of 17th March 2005. which addresses a wide range of issues including:-

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a. Justification of ADC on Fixed Wireless Lines and admissibility of ADC for non-BSNL Fixed Line Operators.
b. ADC as Percentage of Revenue, and its various variants including mixed models, higher ADC on NLD and ILD calls etc.
c. Interconnection Usage Charges (Carriage and Termination issues) including those for Incoming International calls, and whether to have differential termination charges for National and International long distance calls.
d. Implications of increasing disbursement of USO Fund on the quantum of ADC payable.

The Authority had also noted that the disbursement from USO Fund in the last 3 years has been much less than the collection and at the end of 2004-05 the balance amount in USO Fund is Rs.5439 crore. The Authority had expected that the balance by end of year 2010 would be of the order of Rs.25,000 crore. This is indicated in the table given below:-

Table - 2: Collection and disbursement of USOF

Collection and Disbursement of USOF			
			(Rs. in Crore)
Financial Year	**Collection**	**Disbursement**	**Balance**
2002-03	1653.61	300	1353.61
2003-04	2143.22	200	3296.83
2004-05	3457.73	1314.58	5439.98
Total	7254.56	1814.58	5439.98
2005-10	37541	17936.80	25044.2

Note : 1. Figures for 2005-10 are based on projections
2. Growth in fixed service revenue – 10% p.a.
3. Mobile Growth to reach 20 crore by 31.3.2008. Therefore, mobile growth assessed at 10 crore by 31.3.2006 and 15 crore y 31.3.2007.
4. Projection for the year 2008-10 is 25% on absolute revenue of fixed and mobile services.
(Source: TRAI's Recommendation on Rural Telecom :Table 1.2)

Further DoT in USOF Guidelines have indicated that for household DELs installed prior to 1st April, 2002, the difference in rental actually charged from rural subscribers and rent prescribed by TRAI for such subscribers shall be reimbursed until such time the Access Deficit Charge (ADC) prescribed by TRAI from time to time take into account such difference. It is also noted that the Authority is not regulating fixed line tariffs in urban areas but only the rental, free call allowance and local call charges in rural areas are regulated by the Authority. It implies that after liberalisation of long distance services in the country, the Authority is giving sufficient time and opportunity to rebalance the tariff to various operators so that the cross subsidy between long distance charges and rental, etc. is minimized. In case, operators are not doing tariff rebalancing or if they are doing reverse tariff rebalance, i.e. they are reducing the rental and in turn increasing the long distance charges then the Authority is of the opinion that due to such action of the operators the ADC regime cannot continue in perpetuity. Keeping all these factors in mind, the Authority did not go into detailed calculations of admissibility of ADC but reduced it in such a way that the ADC Regime is ultimately merged with USO regime from the year 2008-09 onwards and accordingly estimated the ADC payable to BSNL and other fixed line operators including MTNL for the year 2006-07. The Authority had expressed the similar opinion in its IUC Regulation dated October

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29, 2003 (para-24 of the Explanatory Memorandum) and also in its January 6, 2005 IUC Regulation (Para-25 of the Explanatory Memorandum).

3. The Authority would submit suitable recommendations to Government on this issue so that finally USO Regime takes care of support on account of ADC also.

4. The new regime notified in this Regulation takes into account all the inputs provided during the consultation process, which in a number of cases involved different stakeholders giving diametrically opposite views on certain issues. The responses to the Consultation Paper have been put in the TRAI's website (www.trai.gov.in). The revised IUC / ADC regime has been worked out with a view to allowing larger benefits to the Indian consumers and rapid growth of telecom services.

5. The Authority in its Regulation dated 6th January, 2005 had observed that the revised ADC regime should also be seen in the context of the overall policy framework being developed by the Authority for improving the availability of modern communication services across the country, with a special focus on rural areas. At that time mobile network were covering only around 20% of the population which is around 35% now. Still the mobile operators have to complete substantial rollout of their networks in rural areas. This is shown in the table below:-

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Table- 3 : Present Coverage of Mobile Networks
(Population Coverage around 35%)

	By area	Population Coverage
Towns	**~ 2000 out of 5200**	**~200 Million**
Rural areas	**Negligible**	**Negligible**
Proposed Network Coverage by 2006; operators plan (Population Coverage 75%)		
	By Area	**Population Coverage**
Towns	**~4900 out of 5200**	**~ 300 Million**
Rural areas	**~350,000 out of 607,000 villages**	**~450 Million**

6. As the coverage of service increases to include a larger area in the country, the contribution of lower domestic tariffs becomes crucial for

expanding subscriber base and providing the benefits of accessible communications service to our population in general. **The Authority is of the view that to provide a sustain boost to subscriber growth and teledensity while the operators cover more interior areas with lesser purchasing power, the prevailing tariff levels may have to go down further.**

7. In specifying its 6th January 2005 Regulation, the Authority had given particular emphasis to provide a strong basis for further decrease in domestic charges and death of distance. Relevant paragraph from the explanatory memorandum is reproduced below:

> *"Para-7 : In specifying its revised ADC regime, the Authority has given particular emphasis to provide a strong basis for a further decrease in domestic prices and boosting subscriber growth, as well as to pave the way towards as much similarity in long distance charges as possible (i.e. working towards a "death of distance" which the technological change is bringing about). Thus, the Authority expects that the regime notified under this Regulation will be followed by a competitive market response resulting in a reduction in call charges, which in turn should add to the subscriber growth and greater availability of telecom services. ……".*

In this IUC / ADC regime the Authority has again given particular emphasis to provide a strong basis for a further decrease in domestic prices and boosting subscriber growth, as well as to pave the way towards death of distance. Thus, the Authority expects that the regime notified under this Regulation will be followed by consumer-friendly different tariff packages and will boost the subscriber growth further.

8. The Authority in its January, 2005 Regulation had noted that the large increase in mobile subscriber base will also provide a substantial increase in traffic minutes which will lead to increased AGR. Further, this increase in AGR, to a significant extent, will be external to BSNL, i.e. the ADC funded by the BSNL itself will increasingly become a smaller portion. The Authority had also noted that if ADC is funded through a revenue share regime then this would lead to a lower percentage of revenue share imposed for funding of ADC. As already stated earlier by the Authority, the ADC

Regime will ultimately merge with the USO Regime. ***(Para-8 of Explanatory Memorandum of January, 2005 Regulation)***

9. The Authority had already suggested in IUC Regulation of 29th October, 2003 (para-89) that funding of ADC on a percentage of annual revenue of the operator could be an alternative option as also that it could become part of USO. In most countries, funding of access deficit has been merged with the universal service obligation (USO) program.

> *"Para -89 : Since this was only a review exercise of the IUC/ ADC regime notified in January 2003, the Authority has not undertaken any structural changes in the estimation methodology for ADC. Periodic (annual) ADC calculations based on audited results of all service providers are being proposed. The next exercise would consider changes in the ADC regime. In the subsequent years, the Authority would review both the size of the ADC payments as well as who should be the beneficiaries of the ADC regime. It may even consider funding ADC based on a percentage of the Annual Revenues of the operators. Further, the ADC regime should ideally be merged with the USO regime over time, say in about 3 to 5 years. This will also help implement the scheme in terms of a revenue share, and will further reduce any competitive distortions that may be introduced by loading the ADC regime on the minutes of use. However, such a regime can only be introduced after consultations with the Government, which the Authority would initiate. In the post-Accounting Separation scenario, the Authority would also be better equipped for Forward Looking Proxy Models. "*

10. The Authority also observed that data required for per minute regime is detailed and problems are being faced in reconciliation on this account. It has been reported that reconciliation issues also arise on account of the fact that whether a particular service qualifies for recovery of ADC or not and that verification of the information on such services is very difficult. Above observations suggest that it would be useful to evolve a simpler method of collecting ADC which does not involve distance based and call based ADC, and may also be subject to easier verification. In fact, the Authority had realised the problem of reconciliation and non-simplicity of the minute based regime in its consultation paper dated 23rd June 2004 and proposed ADC regime based on revenue share. The Authority's decision on

this issue finds a place in explanatory memorandum to the Regulation of 6th January 2005. Relevant paragraph from the explanatory memorandum is reproduced below:

> *"Para-51: In moving to the ADC regime based on revenue share, a crucial factor is the large transition that would be required if the ADC amount charged per minute for the international calls is converted into a revenue share. At present, this amount is Rs. 4.25 per minute. The transition will become easier if the corresponding ADC per minute amount is lower and can be distributed more easily on a larger base of minutes and revenues that will generate ADC funds. Over time, this will become possible as the increase in subscriber base results in much larger number of minutes that generate the ADC funds, and as the ADC amounts themselves decrease due to the reasons mentioned in the previous section. This would help us to avoid the "large transition" that would be presently required, and the Authority could consider moving to a revenue share regime with the ADC per minute charge for ILD calls being substantially below the Rs.4.25 presently in place."*

11. In the prevailing competitive scenario a revenue share regime would give a much greater flexibility to the operator to come forward with different packages than being bound by a fixed per minute charge on specific types of calls. Also, calculation and payment of ADC would become much easier since the service provider already makes payments for his license fee on the basis of the revenue share.

12. The Authority in its Regulation dated 29th October, 2003 had not treated other fixed line operators at par with BSNL because under that Regime only BSNL received the ADC from mobile-to-mobile calls and international calls to/from mobile. Further, in January, 2005 Regime also BSNL received ADC on all incoming international calls and all outgoing calls from mobile subscribes. The Authority even at that time felt that there is a good basis for this dissimilar treatment if one takes into account of the lower costs of access involved with fixed line with wireless terminals and the spread of subscribes in urban and rural areas. Please see the table below :-

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Table – 4 : **Percentage distribution of FWT Lines in the total Fixed Subscriber Base of Fixed Operators and Percentage of Rural lines in total Fixed Lines provided by Fixed Operators as on 30th Sept., 2005**

Service Provider	Area of Operation	% of Fixed Wireless lines in Operator's Fixed Lines	% of Rural lines in Operator's Fixed Subscriber Lines
BSNL	All India (except Delhi & Mumbai)	3.93	37.42
MTNL	Delhi & Mumbai	3.81	0.00
BHARTI	AP,MP, Delhi, Haryana, TN , Chennai, Karnataka, Kerala, Gujarat, Punjab, Maharashtra, Mumbai, U.P. (W) including Uttaranchal, West Bengal and Kolkata	2.26	0.00
TATA	Maharastra (Inc. Mumbai), AP, TN, Chennai, Karnataka, Gujarat, Delhi, Bihar, Orissa, Rajasthan, Punjab, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, U.P. (E), U.P (W) including Uttaranchal, West Bengal and Kolkata	89.01	0.29
HFCL	Punjab	27.67	0.29
SHYAM	Rajasthan	16.29	5.16
RELIANCE	AP, Bihar, Delhi,Gujarat, Haryana, HP, KN, Kerala, MP, MH,Mumbai, Orissa, Punjab, Rajasthan,TN Chennai ,UP(E), UP(W), WB, Kolkata	92.04	0.64
TOTAL		**14.28**	**28.76**

It can be seen from the above Table that except BSNL most of the other operators including MTNL do not have any significant number of rural subscribers. In fact, operators like MTNL and Bharati have 'NIL' presence in rural areas. Further, operators like Reliance and TATA have almost 90% of their total subscriber base as wireless subscribers which as per DoT's Order are to be treated at par with mobile subscribers as far as treatment of ADC is concerned. MTNL is providing service in two major metro cities. It is again reiterated that TRAI is not regulating tariff in urban areas. Mainly because of these reasons other fixed operators including MTNL are not eligible to get any ADC support and only BSNL which is having almost 37% of their total subscriber base in rural areas and only around 4% wireless subscribers is eligible to get support from ADC. But, since other fixed

line operators have to compete in the market, therefore, they are being treated at par with BSNL as far as retention of ADC in terms of percentage of fixed line AGR and on outgoing international calls from their fixed line subscribers. In its consultation paper, the Authority had raised this question whether any operator other than BSNL should be provided funding for ADC. Relevant points in this regard include the fact that normally ADC funding is provided to the incumbent, prior to the regime being merged with the USO regime. Further, the transition of service providers from basic service licence to unified access service (UAS) licence has led to a reduction in the extent of roll out requirement for them. In addition, an important factor is that new entrants are operating with modern network, and MTNL which has a legacy network is an incumbent in the premium service areas of India. MTNL has both a more lucrative market and substantially higher monthly rental which has a major impact in reducing the access deficit.

13. In the existing regime BSNL and other fixed service providers are allowed to retain ADC from the calls originating from their network. ADC generated from all ILD incoming calls and all outgoing calls from mobile was paid to BSNL. The Authority has decided that under the new regime also the other access service providers providing fixed wireline services should be allowed to retain the revenue share percentage for their fixed wirelines only. They are also allowed to retain ADC generated from outgoing ILD calls originating from their fixed wireline subscribers. All other services shall be contributing a percentage of Adjusted Gross Revenue(AGR) as ADC directly to BSNL. ADC generated from ILD calls originating from mobile networks shall also be paid to BSNL. Therefore, there is no change in the principle of retaining the ADC for the wireline services by the other fixed service providers.

14. Revenues forecast for the period 2006 – 07 are calculated by taking the average subscriber base at the mid point of the period, namely mid of financial year 2006 – 07 and multiplying it by the monthly average revenue per user (ARPU) taking account of all revenues of access providers and the long distance operators, including both the

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National and International Long Distance Operators. ARPU has been estimated after subtracting the pass through component so that its multiplication with subscriber base gives AGR figure.

II.

Background

15. The Authority notified on 24th January 2003, its first Regulation on Interconnection Usage Charges (IUC) and Access Deficit Charges (ADC). This regime came into effect from 1st May 2003. Even at the time of implementing the first IUC / ADC regime notified on 24th January 2003, the TRAI was looking further into the various comments on that regime's shortcomings, particularly regarding the sustainability of the regime and the underlying calculation of IUC / ADC. The estimated amount of ADC was large and to be collected only from calls involving fixed line subscribers either at one end or both ends. This meant that the IUC/ ADC charges differed widely for calls from and to fixed and mobile networks. With ADC being levied only on calls involving fixed line, the mobile service providers had greater flexibility in offering lower tariffs in comparison to fixed lines especially when fixed lines were involved at both ends. This would have adversely affected the competitive ability of fixed line to a very large extent. The sustainability of the notified IUC/ ADC regime had become questionable.

16. The results of the review were encompassed in the second IUC regime notified in the Regulation dated 29th October, 2003. The Authority at that stage, had taken note of the fact that even developed countries like the US, Australia, Canada, France with lesser compulsions of providing low rentals and tariffs for unviable services had to formulate ADC during initial years of liberalization and tariff re-balancing. The Authority had further noted that in the initial regime, ADC was about 30% of total AGR of Telecom Sector revenue. The major portion of the ADC was contributed by BSNL itself. BSNL's contribution in this total ADC was about 81% from itself and 19% from others. In the new regime of 29th October 2003, the ADC amount was kept at about 10 % of the total AGR of the

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sector, a much more sustainable amount, and the BSNL's contribution was reduced to 47%. The revised (29th October, 2003's IUC) regime became effective from 1st February 2004.

17. Keeping in view the exceptional growth in subscriber base and traffic minutes, the Authority had notified a new ADC regime on 6th January 2005. The Authority's assessment in this regime was based mainly on increased minutes available to fund the ADC. In this regime the Authority had provided BSNL with the same ADC fund as were specified under the regime notified in the Regulation of 29th October 2003 but the per minute rates were reduced. The Authority has also experienced difficulties in getting detailed traffic data and its verification. The Authority had earlier stated in Para 89 of 29th October 2003 Regulation that it may consider funding ADC based on percentage of annual revenue of the operators and that the ADC regime should ideally be merged with USO regime over time, say in about 3 to 5 years.

> *"Para -89 - Since this was only a review exercise of the IUC/ ADC regime notified in January 2003, the Authority has not undertaken any structural changes in the estimation methodology for ADC. Periodic (annual) ADC calculations based on audited results of all service providers are being proposed. The next exercise would consider changes in the ADC regime. In the subsequent years, the Authority would review both the size of the ADC payments as well as who should be the beneficiaries of the ADC regime. It may even consider funding ADC based on a percentage of the Annual Revenues of the operators. Further, the ADC regime should ideally be merged with the USO regime over time, say in about 3 to 5 years. This will also help implement the scheme in terms of a revenue share, and will further reduce any competitive distortions that may be introduced by loading the ADC regime on the minutes of use. However, such a regime can only be introduced after consultations with the Government, which the Authority would initiate. In the post-Accounting Separation scenario, the Authority would also be better equipped for Forward Looking Proxy Models. "*

IUC being an annual review exercise, it was considered necessary to review IUC / ADC regime so that further growth in the telecom sector can be facilitated. Table below indicates the details of ADC funding in various IUC Regulations issued by TRAI.

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TABLE-5 : Details of ADC Funding in various IUC Regulations

IUC Regime Applicable	Total Amount of ADC (in Rs. Crores)	Amount of ADC Funded to BSNL (in Rs . Crores)	Amount of self funding by BSNL Fixed (in Rs . Crores)	Net Amount of ADC to BSNL fixed funded by others (in Rs . Crores)		
				Net amount of ADC to BSNL fixed funded by mobile operators for domestic & inter-national outgoing calls	Funded by ILDOs for incoming inter-national calls on mobile and WLL (M)	Funded by ILDOs for incoming inter-national calls on BSNL fixed line
As per 24th Jan 2003 Regulation estimates	13518	12381	10084	762	0	1536
As per 29th October 2003 Regulation estimates	5340	4792	2264	1048	324	1156
As per 6th January 2005 estimates	5669	4954	1650	1641	708*	955
As per proposed regime	3335	3200	395	929 + 76**	1059*	741

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*** Includes international incoming calls on fixed line also.**

**** This is a percentage revenue share from NLDO and ILDO.**

From the above table, the following observations are made:-

i. In comparison to January, 2005 Regulation, there is a reduction in contribution of ADC by mobile operators from Rs.1641 crore to Rs.929 crore. There is also a reduction of self funding by BSNL fixed from Rs.1650 crore to Rs.395 crore. In fact, there has been a continuous reduction in self-funding by BSNL in various Regulations. A larger reduction in self funding of BSNL is mainly on account of phenomenal growth of mobile sector.

ii. The contribution from ILD sector has been kept almost at the same level in various IUC Regulations.

18. Taking all these aspects into account, the Authority had released a consultation paper, dated 17th March 2005 to review the IUC regime and implement the ADC regime as a revenue share of adjusted gross revenue. In this paper the Authority had noted certain salient

points made in its Regulation of 29th October 2003 and 6th January 2005 and the difficulties that were reportedly arising in implementing the IUC regime.

19. The consultation paper recalled in particular vide range of issues including justification of ADC on fixed wireless line and admissibility of ADC for non-BSNL fixed line operators, ADC as a percentage of revenue and its various variants including mixed model, higher ADC on NLD and ILD calls, interconnection usage charges (carriage and termination issues) including those for incoming international calls, exclusion of rural lines from the ambit of the ADC and whether to have differential termination charges for national and international calls, implication of increasing disbursement of USO fund on the quantum of ADC payable.

20. The extensive comments covered the entire range, there is a no need of ADC, there is no basis for ADC, there is a need to continue with ADC regime and even higher provision of the ADC amount, forbearance in carriage charges, reduction in slabs for carriage charges, higher termination charge for international incoming calls, ADC for rural lines only, ADC should be merged with USO, ADC as a percentage of revenue. In this regard, it is important to recall the Authority's statement in its IUC Regulation of 29th October, 2003 that it will be gradually reducing the ADC, merging it with the USO regime in due time. The reduction of ADC is also implied by increasing implementation of the new technologies that are employable as substitutes for the fixed line network in place, have a much lower average cost. Likewise, the reasons for continuing with the ADC regime for some time were still relevant, and the Authority is of the view that it will continue with the ADC regime for certain number of years (maximum 5). With reference to these issues, it is pertinent to note, for example, the statement of the Authority in paragraph 24 of its Explanatory Memorandum to the IUC Regulation of 29th October, 2003.

> "*The Authority noted that the difference between historical costs and forward looking costs would be large, and relying on costs based only on modern and forward looking technologies would imply a large burden from the stranded*

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costs for BSNL. While the Authority feels that change over to FLLRIC model is imperative, it examined the implications of a sudden changeover against a gradual changeover. Since BSNL is the major supplier of telecom services in the country and has also contributed the maximum for achieving the targets of rural tele-density and in supporting low paying subscribers, a changeover to FLLRIC at present would adversely affect the services provided not only to rural and low paying subscribers but also the telecom industry in the country as a whole. The Authority noted that BSNL is already deploying latest technology and lower cost equipment in its expansion programme. Since wireless technology is being used, it *is expected that some of the existing network will also be gradually replaced by such equipment. In short, the approach is to achieve full shift to FLLRIC cost in a gradual manner over a few years rather than a single year change. The latter would leave heavy stranded cost and would be quite impractical. The Authority therefore, decided to rely on costs for the current year, based on as recent audited costs as possible. For this purpose, it worked with more recent data than was used in the initial IUC exercise. The Authority was of the view that with the changes in technology and a reduction in equipment costs taking place rapidly, the amount of funding required for ADC would decline. Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime. This would be similar to the situation in most other countries, where the ADC regime had been combined with the USO regime, rather than the ADC funding being provided through a separate ADC regime*."

III. Summary of the main comments

21. The various comments received are summarized below:-

a) ADC funding be provided only to BSNL or also to other fixed service providers.

- There is absolutely no justification for payment of any ADC to other basic service providers.

- ADC funding must be provided to all service providers including BSNL and should be based on the principle of below cost access provision.

- There can be no ground for discrimination between BSNL and private operators even in those areas where the TRAI has permitted forbearance in tariff fixation. Forbearance looses its significance because the private operator cannot fix the

tariff above the tariff fixed for various services by BSNL. BSNL, being the dominant operator, is the price leader.

- ADC funding should be provided only to BSNL for the wireline subscribers in rural areas.

b) Would it be reasonable to consider not funding the ADC for other basic service operators but at the same time not charging from them for ADC also?

- ADC is to be provided to those operators who have a legacy network including BSNL.

- There should be level playing field. Hence, ADC should be provided to all fixed service providers irrespective of the nature of roll out i.e. urban or rural.

- In a competitive and open market, Regulation should be such as it is transparent and non-discriminatory and applicable equally on all service providers.

- Any charge on private fixed line service would be a severe blow to availability (competition), quality, and affordability of fixed line voice and broadband services, and to sector growth in general.

- There is no justification why the other fixed service provider should not contribute to ADC.

c) ADC should be given for WLL (F) lines

- ADC funding should be limited to those WLL (F) connections which are provided strictly in rural areas on rural tariffs.

- No ADC should be paid to fixed wireless networks.

- ADC should be provided irrespective of nature of access: wireless or wire line or location, viz. urban and rural.

d) ADC as percentage of revenue

- The imposition of ADC on the basis of percentage of total adjusted gross revenue of the operators is totally unworkable.

- It is time to move to revenue share ADC regime. As of today, the service providers face tremendous difficulty in servicing the per minute ADC regime in terms of inter-operator billing and settlements. A revenue share ADC regime would ease the collection and disbursement of ADC.

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- The ADC on international calls should continue on a per minute basis till the overall requirement of ADC reduced significantly.

- The present method of collection has only resulted in abuse and misuse of ADC by some operators for unlawful gain or to subsidize their own services.

- ADC be contributed in two ways viz. out of the percentage of the revenue share from mobile revenue and call by call basis from the ILD incoming calls apart from self generated ADC which the fixed line operator keep.

e) Whether percentage could be different for long distance and international long distance calls

- This would involve very complicated accounting procedure and a great level of auditing, which will lead to more disputes and litigations.

- The percentage of revenue share should not be different for different services.

- A uniform percentage of revenue share regime should be applicable for long distance and international calls to avoid any grey market which is a threat to national security.

- It would be difficult to implement as local and long distance tariffs are often clubbed together by the service provider so as to attract high-end subscribers.

- A differential revenue share regime may be difficult to implement and could create the same problems of misreporting / bypass as have been witnessed in the current regime.

f) ADC regime could be part of the USO regime.

- The scope and the objective of the two are totally different and therefore, there is no rational for the merger of USO and ADC.

- ADC and USO funds should be combined and the ADC collected from the service provider should be deposited in the common fund. By combining the two funds, we can ensure that USO fund is fully utilized and no additional burden is unnecessarily imposed upon customers.

- ADC regime should become a part of USO regime immediately without imposing any additional burden on the

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subscribers in the form of additional levy beyond 5% which is presently paid for the USO.

- ADC could be part of USO in an about 2 to 3 years. Nonetheless, in the interregnum period it has to be ensured that the contribution to USO fund are fully disbursed and not utilized for boosting the general revenue of the government.

- Once ADC is recovered on revenue share basis, then there is a no rational for having a separate ADC and USO regime.

g) Should percentage of revenue for ADC cover all type of services?

- Internet telephony and VPN services provided by ISPs, provision of domestic bandwidth by IP category II service providers, domestic lease line services, international lease line services definitely call for levy of ADC.

- As we move towards phasing out ADC we should not bring more services under ADC.

- Non-imposition of ADC on Internet telephony has created a non-level playing field between ISPs and licensed ILDOs putting the later at a competitive disadvantage.

- Outgoing intra-circle mobile to mobile calls and revenue from roaming also call for levy of ADC.

h) Carriage charges

- The carriage charges should be left open for negotiation between NLDOs and access providers.

- Three slabs may be defined for carriage charges and 50% more than normal rates may be prescribed for J&K, NE, Orissa, Rajasthan, HP, A&L Island, Uttaranchal, Lakshwadeep.

- Carriage charge should continue to be regulated in the absence of implementation of services like carrier pre-selection and carriage access code.

- A ceiling as well as floor should be mandated by the regulator.

- TRAI should prescribe ceiling carriage charges for different slabs and leave it to access providers and NLDOs to negotiate the actual carriage charges payable from time to time based on market forces.

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i) Termination charge on international incoming calls

- BSNL has all along advocated higher termination charges on ILD calls terminating on all networks. This would involve them in checking the grey market and better enforcement.

- Termination charge for incoming international calls should be higher than for domestic calls.

- Both domestic long distance and international long distance termination charges should not be negotiable as that would result in differential termination charges across various players thus putting to disadvantage the smaller / niche players' vis-à-vis those with a sizable market share.

- The Authority should allow the access provider to negotiate with the ILDOs for termination charges on ILD incoming calls.

- ADC on incoming international calls should be merged with the termination charges so as to eliminate grey traffic.

Above summary of comments indicate that there are divergent views expressed by various stakeholders on the issues raised in the consultation paper. All the comments received from various stakeholders are placed on TRAI's website: www.trai.gov.in.

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IV. Examination of the issues

22. The Authority has taken the various comments and inputs into consideration, and analysed the matter further. The views of the Authority on the main issues are as follows:

a) Whether ADC should be provided

23. The Authority considered the existing situation, the prevailing tariffs and other relevant likely developments and observed that there is still a justification of continuation of ADC mainly for BSNL. The ADC regime has been put in place by the Regulator, within the context of the evolving situation in the telecom market, to manage the sustainability of the operations of the fixed line operators in a competitive environment, a transition to overall low tariff regime. This supports for transition is particularly important for network with large coverage and focus on important social objectives in the

telecom sector. However, the ADC is a depleting regime mainly to give time to incumbent, etc. for rebalancing of tariffs during a transition period and it will be phased out over time and will be merged with the USO Regime and any lines with below cost operation especially in rural areas with regulated tariffs having any justification for access deficit needs to be covered through USO. The Authority is of the opinion that by March 2008, i.e. next two years time frame any lines in rural segment having justification for funding access networks will be required to be considered through USO and ADC will be phased out. In view of this background and its above explanation relating to the ADC and USO regime, the Authority is of the view that at present ADC should continue to be provided though with a reduced amount.

b) How much ADC should be provided?

24. TRAI in its Regulation dated 29th October, 2003 (para-52 of Explanatory Memorandum) had indicated that the total access deficit amount to be funded for BSNL after correction for net revenue from local calls and including the deficit of 0-50 kms. is Rs.5335 crore. Further, TRAI vide its Regulation dated January 6, 2005 (para-36 of Explanatory Memorandum) had decided that the full ADC amount estimated would not be provided to the service providers and the overall ADC amounts were specified at a reduced level for several reasons. These included, inter alia, that there would be an increase in the subscriber base in the period when the ADC Regime would be implemented compared to the subscriber base actually used in the calculations. On this basis, though the estimation of ADC to BSNL was done at Rs.4790 crore but even at that time it was expected that because of increased traffic the total ADC amount payable to BSNL could go up to Rs.5,335 crores. The Authority had considered that since ADC Regime has to be reduced to zero in next 2 years, therefore, in the year 2006-07 the admissible ADC to BSNL would be reduced to 2/3 of Rs.4800 crore which is equal to Rs.3200 crore. It is again reiterated here that right from October, 2003 Authority has been emphasising on the point that ADC regime is a depleting regime and should be replaced by or merged with USO regime from

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2008 – 2009 onwards. The ADC is given for a temporary period for rebalancing the tariff and it cannot continue in perpetuity if the rebalancing is not done or reversed rebalancing is resorted to. Presently the government is collecting the USO amount as 5% of adjusted gross revenue as a part of revenue share licence fee, but virtually the whole amount is not being given to the USF administrator as yet for disbursement. Over time, there would be increasingly large amounts of funds, available from the levy of USO. For instance, in the coming years, amount collected for USO would be more than Rs .5000 crores per year.

25. The Authority expects that in the near future the USF will be fully functional, that it will receive the relevant amount for disbursement under the USF, and that these funds will be disbursed to the service providers as per the procedures decided in that regard.

26. The Authority has given sufficient time for tariff rebalancing and the ADC is mainly for the historical cost and not for the futuristic cost. The Authority is of the opinion that if same amount of the ADC will continue for the incumbent or any other operator tariff rebalancing will never take place and this will put undue burden on the subscribers because of the continuity of ADC Regime in perpetuity. As mentioned above, Authority in its October, 2003 Regulation has done detailed calculations in consultation with BSNL for the total ADC amount based on historical costs and Authority does not consider it necessary to continue to do these calculations based on historical data again and again.

c) Should other fixed line operator continue to get ADC?

27. The Authority recalled that in the IUC Regulation dated January 24, 2003, all the fixed line operators were treated at par with BSNL. In the IUC Regulation dated October 29, 2003 the ADC was imposed on cell-to-cell inter-circle calls and on incoming international traffic to cellular phones which were to be paid to BSNL. The other fixed operators were getting ADC on the terminating traffic on their fixed wireline as well as retaining the ADC on outgoing calls originating from their fixed subscribers. In the Regulation of January 6, 2005 the

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other fixed line operators were allowed to retain ADC on outgoing traffic from their fixed wireline subscribers and no ADC was paid to them on the traffic terminating in their fixed line network. This was done because the other fixed line operators were able to generate the estimated ADC from their originating traffic including international originating traffic itself. In this Regulation also the same principle of ADC retention by fixed line operators has been followed. In other words, the fixed line operators are not required to pay ADC in terms of percentage of revenue share from their fixed line operations and also from outgoing international traffic from their fixed line subscribers. The Authority has taken this decision on the basis of the two important criteria, namely the distribution of the wireline and wireless subscriber base and second the distribution of subscribers in urban and rural areas as may be seen from the table No. 4. , position of the BSNL and other fixed line operators is very different when they are compared on the basis of these criteria. Authority has also noted the recent decisions of Hon'ble TDSDAT and Licensor on fixed wireless telephony. Other fixed line service providers are mainly adding their WLL(F) subscribers in urban areas. Though there is no justification of ADC for other fixed line service providers yet since other fixed line operators have to compete in the market, therefore, they are being treated at par with BSNL as far as retention of ADC in terms of percentage of fixed wireline AGR and on outgoing international calls from their fixed wireline subscribers.

d) Should the revised ADC Regime move to Revenue Share Regime?

28. The Authority had mentioned as early as in 29th October, 2003 Regulation that they would like to migrate to a revenue share regime as far as ADC recovery was concerned but it was not possible to implement this regime earlier because it would have increased the burden on fixed line rental and local call charges. Now, since the revenue base has increased substantially and the Authority has also decided to reduce the ADC amount as it is a depleting Regime this percentage revenue share will be significantly

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lower than before, and therefore, migration to revenue share regime will not have any significant impact on rental and local call charges.

Table -6: Year-wise Adjusted Gross Revenue

AGR (In Rs. Crores)				
	2003-04	**2004-05**	**2005-06**	**2006-07**
			Projected	
All Wireline	33911	32099	32604	**33228**
All Mobile (including WLL(F)	11604	20181	31747	**51825**
All NLD	1472	2837	3246	**3479**
All ILD	1525	1335	1468	**1615**
Total	48512	56451	69065	**90148**
Less Rural Revenue		4749	4850	**4981**
Net AGR for ADC recovery		**51702**	**64215**	**85167**

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29. The main concern of the Authority was that the contribution of ADC from ILD sector should remain at the existing level so that the ADC burden on domestic sector would reduce further. The contribution from incoming international calls in January, 2005 Regulation was estimated at Rs.1662 crore and from outgoing international calls was estimated at Rs.442 crore. As explained earlier, the Authority has decided to bring down the ADC to BSNL from Rs.4,800 crore to Rs.3,200 crore. This would mean that after getting Rs.2,057 crore from ILD (incoming and outgoing) calls the remaining Rs.1,143 crore would be recovered from the domestic sector in terms of percentage revenue share on AGR of BSNL, private cellular operators, UASL operators, NLD operators and ILD operators. The Authority has also decided that the fixed line operators other than BSNL would be permitted to retain ADC in terms of percentage revenue share of the fixed line phones and ADC generated from outgoing international calls originating from their fixed line subscribers as was the principle in January, 2005 Regulation also. The Authority also observed

(Table-7 given below) with the policy initiative to reduce per minute ADC from time to time on incoming international calls (from Rs.5.50 to Rs.4.25 to Rs.3.25) there is substantial increase in minutes of international incoming calls. It shows that there was a high elasticity of demand in incoming international minutes but the same elasticity was not available in outgoing international minutes as mostly marginal subscribers are being added in the recent past. Authority would continue to monitor this trend and would initiate any further review, if required.

Table -7: International Long Distance Minutes

Minutes in Millions			
Based on Data reported by ILDOs			
Year	**Incoming Minutes**	**Outgoing Minutes**	**Total Minutes**
1999-2000	1769	473	2242
2000-2001	2167	527	2694
2001-2002	2546	575	3121
2002-2003	3110	764	3874
2003-2004	4043	1176	5219
2004-2005	5251	1661	6912
2005-2006*	7685	2308	9993
2006-2007**	11247	3208	14455

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* Reported minutes from ILDOs for 7 months + Forecast for 5 months.
** Forecasted minutes taking the same growth rate of last year.

30. Further, the Authority also examined whether it would be possible to fix revenue share on all telecom services including ILD sector. The AGR of ILD sector is around Rs.1600 crore and ADC which is around Rs.2000 crore is not part of the AGR of the ILD operators. If this amount is to be recovered from ILD sector then percentage revenue share would be very high and unreasonable. Further, if the percentage revenue share on ILD AGR is very high in comparison to the percentage on domestic services then this would lead to a very high arbitrage and consequently the tendency of generating grey traffic. Keeping this in view, the Authority has decided that on ILD (incoming and outgoing) calls, the existing method of charging ADC in terms of per minute basis should continue.

31. ILDOs revenue is dependent on the settlement rate between international players and ILDO. ADC is the part of this settlement. The final transaction between them is on a net basis. If the ADC is changed to percentage revenue basis, ILDOs may reduce settlement rates for both incoming and outgoing calls thus reducing their AGR. Therefore, total amount of ADC on percentage revenue share will be affected severely, and this can be done without affecting their net revenues. ILD Operators may also load percentage of ADC on outgoing and incoming revenue as per their convenience and may distribute higher percentage on outgoing international traffic revenue thereby defeating the basic objective of the Authority to give relief to the domestic consumers.

32. Another alternative that was examined was fixing a higher termination charge on incoming international calls which would be passed on to the terminating access provider and then a percentage revenue share fixed on access provider's AGR such that the recovery from ILD sector still remained at the existing level. This alternative was not considered viable by the Authority because the practice of fixing higher termination charges for incoming international calls vis-à-vis domestic calls is not prevalent in any other country. Further the termination charges in India are cost based, and on the principal of work done, there is no difference between International calls and domestic calls terminating in the operators network. Higher termination charge would also increase the arbitrage and hence grey market. This higher arbitrage would also provide gain to integrated operators as they can transfer their revenues from one account to another.

33. The Authority also examined the feasibility of imposing a higher percentage on ILD revenue of access providers itself. It was found that operators may design different tariff schemes with high rental and low call charges for all kind of calls including ILD calls. Thus the ADC recovery on a percentage revenue share of ILD call revenue will severely fall.

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34. Due to these reasons, the Authority decided that it would be better to charge ADC in terms of per minute basis both for incoming and outgoing international calls as is the prevailing practice. Since, the incoming and outgoing international call minutes have gone up substantially, therefore, per minute charges for both incoming and outgoing calls will come down.

35. Keeping in view the above, the Authority has decided to recover the ADC amount as follows:-

i. A per minute charge on incoming and outgoing international calls.

ii. Uniform percentage revenue share on the AGR of all telecom service providers, viz. UASLs, BSOs, CMSPs, NLDOs and ILDOs. While calculating AGR for purposes of percentage revenue share, the revenue generated from the rural subscribers will be deducted only from the access providers' revenue.

36. The main criteria adopted by the Authority while deciding the rates of ADC was to maintain the total collection of ADC at around the present Rs.2,000 crore from international traffic, as also to reduce the burden on domestic subscribers. The percentage revenue share should be fixed such that the remaining ADC was recovered from the percentage revenue share route.

37. In its assessment of whether it is appropriate to move at present to a revenue share ADC, the Authority took note in particular that AGR will be around Rs. 90,000 crore in 2006-07. Therefore, it is an appropriate time to switch to Revenue Share as now there will be less percentage across the sector. But at the same time, the Authority has also noted that the ADC in the form of revenue share from the international traffic will come down drastically and this is not a desirable situation especially to give particular emphasis to provide a strong basis for further decrease in domestic prices so as to achieve the target of 250 million subscribers by December, 2007. Therefore, keeping in view both the objectives the Authority has decided that for international traffic (outgoing as well as incoming) the per minute regime shall continue but at a lower ADC rate since number of minutes of usages has increased in both outgoing as well as incoming international traffic but the contribution from ILD sector towards ADC would be retained

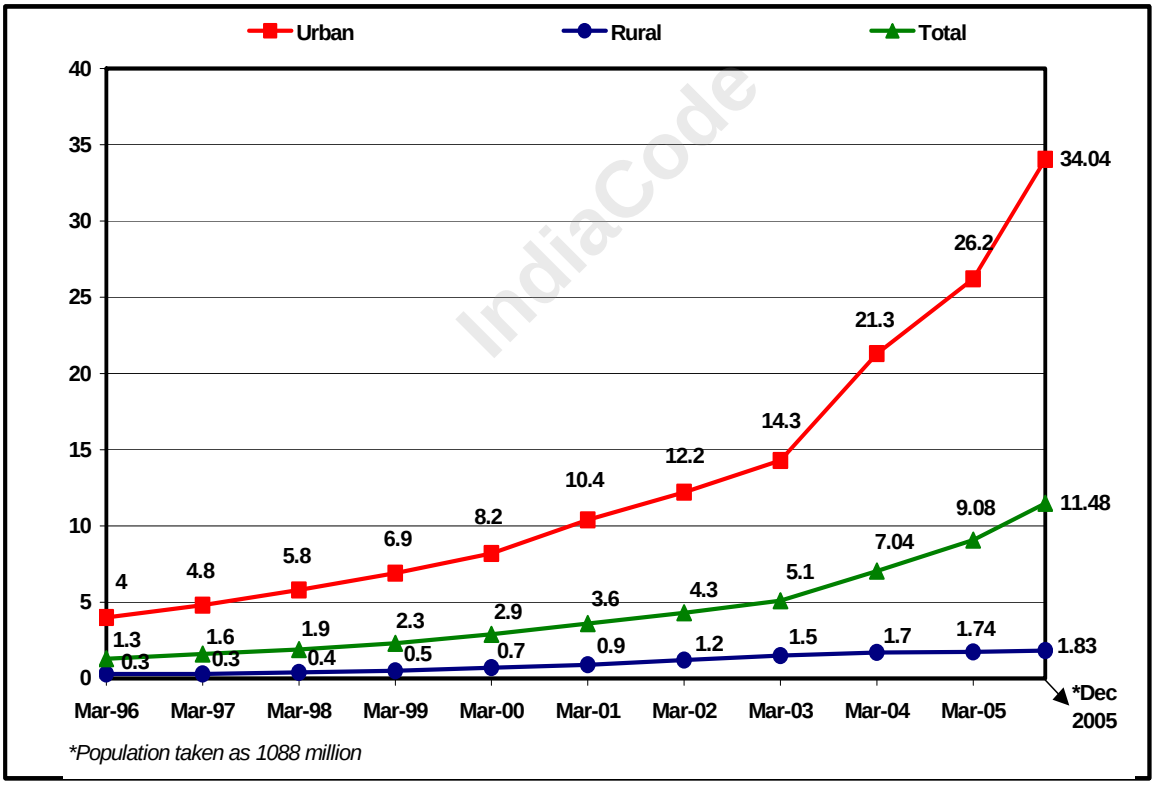
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at the level estimated in January 6, 2005 Regulation which is approximately Rs.2,000 crores. There will not be per minute ADC on domestic Calls which will pave the way for reduction in domestic tariffs.

e) Substraction of the rural revenue

38. Inadequate access in rural India, where 70% of the population lives is always a big concern for the Authority. Therefore, it is vital that an enabling environment through policy and regulatory measures is created for the transformation of the existing 'digital divide' into 'digital opportunity'. Widening gap between urban and rural tele-density may be seen from the following figure-1.

Fig-1 :Rural-Urban Tele-density – widening Gap



This graph clearly shows the huge success in our policies towards telecommunications services in urban areas and a failure in replicating the same for rural areas. The Authority has already given its recommendation to Government on growth of telecom services in rural India. This is one more endevour to provide incentive to the operators to develop their infrastructure in rural areas for narrowing the gap between urban and rural tele-density

39. TRAI in its consultation paper dated 17th March, 2005 has raised the issue whether ADC should be applicable for non-rural lines only. As explained above, one of the reasons for providing ADC to BSNL was that almost 100% rural subscribers have been provided by them, and therefore, in a percentage revenue share regime it is logical that revenue earned from rural subscribers should not be included while calculating the percentage revenue share. Keeping this in view, the Authority has decided that while calculating the percentage revenue share the revenue earned from the rural subscribers is to be subtracted from the total revenue AGR of the access providers, NLD and ILD operators.

40. BSNL will retain the ADC amount on its fixed wireline AGR services. While calculating the self generated ADC from BSNL fixed wireline operations, the amount will be a calculated as a percentage on its AGR after subtracting the revenue from rural subscribers . The ADC on outgoing international calls from fixed wireline subscribers will be additionally retained, and thus, the total self-generated ADC from BSNL wireline operations will be in three parts, i.e., percentage revenue share of wireline operations and ADC on outgoing international calls. The AGR of rural subscribers is not available with the Authority because BSNL has reported the consolidated revenue of rural subscribers. Since this amount (approx. Rs. 5000 crore) is being deducted from a larger revenue base of the order of Rs.90000 crore for estimation of percentage revenue share, therefore, even if equivalent AGR of rural subscribers is not available, it will not make a substantial difference in the calculation. Therefore, the Authority has not applied any correction on this amount.

f) Quantum of ADC

41. Break up of ADC funding to BSNL by other operators and the self funding by BSNL fixed operator for October, 2003 and January, 2005 regimes is given in Table-5,. 6th January, 2005 Regulation had retained approximately the same ADC amount and only per

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minute ADC collection was adjusted due to increased minutes of traffic. Secondly, total ADC on incoming international calls was paid to BSNL in January, 2005 Regulation. In October, 2003 Regulation the ADC on incoming international calls was paid by ILDOs to the respective fixed line operators and ADC on incoming international calls to cellular operators was also being paid to BSNL. Further, on cellular calls terminating in fixed operators other then BSNL in October, 2003 Regulation, the ADC was being paid to terminating fixed line operator but in January, 2005 Regulation thus ADC was also to be paid to BSNL. This was mainly because of the fact that the retention of ADC by fixed operators other than BSNL was enough to meet their ADC requirement.

Table -8 :Summary Of Estimated ADC Calculation For Year 2006-07

Stream	ADC Rate	ADC in Rs. Crores
Revenue Share	1.5% of AGR for all service providers as given in Table-6 above	1278
International Incoming Calls	Rs. 1.60 per Minute	1800
International Outgoing Calls	Rs. 0.80 per Minute	257
Total		3335

42. ADC contribution from other operators to BSNL with reference to October, 2003 Regulation increased in January, 2005 due to following reasons:-

i. Total ADC on Incoming international calls was paid to BSNL.

ii. ADC on outgoing cellular calls terminating in fixed networks other than BSNL was also paid to BSNL

iii. Due to large growth of cellular subscribers beyond February, 2004 also increased the traffic minutes of cellular traffic which led to higher contribution of ADC to BSNL.

iv. Since BSNL fixed wireline growth was negligible and total ADC paid to BSNL was more or less same as in October, 2003 Regulation, therefore, BSNL's self generated ADC was lower in January, 2005 Regulation in comparison to October, 2003 Regulation.

43. Authority had already mentioned in October, 2003 Regulation that ADC will be a depleting Regime. Since ADC was mainly on account of deficit in the wireline cost based rentals and the number of wireline subscribers is not changing. Therefore, the ADC amount estimated earlier by the Authority need not be calculated again but since this is a depleting regime, therefore, the earlier calculated value of ADC has to gradually come down so that it becomes zero in the year 2008-09 and if at that stage the Authority feels that some support is required then that can be given from Universal Service Fund and the Authority would appropriately make a recommendation to the Government on this issue so as to increase the scope of USO Fund. Keeping this in view, the Authority has not done any fresh calculations for calculating the admissibility of ADC to BSNL and other fixed line operators. As per January, 2005 Regulation mentioned above, the ADC admissible had to be brought down to zero by 2008-09. Therefore, the ADC in the year 2006-07 should be Rs.3,200 crore to BSNL out of a total of about Rs.3,335 crore for all fixed line operators including BSNL. As per January, 2005 Regulation the contribution of BSNL towards total ADC collection came down to Rs.1651 crore as against Rs.2264 crore in October, 2003 Regulation. The funding from others increased from Rs.2528 crore to Rs.2805 crore. The increased contributions from others mainly came due to growth of cellular subscribers which in turn increased the incoming international traffic. Secondly, there was a larger contribution by cellular subscribers for domestic calls also.

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g) Carriage Charges

44. The Authority considered the views of all stakeholders in the matter of carriage charges. The overwhelming opinion of the stakeholders in this regard is that the Authority should continue to fix carriage charges and regulate the same at least as a ceiling charge. The underlying reasons given by the operators for fixation of carriage charges are as follows:-

i. Implementation of CAC, Carrier pre-selection is yet to take place.

ii. It would check high charges that may be levied by incumbent where it is the only NLD operator.

iii. It would prevent the integrated operator from cross subsidizing on the long distance carriage charge resulting in a non-level playing field to stand-alone operator.

45 Going forward, the Authority also considered the views of the stakeholders regarding the level at which be carriage charges should be fixed. One industry association has pointed out that, in view of the sharp reduction of over 70% in the ceiling tariffs for domestic bandwidth, the cost of carriage would also need to be significantly revised downwards. And in their view, for distances over 500 kms, the carriage charges should be reduced from Rs.1.10 per minute to around Rs.0.30 per minute. This in their opinion would go a long way in hastening the death of distance and convergence in the cost of carriage for intra and inter-circle calls. A stand-alone player has in their written submission to the Authority stated that as on date carriage charges are on the higher side. Once the carriage charges are reduced the overall tariff will fall resulting in increase in affordability which in turn will fuel growth in tele-density.

46 The incumbent operator (BSNL) has stated that, it is operating in areas like North Eastern States, J&K, A&N Islands, Uttranchal, Lakshdweep Islands, H.P., Rajasthan, Orissa, etc., which meant higher carriage charges on account of high cost of operations. NLDOs are not disallowed to lay their own backbone for purposes of carrying long distance calls and to that extent there may be requirement for investments by the NLDOs in remote and inaccessible areas where BSNL is the only operator.

47 Evidence on retail tariffs for long distance calls charged by the service providers was also examined which suggests that there has been a substantial reduction in the tariffs for long distance calls since the implementation of the IUC Regulation, 2003. The Authority recalled a case of an NLDO seeking to offer a weighted average carriage charges way below the ceiling tariffs about a year back which also suggested

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intense competition in this segment. The evidence on retail tariffs for long distance calls also suggest that, the Authority need not fix carriage charges for each of the distance slabs as a number of operators have brought in uniform long distance tariffs in the country.

48. The Authority also examined the cost structure of various NLDOs, including the incumbent with respect to their backbone infrastructure. The cost estimates of the network elements differed considerably across operators, particularly with respect to the incumbent. Deployment of long distance backbone by the new entrants is seen to be predominantly in routes covering metros and state capitals. Only the incumbent has the nationwide coverage with its backbone infrastructure. If carriage charge is left open to open ended mutual negotiation between Access Providers and NLDOs, negotiation may not take place as an operator who has monopoly in some remote areas may insist for unreasonable higher carriage charge.

49 The Authority took note of the recent developments in the licensing policy in respect of long distance telecommunication services in the country, which have facilitated much easier entry at a substantially lower entry fee with the reduced licence fee. This coupled with the steep reduction in the ceiling tariffs for domestic bandwidth will in all likelihood lead to more competition and reduced cost of carriage services during the implementation period. Keeping these factors in view the Authority considers appropriate to mandate only one carriage charge which is distance neutral ceiling. In this regard, the Authority has also reiterated its thrust to simplify the regulatory regime wherever competition is picking up and to create conditions, which would facilitate the ongoing convergence and death of distance that is increasingly taking place due to technological and market developments. In the meantime till the competition sets in completely in the market and till the backbone infrastructure is deployed by new entrants also in areas where the incumbent is the only operator, the Authority is of the view that at least a ceiling on carriage charge is necessary to be maintained. Towards this end, the Authority carried out a limited exercise of arriving at an appropriate cost estimate to fix a ceiling carriage charge for the implementation period.

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Methodology of arriving at cost estimates for carriage charges

50. The Authority recalled that in its IUC Regulation 2003, it had used the cost data of BSNL because at that time BSNL was the pre-dominant NLDO having nationwide coverage for providing long distance call services within the country. Since then, other operators viz. Bharti, Reliance and VSNL have also started providing national long distance services.

51. The Authority has now used the data on costs of these operators based on the reports of the NLDOs submitted to the Authority under the Reporting System of Accounting Separation Regulation 2004. This data is now available for the financial year ending 2004-05. One major limitation of this data source is that the non-financial information pertaining to one major operator is not available as of now despite repeated reminders to that operator. Nevertheless, the Authority has derived the required non-financial information i.e. data on traffic based on information on other available parameters. The estimated minutes are given in the Table below:

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Table-9 :Total Inter Circle Minutes (Carriage Minutes) in Crores

Year	Inter Circle Minutes
2004-05	3139
2005-06*	4790
2006-07**	7619

*Inter-circle Minutes as reported by Access Providers + Forecasted for later months

**Forecasted Minutes

52 The Authority has arrived at the cost estimates based on the average cost of BSNL and other NLDOs. The costs data as available in the Accounting Separation reports, has been used for purposes of arriving at the average costs of these operators. Further, the Authority has projected the cost of the provision of long distance services by the NLDOs by assuming 10% increase for the year 2005-06 and another 10% increase for the year 2006-07. This is justified on the ground that the NLDOs have firm plans to expand the coverage to areas which are likely to be other than the ones covering metros and State capitals. It is also expected that the operators are required to make investments in equipments and other infrastructure facilities that may be required to achieve the stipulated quality of services by the Authority. Further, the discussions with industry

sources and other experts indicate that the likelihood of spurt in the growth of national long distance minutes of usage is very high on account of the fact there is a sudden jump in the additions to overall subscriber base in the country. These factors are likely to result in increase in the order of investment required and therefore a likely increase in the total cost for the operators.

53. The average cost per minute after considering the cost in respect of all NLDOs comes to Re. 0.52. (For details see Table given after this paragraph)Considering the fact that the Authority is now fixing a ceiling for carriage in respect of all distances, all destinations and all terminating networks, it becomes necessary to build in a mark-up in the cost estimates. Discussions with the industry sources and the internal analysis in this regard suggest that the mark-up for the ceiling on these grounds could be in the region of 15-25%. Authority however decided to adopt the highest of the range i.e.25% for this purpose. This resulted in the ceiling carriage charge of Re.0.65 per minute. The Authority is aware that this ceiling limit is higher than the value of Rs. 0.20 per minute prescribed for calls up to 50 kms in the existing Regime and there may be tendency for some operators to charge this higher amount. One alternative before the Authority was to prescribe if fresh ceiling for distance up to 50 kms. The other alternative was that should such a situation arise, competitive forces will encourage other operators to set up infrastructure to cover such distances. Adequate break-up data was not available with the Authority to fix a fresh ceiling for these short distances, and therefore, the Authority has decided to retain only one distance independent ceiling for carriage charges. The Authority has also noted that already service providers are carrying their traffic through VOIP networks and this trend may increase, especially after issue of recent amendment in the license agreement of UASL/NLD by Department of Telecom and introduction of NGN by various service providers. The Authority could have utilized FLLRIC for estimation of carriage charges which could have led to a drastic reduction in ceiling, and therefore, as a transition that methodology was not adopted. It is also mentioned that detailed data for FLLRIC estimation was not available with the Authority. A situation will be kept under observation and if required, a review will be carried out.

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Table-10: Calculation of Carriage Charge for 2006-07

Particulars	Unit	Value
Total estimated cost of all NLDOs (Inter Circle)	In Rs. Crores	3670
Total Forecasted Inter Circle Minutes (Carriage Minutes)	In Crores	7619
Cost per Minute	In Rs. Per minute	0.48
Add License Fee	In Rs. Per minute	0.03
ADD ADC (Revenue Share Percentage)	In Rs. Per minute	0.01
Total weighted average cost of carriage per minute	In Rs. Per minute	0.52
Add Mark up (25%)	In Rs. Per minute	0.13
Per Minute Ceiling for Carriage Charges	In Rs. Per minute	0.65

54. Although, several countries had used Forward Looking Long Run Incremental Cost (FLLRIC) i.e. a methodology under which only a portion of stranded costs is included in the calculation of costs, the Authority has once again refrained from adopting this methodology keeping in view the need to incentivize investment in infrastructure by the new entrants who are presently operating only in routes covering the metros and State capitals.

55. This ceiling charge shall facilitate flexibility to operators to arrive at appropriate carriage charges among themselves. With this the Authority has moved away from a regime of specified carriage charges introduced in 2003 to a regime where the carriage charges are fixed as ceilings.

56. Having taken this step towards deregulation of carriage charges, the Authority would closely monitor the trends and patterns of carriage charges that would be seen in the market during the implementation period. If there is any aberration or distortion in the market in the matter of carriage charges being levied and collected by the NLDOs with respect to their own traffic and with respect to the traffic of other access providers, the Authority would not hesitate to review this regulatory regime.

57. The interconnection agreements would continue to be filed by all the operators who are providing the carriage services and also those operators who are availing the carriage services from the NLDOs. The Authority

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would also take necessary steps for implementation of Carrier Access Code (CAC)

h) Mobile Termination Charge and Fixed line Termination Charge

58. Due to increased volume of traffic, it is likely that the termination charges especially for mobile services may come down. The Authority has also estimated and found that mobile termination charges as well as fixed termination charges could be lower than the present specified level of Rs.0.3 per minute. In spite of this, the Authority did not reduce the mobile termination charges and fixed termination charges mainly on account of the following reasons:-

i. With the increased growth of subscribers, the addition in capacity of the network also has to match both in terms of the radio equipment capacity and also switching and transmission equipment capacity. If these additions in capacity do not match with the growth of subscribers then the quality of service deteriorates which is also a major concern of the Regulator. Regulator expects that along with the growth the service providers adds to the capacity of networks so that there is no deterioration in the quality of service which is being experience now for various parameters which has been laid down by TRAI in its QoS Regulation dated 8th July, 2005.

ii. Mobile termination charges in India are not only equal to fixed termination charges but they are even lower than one US cent per minute, which is not only lowest in the world but also it is 12 to 24 times lower than mobile termination charges in other countries of the world. **(Indicated in the table below)** This also should be noted that in all countries, the mobile equipments are supplied by the same set of vendors.

iii. As mentioned earlier, the mobile coverage in terms of population in India is only about 35% of the population which is lowest in the world and mobile operators have to increase their penetration into rural areas and therefore, large investments are to be made to cover even the 77% (world average) of the country's population. As networks penetrate into interiors and there is evidence that this is happening.

iv. The exponential growth in mobile subscribers has been possible because of various innovative and competitive tariff schemes which may have a higher component of incoming calls. If mobile termination charges are decreased then the viability and sustainability of these tariff plans may not be possible and this may retard the growth of mobile subscribers in the country. It should be noted that the main concern of the Authority here is not to ensure the viability of a tariff plan because that is the main responsibility of service provider in an unregulated tariff regime but the Authority has a

responsibility to achieve a higher growth and tele-density in the country, and therefore, it is a matter of concern.

Table - 11: Termination Rates per minute for mobile service in different countries (June, 2004)

Name of the country	Termination rates per minute	
	Fixed	Mobile
	(US$)	(US$)
Australia	0.016	0.152
Brazil	0.020	0.080
China	0.010	0.025
Switzerland	0.017	0.163
Japan	0.022	0.130
India	0.007	0.007

59. Further, the World Bank (InfoDev Division) in its Report on Regulating Competition, Interconnection and Prices dated December 23, 2005 has mentioned as follows:-

> *"**c. Mobile Termination Charges, Mobile Penetration and Universal Service Goals*** - Developing countries with low penetration levels are experiencing a growing tension between encouraging further penetration of mobile services with above-cost mobile termination charges and the downward pressures of mobile termination rates coming from market and regulatory forces. This is especially valid in low penetrated markets in which there could be theoretical and practical justifications of having mobile termination charges above cost in order to cross subsidized access to the service (basically the handset) and mobile-to-mobile and mobile-to-fixed calls…….
>
> ……..However, in most of developing countries where landline penetration is far less ubiquitous, mobile telephone development is enabling countries to achieve universal service goals to segments of populations where landline or other telecommunication services have not ever penetrated before. High-income segments of population within developing countries are easily penetrated in the first stages of mobile telephony. The great challenge of the mobile industry is to continue penetrating low-income segments of the population and it is there where the source of industry growth will be coming from in most of developing countries. Any regulatory intervention to reduce mobile termination charges should weight the effects of reducing interconnection revenues that are used to cross-subsidized handset prices (i.e. access to the network to poorer segments of population) and outbound mobile prices, against the purported benefits that a reduction of charges would produce."

Keeping all these facts in view, the Authority decided not to review the termination charges and keep them same for both mobile as well as fixed termination charges. The Authority expects that mobile service providers would increase their penetration into rural and remote areas and the Authority would continue to monitor their progress in this regard.

i) Termination Charge on incoming international long distance call.

60. A proposition has been made by the access providers that they should be permitted to negotiate termination charges with the ILDOs. The Authority took account of all points made in favour and against allowing the access providers to negotiate the termination charges with the ILDOs.

61. The Authority recalled the situation few years ago, where such negotiation was allowed and the uncertainty and dispute that was created in the market at that time. In this context, the Authority noted that the moment the negotiation process becomes a dispute, which is likely; the prevailing legal framework is such that the Authority will not be in a position to take steps to address the matter. This will imply lack of certainty and increased possibility of discord in the market, which possibility may get further enhanced as BSNL has already entered the market as an ILDO itself. Termination is a monopoly , therefore, an access provider may ask for a high termination charge which could lead to non-settlement of termination charges between access provider and ILDO. This would result in the call not being completed because the network would be broken.

62. For incoming calls, since the end user is specified by the number on which the call comes, the access provider effectively has a monopoly position. In such a situation, the Authority is of the view that there is a major likelihood of the dominant operator exercising undue advantage through the negotiation process. The Authority further noted that allowing negotiations would permit a reduction of the ADC charge on international calls, but the total arbitrage margin would still remain high due to an increase in the termination amount retained by the access provider. As explained earlier, the lower ADC on international charge would result in a correspondingly higher ADC charge for the domestic calls, making them more expensive.

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The Authority also noted that BSNL was already being provided adequate funding for ADC and there was a USO regime in place for funding investment in rural and other net cost areas. Hence additional funding through negotiations would have certain adverse effects and would be over and above the amounts already being provided. In none of the countries termination rates are different between local, long distance and international long distance calls.

63. The Authority then examined the argument that if mobile operators received higher termination charges from ILDOs, they would have greater incentive to curb the grey market traffic. The Authority recalled that under the DOT letter of 23rd June 2003, mobile operators had already been directed to monitor and take requisite measures, in co-ordination with DOT's Vigilance Department, to address the illegal international traffic. The above argument appeared to suggest that the mobile operators should be paid an incentive in order to follow the aforesaid Direction from DOT. This argument cannot be accepted by the Authority. In fact, as BSNL has strongly stated in a related context that monitoring and penalty are adequate for addressing grey traffic, such monitoring and penalty should also be effectively put in place for the mobile operators. Moreover, the Authority has examined the proposition further and it does not appear that the incentive so provided to mobile operators will effectively address grey traffic as such.

64. In this background, allowing BSNL or any other access provider to negotiate termination charges with ILDOs would not be appropriate. The Authority foresees the reduction in the arbitrage margin along with better monitoring and vigilant action, to result in growth of international long distance calls through the legal channels.

65. The Authority also observed that with the policy initiative to reduce per minute ADC from time to time on incoming international calls (From Rs.5.50 to Rs. 4.25 to Rs.3.25), the increase in minutes of international incoming calls (46% as compared to last year) have shown that there was a great elasticity in incoming minutes whereas the same elasticity was not available in outgoing calls. This, the Authority considered may be due to the addition in subscriber base being of the marginal subscribers and would keep a watch on this trend.

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66. In this Regime the Authority expect that trend of increased incoming international calls as well as outgoing cellular traffic continued even beyond February, 2005. Subsequently, as per the definition given by Department of Telecommunication for WLL(F), most of the WLL(F) came in WLL(M) category. It is mentioned that in the earlier Regime, on the traffic originating from WLL(F) subscribers the operators were permitted to retained ADC but once it was defined as mobile i.e., WLL(M) then on the traffic originating from such mobile subscribers, the ADC payment has also to be made to BSNL. To summarize, the contribution of ADC from cellular mobile and WLL(F), which is treated as mobile, would go up and accordingly the self-generated ADC from BSNL would come down because the overall amount of ADC to be collected also has to come down.

Summary

67. In summary, while the Authority has addressed all the relevant issues and decided its IUC / ADC regime, it had to balance the achievement of various objectives. This can be seen in the context of certain key objectives emphasised during consultation process and previous IUC Regulation notified by TRAI. For example:

i) ADC is a depleting regime.

ii) ADC regime would be redued to zeo in next 2 years.

iii) Method of collecting ADC should be transparent, simple and easy to administer.

iv) Reducing the domestic call charges for general benefit of our consumers and death of distance.

v) Addressing grey international calls through a combination policies relating to incentives (arbitrage margin) and disincentives (monitoring and penalty) for such calls.

vi) Ensuring that benefit is not passed on to the foreign carriers and consumers at the cost of domestic consumers and operators.

vii) Enabling environment through policy and regulatory measures to reduce the widening gap between rural and urban tele-density.

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68. A crucial factor in the assessment was that for funding a given ADC amount more reduction in per minute ADC charge on international call would require higher percentage of revenue share for domestic calls. Likewise any increase in per minute ADC charge on international calls would result in a lower ADC charge on domestic calls but will increase the arbitrage. In this situation a trade off among these objectives, the Authority has to choose the appropriate balance while specifying the new ADC regime.

69. As in its previous review the Authority has again given the highest priority or emphasised the objective of reducing domestic tariff to meet consumer interests, and spurring sustained growth, flexibility to the operators, incentives for the rural telephony.

70. The Authority further noted that changeover to complete revenue share regime and its merger with USO is indeed the final solution for taking care of all anomalies and issues associated with ADC. However, till such time as contribution of ILD and NLD traffic to fund ADC continues to be disproportionate, this solution is difficult to implement. This will be possible when disbursement from USO reach their full proportion for rural telecommunication. Taking account of the increase in the overall minutes, exceptional growth in subscriber base, reduction in admissibility of ADC, pave the way for uniform rate across the country and ensuring that benefit not passed on to the foreign carriers at the cost of domestic consumers and operators. The Authority amends the previous IUC Regulation on the following lines:

- There will not be any per minute ADC on National Long Distance calls.
- The method of collecting the ADC amounts from International Long Distance calls will be same as before.
- The basic service operators, cellular service providers and UASL will pay 1.5 % of their AGR after deducting the revenue generated from rural subscribers and the revenue generated from their fixed line operations to BSNL as a ADC.

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- All NLDOs and ILDOs will pay 1.5 % of their AGR to BSNL as ADC.

- All UASL / BSOs will retain Rs. 0.80 per minute ADC of their outgoing international traffic.

- UASL / BSOs will not pay any percentage of revenue as ADC to BSNL for their revenue generated from fixed line operators.

- It will simplify the ADC regime.

- ADC on outgoing International Long Distance calls to be kept lower than ADC applicable on ILD incoming calls so that advantage of ADC reduction benefits Indian consumers more.

- Termination charge shall be at the existing level, i.e. Rs.0.30 per minute for mobile and fixed wirelines.

- Ceiling for Carriage charges shall be Rs.0.65 per minute. Service providers are allowed to negotiate within a ceiling value of maximum Rs.0.65 per minute for the long distance calls carriage charge for any distance.

- Revised regime will be implemented from 1st March 2006.

- The Authority will review the regime within six months of its implementation.

- The ADC rates and payment receipts of ADC for International Outgoing and Incoming Calls will be as per Table:-

Table-12 :ADC Rates and Payment Receipts for International Long Distance Calls

Sl.No.	Type of call	ADC Rate per minute	ADC payable to or retained by
1.	All Outgoing ILD calls originated from Fixed wireline Line.	Rs.0.80	Retained by originating Fixed Service Provider.
2.	All Outgoing ILD calls originated from Cellular Mobile / Wireless.	Rs.0.80	Payable to BSNL fixed by originating access provider through ILDO
3.	All Incoming ILD calls	Rs. 1.60	Payable to BSNL fixed by ILDO or NLDO

BY ORDER

[RAJENDRA SINGH]
Secretary

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New Delhi, the 10th March 2006

No.409-5-2005-FN

In exercise of the powers conferred upon it under section 36 read with paragraphs (ii), (iii) and (iv) of clause (b) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India hereby makes the following regulation to further amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

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1. Short title, extent and commencement:

   (i) This Regulation shall be called "The Telecommunication Interconnection Usage Charges (Seventh Amendment) Regulation (2 of 2006)"

   (ii) This Regulation shall come into force with effect from the date of its publication in the Official Gazette.

2. In Schedule III of The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), the following entries shall substitute the existing entries relating to paragraph 3.2.2:-

   "3.2.2 For calculating ADC , Adjusted Gross Revenue shall have the same meaning as given in the respective licences;

   PROVIDED that in calculating the ADC as a percentage of Adjusted Gross Revenue (AGR) of a Universal Access Service Licensee/Basic Service Operator, the revenue from Rural Fixed Wireline subscribers shall be excluded."

3. Explanatory Memorandum

This Regulation contains at Annex A, an explanatory memorandum to provide clarity and transparency to mattes covered under this Regulation.

BY ORDER

[RAJENDRA SINGH]
Secretary

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ANNEX "A"

EXPLANATORY MEMORANDUM

1. Many operators have raised the issue whether Clause 3.2.2 of the IUC Regulation also covers the revenue generated from the mobile rural subscribers.

2. Authority has noted this issue, while issuing The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006) Dated 23rd February 2006 and observed that scope of the ADC has to be limited to Fixed wireline only. Therefore, while calculating the percentage of AGR, the revenue generated from the rural fixed wireline subscribers has only been deducted.

3. TRAI in its Recommendation on growth of Telecom Services in Rural India dated October 3, 2005 had recommended that Cellular Mobile operators / Unified Access Service Licensees should be provided support from USOF for providing and sharing infrastructure in rural areas. As mentioned in IUC Regulation dated 23rd February 2006 there is an overlap between USO and ADC. The definition of rural cellular subscriber based on the address may lead to confusion and uncertainty in the market as far as deduction of revenue from rural cellular subscribers is concerned. Keeping this in view as well as the aspect that ultimately ADC also has to merge with USOF, Authority had decided that only revenue from rural fixed wireline subscribers shall be excluded for calculation of ADC in terms of percentage of AGR. Revenue from fixed wireless rural subscribers is also not to be excluded from AGR for calculation of ADC in terms of percentage of AGR.

4. Rural Wireline subscribers are those wireline subscribers who reside in rural areas. The definition of rural area shall be same as used in conducting the Census of India.

[RAJENDRA SINGH]
Secretary

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TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

TELECOM REGULATORY AUTHORITY OF INDIA

NOTIFICATION

New Delhi, the 21st March, 2007

THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007 (2 of 2007)

File No. 409-2/2007-FN.---------- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations to further amend the Telecommunication Interconnection Usage Charges Regulation, 2003(4 of 2003) ,namely:-

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1. (1) These regulations shall be called as the Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007.

(2) These regulations shall come into force with effect from the 1st day of April, 2007.

2. In the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), (hereinafter referred to as the said regulations), in the regulation 5, in paragraph (iv) , the words "and outgoing" shall be omitted;

3. In Schedule III to the said regulations---

(a) in paragraph 3.1,--

(i) the words "outgoing and" shall be omitted;

(ii) for the Table III, the following Table shall be substituted namely:

"Table III

Access Deficit Charge for International Long Distance Calls

Type of Call (1)	Access Deficit Charge per minute (2)	Access Deficit Charge to be paid to BSNL (3)
All Incoming ILD calls	Rs. 1.00 (Rupee One only)	By ILDOs or NLDOs referred to in clause (iv) of regulation 2";

(b) in paragraph 3.2,-----
(i) in sub- paragraph 3.2.1,---
(A) the words "outgoing and" shall be omitted;
(B) for the word and figures "pay 1.5%", the word and figures "pay 0.75%" shall be substituted;
(ii) in sub-paragraph 3.2.4, for the words and figures "up to 31-3-2006, the subsequent payments" the words and figures "up to 31-3-2006, the subsequent payments before the 1st April,2007" shall be substituted;
(iii) after sub- paragraph 3.2.4, the following sub-paragraph shall be inserted, namely:-
"3.2.5. For the financial year beginning on the 1st April, 2007 and effective till 31st March, 2008, on or after the 1st day of April,2007 during the said financial year, the Access Deficit Charge referred to in sub- paragraph 3.2.1, shall be payable at the rate of 0.75% of the Adjusted Gross Revenue for every quarter in that financial year and shall be paid in accordance within the time schedule for payment of licence fee mentioned in the licence of the concerned licensees.".

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(R.K. Arnold)
Secretary

Note1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29th October 2003 (4 of 2003) and subsequently amended vide notifications Nos --

(i) 409-5/2003-FN dated 25th November 2003 (5 of 2003) (First Amendment);
(ii) 409-5/2003-FN dated 12th December 2003 (6 of 2003) (Second Amendment);
(iii) 409-5/2003-FN dated 31st December 2003 (7 of 2003) (Third Amendment);
(iv) 409-8/2004-FN dated 6th January 2005 (1 of 2005) (Fourth Amendment);
(v) 409-8/2004-FN dated 11th April 2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21st September, 2005 in appeal No. 7 of 2005;
(vi) 409-5/2005-FN dated 23rd February 2006 (1 of 2006) (Sixth Amendment);
(vii) 409-5-2005-FN dated 10th March 2006 (2 of 2006) (Seventh Amendment)

Note 2. The Explanatory Memorandum explains the objects and reasons of these regulations.

EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007" (2 of 2007) dated the 21st March, 2007

1. BACKGROUND

1.1 The Access Deficit Charge (ADC) regime was put in place within the context of the evolving situation in the telecom market particularly the exponential growth trend and the sustainability of the fixed line operations in a competitive environment. This temporary support during transition was particularly important for the network with large coverage area and focused on important social objectives in the telecom sector. However the ADC, which in the very nature is for a limited period, is mainly to give time to incumbent operators for rebalancing of tariffs during a transition period. In the paragraph 101 of Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges Regulation, 2003" (4 of 2003) dated the 29th October 2003, it was stated that ADC regime would be phased out in general and be merged with the USO regime in 3 to 5 years.

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2. INTRODUCTION OF ADC REGIME/REVIEW OF ADC IN YEAR 2003

2.1 The framework of Interconnection Usage Charge (IUC) and ADC regime was established by the Telecom Regulatory Authority of India (herein after referred to as Authority) by "The Telecommunication Interconnection Usage Charges (IUC) Regulation, 2003" (1 of 2003) dated the 24th January 2003. This regime came into effect from 1st May 2003. The Authority reviewed the above regime and the revised ADC regime was notified by "The Telecommunication Interconnection Usage Charges Regulation, 2003" (4 of 2003) dated the 29th October 2003 (hereinafter referred to as the principal regulations) superseding the earlier regulations referred above and became effective from the 1st February 2004.

3. REVIEW OF ADC DURING THE FINANCIAL YEAR 2004-05

3.1 Keeping in view the higher growth in subscriber base and increased minutes available to fund the ADC, Authority issued another Consultation Paper on 23rd June 2004 on 'Access Deficit Review'. As a consequence of consultation, the Authority amended the principal regulations vide "The Telecommunication Interconnection Usage Charges (Fourth Amendment) Regulation (1 of 2005)" dated the 6th January 2005, and decided to continue the same amount of ADC fund as were specified vide principal regulations. Though the per minute rates were reduced due to increased minutes available to fund the ADC for the year 2005-2006 yet there was no reduction in the ADC fund. The said amendment to principal regulations became effective from the 1st February 2005. Under the principal regulations as amended by "The Telecommunication Interconnection Usage Charges (Fourth Amendment) Regulation (1 of 2005)" dated the 6th January 2005, "other fixed line operators" were allowed to retain ADC generated from the calls originated from their networks. BSNL was allowed to get the ADC generated from other calls subject to ADC, including all incoming international calls and all calls originated from mobile (excluding intra circle mobile to mobile calls).

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4. REVIEW OF ADC DURING THE FINANCIAL YEAR 2005-06 (INCLUDING THE MONTH OF MARCH 2005)

4.1 The Authority conducted a third review of IUC/ADC vide its consultation paper of 17th March 2005. This consultation paper dealt inter-alia with a wide range of issues including (a) justification of ADC on fixed wireless line and admissibility of ADC to fixed line operators other than BSNL, (b) ADC as a percentage of revenue and its various variants i.e. higher ADC on National Long Distance (NLD) and International Long Distance (ILD) calls, (c) interconnection usage charges (carriage and termination) including those for incoming international calls, (d) exclusion of revenue generated from rural wireline subscribers from the ambit of the ADC, (e) possible differential termination charges for national &

international calls and (f) implication of making available Universal Service Obligation (USO) fund to meet the quantum of ADC payable.

4.2 The Authority, after following the consultation process mentioned in the preceding paragraph amended the principal regulations vide "The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006)" on the 23rd February, 2006, effective from 1st March, 2006. By the said amendment to the principal regulations, the total estimated funding of ADC for the year 2006-07 was Rs. 3335 crores, out of which Rs. 3200 crores was the estimated ADC funding for BSNL. By the aforesaid amendment, the ADC on ILD traffic was continued to be on per minute basis but at a reduced rate of Rs. 1.60 per minute (earlier Rs. 3.25 per minute) for incoming ILD calls and Rs. 0.80 per minute (earlier Rs. 2.50 per minute) for outgoing ILD calls. In addition to ILD calls, ADC was also applicable as 1.5% of Adjusted Gross Revenue (AGR) of Access Providers, National Long Distance Operators (NLDOs) and International Long Distance Operators (ILDOs). By the amendment, no ADC was levied on revenue generated from rural wireline subscribers i.e. while calculating the ADC as a percentage of AGR of a Unified Access Service Licensee/Basic Service Operator, the revenue from Rural Fixed Wireline subscribers was allowed to be excluded. The Access providers were allowed to retain ADC generated from Outgoing ILD calls originated from Fixed Wirelines and ADC as percentage of AGR of Fixed Wirelines. Summary of Estimated ADC amount from various streams for the year 2006-07 as given in Table 8 of the aforesaid amendment is given below for ready reference:

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Table 8 of IUC Regulations dated the 23rd February 2006

ADC Rate & Estimated ADC amount for the Year 2006-07

Stream	ADC Rate	ADC Amount (in Rs. Crores)
Revenue Share	**1.5% of AGR for all service providers**	**1278**
International Incoming Calls	**Rs. 1.60 per Minute**	**1800**
International Outgoing Calls	**Rs. 0.80 per Minute**	**257**
Total		**3335**

5. REVIEW OF ADC DURING THE FINANCIAL YEAR 2006-07

5.1 In the principal regulations, the Authority had mentioned that **review of ADC would be done annually**. Subsequent to coming into force of the principal regulations, w.e.f. 1st February 2004, the Authority has been reviewing the ADC regime on annual basis. The ADC framework established by the Authority envisaged that **ADC is a depleting regime and the regime cannot be continued in perpetuity.**

5.2 As part of an annual review, the Authority issued a Consultation Paper on Access Deficit Charge (ADC) on 31st January 2007. The last date for receiving comments from the stakeholders was 26th February 2007. This consultation paper, inter-alia, recalled the established framework of ADC regime, that had been established by the Authority and reviewed from time to time. In the review of ADC in 2007, by said Consultation Paper, the consultation is basically for the (a) amount of ADC for the year 2007-08; (b) mechanism for funding/ collection of such ADC amount e.g. ADC as Percentage of Revenue, per minute ADC on ILD calls, and its various variants.

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6. FRAMEWORK OF ADC REGIME

Salient features of ADC regime as already decided by the Authority in the principal regulations and various amending regulations are discussed briefly as under:

6.1 ADC IS DEPLETING REGIME

The Authority has been emphasizing since October, 2003 onwards that ADC is a depleting regime. In this connection, the extracts of the relevant paragraphs of the Explanatory Memorandum to the principal regulations and various amending regulations are as given in the **Annexure-A** to the Explanatory Memorandum.

6.2 ADC CANNOT BE CONTINUED IN PERPETUITY

The framework was established in the year 2003 that ADC regime would not continue in perpetuity. In this connection the extracts of the relevant paragraphs of the Explanatory Memorandum to the principal regulations and various amending regulations are as given in the **Annexure-B** to the Explanatory Memorandum.

6.3 NO NEED OF FRESH CALCULATIONS FOR THE ADMISSIBILITY OF ADC

The ADC framework established by the Authority envisaged that since ADC is a depleting regime and cannot be continued in perpetuity, therefore, the need to carry out fresh calculations for the admissibility of ADC does not arise. In this connection the extracts of the relevant paragraphs of the Explanatory Memorandum to the amendment to principal regulations are as given in the **Annexure-C** to the Explanatory Memorandum.

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6.4 PHASING OUT OF ADC BY 2008-09 AND FUTURE SUPPORT IF REQUIRED THROUGH USO FUND

The Authority has already stated in 2003 that the ADC regime will be phased out over time and will be merged with the USO regime in 3 to 5 years. In the principal regulations and further amendment to the principal regulations, the Authority has established the framework of ADC including its lifespan. In this connection the extracts of the relevant paragraphs of the Explanatory Memorandum to the principal regulations and various amending regulations are as given in the **Annexure-D** to the Explanatory Memorandum.

6.5 ADC SHOULD BE REPLACED OR MERGED WITH USO REGIME

The Authority has already stated in 2003 that the prevailing ADC regime should be made to transition towards an USO type of regime in 3 to 5 years. In further amendment to the principal regulations the Authority has emphasized merger of USO and ADC. In this connection the

extracts of the relevant paragraphs of the Explanatory Memorandum to the principal regulations and various amending regulations are as given in the **Annexure-E** to the Explanatory Memorandum.

7. CONSIDERATION OF THE MAIN COMMENTS / ISSUES RAISED BY THE STAKEHOLDERS:-

7.1 Authority received comments from 14 stakeholders including preliminary response from BSNL. Comments received from stakeholders have been put out on TRAI's website and Open House Discussion was held at New Delhi on 6th March 2007.

7.2 BSNL has furnished its preliminary response enclosing therewith copy of the Appeal No. 6/2006 [3 volumes] along with rejoinder, containing the fundamental submissions raised by them before the Hon'ble Telecom Dispute settlement Appellate Tribunal (TDSAT) and mentioning therein that the contents of their appeal be taken as an integral part of their "without prejudice preliminary response". BSNL also mentioned that it would furnish its response immediately on the completion of the hearing before the Hon'ble TDSAT. In this regard it is mentioned that TRAI has already furnished its reply to Appeal No. 6/2006 before the Hon'ble TDSAT. The present exercise is an annual review for funding/collection of ADC amount for the year 2007-08 within the ADC framework already established by the Authority. The appeal referred to above pertains to the ADC for the year 2006-07 wherein BSNL has challenged "The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006)" dated the 23rd February, 2006.

7.3 The Authority has considered comments of the stakeholders and other inputs and analysed the matter in detail. The comments/issues raised by stakeholders are discussed briefly hereafter. For the sake of clarity points raised by stakeholders are given in the *italic* font followed by the consideration of the Authority on that point.

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7.4 ISSUE-I: WHETHER ACCESS DEFICIT REGIME TO BE CONTINUED

7.4.1 The comments received from the stakeholders on this issue are summarized in para (a) to (h) and dealt with in the paragraphs following thereafter:

(a) ADC should be done away immediately, it is unwanted burden on the customer, a source of various distortions, grey market and hurdle in Internet Telephony launch.

(b) There is no case for continuing access deficit regime in the telecom sector.

(c) ADC should not be admissible to BSNL as it is a profit making company. For the year 2005-06, BSNL's total profits stood at Rs. 8739 Crores.

(d) As per BSNL's Audited accounts Investment plus profit for the year 2003-04 is Rs. 15,923 Crores, 2004-05 is Rs. 18,998 Crores and 2005-06 is Rs. 16329 Crores. Any company having access deficit cannot make investments through internal resources and at the same time make profit to such extent.

(e) There are number of new revenue streams like broadband which provide additional revenue for copper network. BSNL can generate additional revenue by unbundling its copper local loop. The potential to bear this notional loss of revenue clearly establishes that it is not incurring any access deficit.

(f) Even after providing sufficient time for tariff re-balancing, continuance of the same level of ADC in a growing market will put undue burden on the subscribers and the objective of tariff re-balancing will never be achieved.

(g) It is not fair to fund the competitor's operations at the cost of private operators.

(h) ADC should continue till the deficit is made zero.

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7.4.2 Since the inception of ADC regime, Authority has been receiving divergent views from the stakeholders regarding admissibility of ADC. Some of the stakeholders perceive the ADC as an unwanted burden on the consumers; a disproportionate enrichment of the incumbent at the cost of the competing operators; creating distortions in the market; creating arbitrage and thereby resulting in grey market in international calls. The other view supports not only continuation of the ADC but argues for an enhanced scale / amount of ADC. The justification given by BSNL inter-alia includes that it is meeting social objectives by its significant investment in rural areas where the private operators have shown almost negligible presence. The Authority after considering the divergent views decided to provide Access Deficit Charge for sufficient time for tariff rebalancing. The Authority considered that it was necessary to provide ADC to incumbent for a limited period to enable him to rebalance the tariff and at the same time it should not continue in perpetuity causing undue burden on the consumers and various distortions in the market. It is not the sudden decision of the Authority now but the depleting regime was made known since 2003.

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7.4.3 Keeping in view the framework of ADC regime already established by the Authority by principal regulations as amended from time to time, the Authority has decided to continue the ADC regime within the earlier determined framework for the year 2007-08. It is to be emphasized here that this transition was specific to the present framework and does not exclude, if required, the possibility of considering funding the below cost rural fixed line operations of BSNL from USO Fund.

7.5 ISSUE-II: ADC TO PRIVATE FIXED WIRELINE OPERATORS:

7.5.1 The views of the various stakeholders on this issue are summarized in paras (a) to (c) and dealt with in the paragraphs following thereafter:

(a) There is no justification for providing any ADC to any private fixed operator as they are:

(i) *Offering services only in the urban and semi-urban areas where tariffs are forborne and the issue of an access deficit does not arise.*

(ii) *Predominantly using wireless networks to offer their services.*

(iii) *Have an average monthly rental that is higher than the cost based rental for wireless systems.*

(b) *The Authority allowed the other fixed operators to retain ADC as a % of AGR and on a per minute basis on their outgoing ILD calls. It is submitted that this above gave the private fixed operators an anti-competitive advantage over their wireless counterparts, which was not in the interest of level playing field. Hereinafter private fixed operators should no longer be incorrectly and unfairly entitled to ADC.*

(c) *Phasing out of ADC to other Basic Service Operators (BSOs) should be done only when overall ADC regime is phased out.*

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7.5.2 The Authority by principal regulations had not treated other fixed line operators at par with BSNL. Under the principal regulations only BSNL received the ADC from mobile-to-mobile calls and international calls to/from mobile. In that regime other BSOs were allowed to get ADC for all calls that terminate in their network and originate from their network. While examining the case for ADC to other service providers, the Authority had stated in para 57 of the principal regulations that phasing out of ADC to other BSOs may be earlier than the overall phasing out of the access deficit regime.

7.5.3 In the principal regulations as amended by "The Telecommunication Interconnection Usage Charges (Fourth Amendment) Regulation (1 of 2005)" dated the 6th January 2005, the Authority decided that operators other than BSNL should continue to be treated differently from BSNL in terms of the ADC applicable to them. The other fixed line operators were allowed to retain ADC on outgoing traffic from their fixed subscribers and

no ADC was paid to them on the traffic terminating in their fixed line network. In the said amendment to principal regulations, BSNL received ADC on all incoming international calls and all outgoing calls from mobile subscribers (excluding mobile to mobile intra-circle calls).

7.5.4 In the principal regulations as amended by "The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006)" dated the 23rd February, 2006, the Authority allowed other fixed line service providers to retain ADC as percentage of AGR of their fixed wireline operations and ADC on per minute basis from ILD calls originating from their fixed wireline operations.

7.5.5 It is apparent from the above that operators other than BSNL continued to be treated differently from BSNL in terms of the ADC applicable to them. Rationale for such treatment have been explained in the previous IUC Regulations, which inter-alia includes lower cost of access involved with fixed line provided through wireless terminals and the spread of subscribers in urban and rural areas. These factors continue to be relevant even today.

7.5.6 The Authority examined the comments received from stakeholders and also recalled the analysis and consideration in Para 27 of explanatory memorandum of "The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006)" dated the 23rd February, 2006, wherein the Authority considered that "Though there is no justification of ADC for other fixed line service providers yet since other fixed line operators have to compete in the market, therefore, they are being treated at par with BSNL as far as retention of ADC in terms of percentage of fixed wireline AGR and on outgoing international calls from their fixed wireline subscribers." These reasons continue to be relevant even today. Therefore, in the regime notified under the present amendment to the principal regulations, other service providers having

fixed wireline operations are allowed to retain ADC in terms of percentage of AGR of fixed wireline services.

7.6 ISSUE-III: EXTENSION OF ADC BENEFIT ON RURAL WIRELESS IN LINE WITH RURAL WIRELINE

7.6.1 The views of the stakeholders on an extension of ADC benefit on rural wireline has been that *the existing principle of exclusion of revenue earned from rural wireline subscribers from the total AGR of the Access Providers should be extended to rural wireless as well, in case the revenue sharing mechanism for recovery of ADC is continued in the year 2007-08.*

7.6.2 In the principal regulations as amended by "The Telecommunication Interconnection Usage Charges (Seventh Amendment) Regulation (2 of 2006)" dated the 10th March 2006; the Authority has clearly explained in the explanatory memorandum to the said amendment regulations, 2006, the rationale behind not excluding the revenue generated from rural wireless subscribers from AGR. The Authority does not find any reason to change the existing framework and reiterates that only revenue earned from **rural fixed wireline subscribers** shall be excluded from the AGR of the Access Providers and such AGR shall be used for calculation of ADC in terms of percentage of revenue share.

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7.7 ISSUE-IV : DOUBLE INCIDENCE OF THE ADC ON ILDOs

7.7.1 On this issue the views of the stakeholders has been that *the present mechanism of funding of ADC results in double incidence of the ADC on ILDOs by requiring them to pay ADC both on a Per minute basis and also as a percentage of their AGR. The requirement of payment of percentage of AGR by ILDOs should be dispense with, since a major portion of the ADC is already being contributed by the ILDOs on a Per minute basis on ILD incoming calls.*

7.7.2 While amending the principal regulations by "The Telecommunication Interconnection Usage Charges (Sixth Amendment)

Regulation (1 of 2006)" on the 23rd February, 2006, the main concern of the Authority had been that the contribution of ADC from ILD sector should remain at the same order, as was earlier when principal regulations were made in October 2003 and amended in January 2005. It may be noted that ADC generated from ILD calls on per minute basis is not the part of the AGR of the ILD operators. Therefore, the collection of ADC as percentage of AGR of ILDOs is significantly less as compared to ADC generated from ILD incoming and outgoing calls. Imposition of ADC on ILD sector as percentage of AGR as well as on per minute basis on ILD calls was the outcome of well-thought process and the rates were so specified that approximately Rs. 2100 crores can be recovered from ILD sector (estimated ADC from ILD incoming calls was Rs. 1800 crores, from ILD outgoing calls was Rs.257 crores and from percentage revenue share of ILDOs was Rs. 24 crores). Further, imposition of uniform percentage on AGR of all service providers including the ILDOs for ADC was prescribed to avoid any misreporting or transferring of revenue from one service to another service.

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7.7.3 While amending the principal regulations by the "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007", the Authority has decided to continue the present regime of imposing an obligation upon all service providers including ILDOs to pay ADC on uniform percentage of AGR.

7.8 ISSUE V: USO AND ADC

7.8.1 The views of stake holders on USO and ADC are summarized in para (a) to (d) and dealt with in the paragraphs following thereafter:

(a) *USO and the ADC meet similar objectives and that it is undesirable to have to different vehicles and two different mechanisms in force to meet the same policy objectives.*

(b) *There should not be any ADC. Instead, the relevant assistance should be provided through the USO regime.*

(c) *The scope and objective of ADC and USO is totally different, mobile operators are also getting funds from USO, there is no rationale for the merger of USO and ADC.*

(d) *There is no need to debate USO at this stage. Regarding merging of ADC and USO, there should be separate consultation process.*

7.8.2 Presently the Government is collecting the USO amount as 5% of Adjusted Gross Revenue as part of revenue share Licence Fee. The Authority in "The Telecommunication Interconnection Usage Charges (Fourth Amendment) Regulation (1 of 2005)" dated the 6th January 2005, noted that there is a considerable overlap among the objectives of the USO and ADC regimes. Further over the time, with the USO regime being implemented in terms of "net cost SDCAs" as was notified by the USF Administrator in early 2004, the overlap between the ADC and USO will in fact increase.

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7.8.3 In the context of USO fund, the Authority in Para 3 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Sixth Amendment) Regulation (1 of 2006)" dated the 23rd February, 2006, indicated that the Authority would submit suitable recommendations to the Government on this issue so that finally USO regime takes care of support on account of ADC also. TRAI had already communicated to DOT vide its letter dated the 20th September 2006 and subsequent reminder dated the 22nd November 2006 that DOT may like to consider further course of action in view of the fact that the ADC is a depleting regime. Since the matter has already been referred to competent Authority viz DOT, for consideration, therefore the Authority is of the view that any subsequent action in this regard will be from DOT.

7.9 ISSUE-VI: QUANTUM OF ACCESS DEFICIT CHARGE

7.9.1 The views of stake holders relating to the quantum of Access Deficit Charge for the financial year 2007 – 08 are summarized in para (a) to (e) and dealt with in the paragraphs following thereafter:

(a) The Authority should maintain the present trend of reduction in ADC.

(b) ADC reduced by 2/3rd in 06-07. *ADC may be reduced to Rs. 1600 crores for the year 2007-2008 and nil thereafter.*

(c) ADC should be reduced at a higher rate of around 60% of Rs. 4800 crores so that quantum of ADC for BSNL is restricted to Rs1280 Crores.

(d) ADC should be reduced by Rs. 2334 Cr. i.e. the difference between last year ADC and year previous to that, thus Rs. 1000 crores would be the ADC for 2007-08.

(e) Total ADC per year to be provided to BSNL to off-set its deficits emerging due to provisioning of below cost Rural Wireline telephony on account of rental, free calls and subsidized call charges is of the order of Rs.14301 crores.

7.9.2 The Authority in principal regulations has done detailed calculations in consultation with BSNL for the total ADC amount based on historical costs. The ADC framework established by the Authority envisaged that since ADC is a depleting regime, the regime cannot be continued in perpetuity, and thus the need to carry out fresh calculations for the admissibility of ADC does not arise.

7.9.3 The basis for arriving at the regime has been clearly brought out in paragraph 24 of Explanatory Memorandum to the principal regulations, which is as under:

> "The Authority noted that the difference between historical costs and forward looking costs would be large, and relying on costs based only on modern and forward looking technologies would imply a large burden from the stranded costs for BSNL. While the Authority feels that change over to FLLRIC model is imperative, it examined the implications of a sudden changeover against a gradual changeover. Since BSNL is the major supplier of telecom services in the country and has also contributed the maximum for achieving the targets of rural tele-density and in supporting low paying subscribers, a changeover to FLLRIC at present would adversely affect the services provided not only to rural and low paying subscribers but also the telecom industry in the country as a whole. The Authority noted that BSNL is already deploying latest technology and lower cost equipment in its expansion programme. Since wireless technology is being used, it is expected that some of the existing network will also be gradually replaced by such

equipment. In short, the approach is to achieve full shift to FLLRIC cost in a gradual manner over a few years rather than a single year change. The latter would leave heavy stranded cost and would be quite impractical. The Authority therefore, decided to rely on costs for the current year, based on as recent audited costs as possible. For this purpose, it worked with more recent data than was used in the initial IUC exercise. The Authority was of the view that with the changes in technology and a reduction in equipment costs taking place rapidly, the amount of funding required for ADC would decline. Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime. This would be similar to the situation in most other countries, where the ADC regime had been combined with the USO regime, rather than the ADC funding being provided through a separate ADC regime."

[Note: 'FLLRIC' in the above paragraph means Forward Looking Long Run Incremental Cost]

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7.9.4 As mentioned before, the estimated ADC for BSNL for the year 2006–07 was Rs. 3200 crores. The reporting requirement for ADC collection / paid by service providers is one month after each quarter. Information regarding incoming and outgoing traffic minutes is also separately furnished by the service providers to TRAI. The actual receipt for the financial year 2006 – 07 have not been finalized but the receipt of the first two quarters and the projections for the remaining two quarters are reassuring in terms of anticipated / estimated ADC collection.

Attention of the Authority has been drawn to the annual administrative report of BSNL regarding the ADC receipt for 2004 – 05 and 2005 – 06. The said reports also mention that ADC for 2003 – 04 has been 'nil'. The Authority has gone into the details. Some of the ADC amounts received are reflected in net adjustment of interconnection charges, IUC from basic and cellular service providers and contribution of BSNL to ADC. It is to be noted that ADC collection reported by BSNL from ILD incoming and outgoing traffic has not been fully reconciled with the ADC generated from ILD incoming and outgoing traffic minutes as reported by ILDOs. BSNL collects ADC from ILDOs, NLDOs on the basis of volume of ILD traffic reported by the access providers for each service area, segregating/ billing ILDOs/ NLDOs individually on the basis of data

received from access providers delays the process of recovery of ADC and hence reporting to TRAI in a time bound manner. This has also generated a problem in reconciliation as sometimes bills raised by BSNL are delayed in some service areas. ILDOs report to TRAI the amount of ADC paid up by a particular date on the basis of bills raised by BSNL. Thus, the quarterly reconciliation regarding ADC collection has not been possible. There is obvious need for strengthening the billing and recovery mechanism at the level of BSNL so as to ensure the timely recovery of ADC generated from ILD calls. The Authority is equally concerned regarding the reporting procedure of ADC by BSNL. However, the Authority remains convinced that the projection of the Authority regarding ADC to BSNL has been either fully realized or in the process of being realized through compilation of billing and other adjustment. These factors have also been kept in view while determining the framework of ADC for the financial year 2007 – 08.

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7.9.5 The Authority has also noted that BSNL has not actively responded to the key purpose for which ADC was given. It may be recalled that ADC had specific purpose to be fulfilled in a time frame (i.e. tariff rebalancing). Further, BSNL is now offering tariff regime for bundled services which appear to be having some element of cross subsidy.

7.9.6 Adjusted Gross Revenues (AGR) for the financial year 2007–08 has been estimated by taking the average subscriber base at the mid point of the period, namely mid of financial year 2007 – 08 and multiplying it by the monthly average revenue per user (ARPU) taking account of all revenues of access providers and the long distance operators, including both the National and International Long Distance Operators. ARPU has been estimated after subtracting the pass through component so that its multiplication with subscriber base gives AGR figure. The estimated AGR for wire-line, Mobile(including WLL), National Long Distance and International Long Distance services after deduction of revenue generated

from rural wireline subscribers has been estimated well above Rs. 90,000 Crore for the financial year 2007-08.

7.9.7 International incoming minutes for the financial year 2007–08 has been estimated based on the information provided by the various ILDOs. The Authority has received information from all ILDOs for month of April 2006 to January 2007. The reported ILD incoming minutes for 10 month period are 8762 millions. The Authority has also considered the estimations given by the stakeholders regarding international incoming minutes for the year 2007-08. The Authority has considered about 14000 millions international incoming minutes for the year 2007-08. The Authority also notes that a separate recommendation on ISP licence regime is being actively considered and will be sent to the Department of Telecommunications soon. It is expected that the scope of services under the licence would be less restrictive than existing today. It will have its influence on the overall estimation of international calls passing through telecom service providers. It is acknowledged that reduction in ADC rate for incoming international minutes will further depress the grey market and boost the international minutes through legitimate route but the growth trend has been deliberately kept conservative to ensure robust but definite inflow to BSNL on the score.

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7.10 ISSUE-VII: OPTION FOR COLLECTION OF ADC

7.10.1 Authority in its consultation paper dated 31st January, 2007 given some possible options, as illustration, for collection of ADC during financial year 2007 – 08. These options are as follows:-

(i) Move to a revenue share regime if the incidence of burden can be ensured on International Calls.

(ii) Per Minute basis from ILD incoming and Outgoing and percentage of revenue share (same as existing Scheme) though at reduced scale.

(iii) Per Minute basis from ILD incoming only and percentage revenue share on the AGR of all telecom service providers.

(iv) Recovery of Complete amount of ADC from ILD Incoming calls on per minute basis only and no ADC from percentage revenue share.

(v) Recovery of complete amount of ADC from ILD Incoming and Outgoing calls on per minute basis and no ADC from percentage revenue share.

7.10.2 Comments received from stake holders have been summarized under (a) to (p) and dealt with in the paragraphs following thereafter:

(a) It should be funded only from ILD incoming calls on per minute basis and no ADC from percentage of revenue share.

(b) An ADC of Rs. 1 per minute on incoming ILD calls will be sufficient to meet the ADC requirements for 2007-08.

(c) Highest priority should be given to reducing domestic tariffs to meet domestic consumer interest and spurring sustained growth.

(d) No ADC should be levied on Outgoing ILD calls, this would put the ILD calls from switched network at par with internet telephony.

(e) Equitable and non discriminatory treatment of all services under a revenue share approach would be consistent.

(f) If the collection is made through percentage of revenue share only, the percentage of revenue share will be increased from existing 1.5% of AGR, thereby burden on domestic industry would increase.

(g) Option II would provide some relief for domestic industry by reduction in the existing percentage of revenue share, however, the benefits to the domestic industry would not be as much. In addition this methodology would be cumbersome to administer since a small portion would be collected from various sources.

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(h) There are no compelling reasons to consider any major change in the mechanism of funding/collection of ADC in FY 2007-08, especially when ADC would be reduced to Zero by 2008-09.

(i) Option III would give limited relief to the domestic industry, by way of reduction in % of AGR however it looks that the benefit of international outgoing calls would be at the cost of domestic calls

(j) ADC can be recovered by Rupee 1 per minute ADC on ILD incoming calls plus 0.25% to 0.5 % of the AGR.

(k) TRAI should remove disproportionate ADC burden placed on international calls.

(l) By loading different ADC rates on the basis of direction of traffic, TRAI has changed traffic pattern

(m) There should be ADC on outgoing and incoming international calls and other service providers should be allowed to get ADC on incoming international calls terminating on its network.

(n) Reduction of ADC on Incoming ILD calls will reduce the arbitrage opportunity and check ILD grey traffic as well as boost the volumes of ILD traffic.

(o) The ILD traffic data clearly indicates that the demand for the international voice service is highly elastic.

(p) The concept needs to be looked into afresh. There is need to remove the sunset clause and the concept of depleting regime.

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7.10.3 The Authority has taken the various comments and inputs into consideration. While deciding the pattern of funding this ADC regime, the Authority has also taken various objectives into consideration, which inter-alia include the following; namely:-

(i) to make telecom services more affordable to consumers.

(ii) to reduce burden of ADC on domestic sector.

(iii) to remove the distinction between national and international outgoing calls in terms of ADC in the interest of consumers.

(iv) to create level playing field between outgoing international calls made through Internet Telephony and switched traffic minutes, thereby

boosting growth of traffic minutes through switched telephony resulting in growth of revenue.

(v) to reduce the available arbitrage margin in International Calls thereby addressing Grey Market.

(vi) to facilitate merger of ADC regime with USO type mechanism for ADC funding, if such merger is envisaged in future.

7.10.4 Keeping in view the various objectives referred to in the preceding paragraphs and also the views of the stakeholders, the Authority considered that Option (iii) at para 7.10.1 above i.e. Per Minute basis from ILD incoming only and percentage revenue share on the AGR of all telecom service providers, is the most preferred option. **The decisions, therefore, taken by the Authority in the present amendment to the principal regulations are as follows:-**

(a) Reduction in percentage of AGR (excluding the revenue generated from rural wireline subscribers) from the existing 1.5 % to 0.75%;

(b) Removal of per minute ADC from Outgoing International Calls;

(c) Reduction in per minute ADC on International Incoming calls by 38% i.e. from the existing value of Rs.1.60 per minute to Rs.1 per minute;

7.10.5 The summary of the ADC determination for the financial year 2007-08 is given in Table-I below:-

Table-I

Summary of ADC determination for the Financial Year 2007-08

Stream	ADC Rate	Estimated ADC (in Rs. Crores)
Revenue Share	0.75% of AGR for all service providers	650
International Incoming Calls	Rs.1 per minute	1400
Total		2050

Out of the total estimated ADC collections of around Rs. 2050 Crores, around Rs. 2000 Crores is estimated ADC collection for BSNL.

7.10.6 The Authority expects that the reduction in ADC amount resulting from "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007, would be fully passed on by telecom service providers to the consumers and would pave the path for:

(a) lower telecom tariffs;

(b) greater usage of services as a result of affordable / lower tariffs;

(c) sustained growth of telecom services;

(d) greater flexibility to service providers for reducing the tariff and offering innovative packages to consumers;

(e) reduction in arbitrage hence very less incentive for ILD grey market;

(f) level playing field between outgoing international calls made through Internet Telephony and switched traffic minutes, hence, boost growth of traffic minutes through switched telephony which will result in growth of revenue of telecom service providers.

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ANNEXURE A TO THE EXPLANATORY MEMORANDUM TO THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007

ANNEXURE A

(See paragraph 6.1 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007")

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO ADC IS DEPLETING REGIME IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES REGULATION, 2003"(4 OF 2003) DATED THE 29th OCTOBER 2003:

"*…Even the ADC regime that remains for BSNL is to be phased out in general and to be merged with USO regime in 3 to 5 years…"* (See Para 101)

".....The Authority is of the opinion that the prevailing ADC regime should be made to transition within 3 to 5 years towards an USO type of regime." (See Para 98)

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO ADC IS DEPLETING REGIME IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (FOURTH AMENDMENT) REGULATION (1 OF 2005)" DATED THE 6th JANUARY 2005:

".....In this regard, it is important to recall the Authority's statement in its IUC Regulation of 29th October, 2003 that it will be gradually reducing the ADC, merging it with the USO regime in due time….(See Para 25).

".....and has also decided that the ADC will be progressively decreased to be phased out in a few years time…" (See Para 52).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO ADC IS DEPLETING REGIME IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (SIXTH AMENDMENT) REGULATION (1 OF 2006)" DATED THE 23rd FEBRUARY, 2006.

".....However, the ADC is a depleting regime mainly to give time to incumbent, etc. for rebalancing of tariffs during a transition period and it will be phased out over time and will be merged with the USO Regime and any lines with below cost operation especially in rural areas with regulated tariffs having any justification for access deficit needs to be covered through USO....." (See Para 23).

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".....It is again reiterated here that right from October, 2003 Authority has been emphasising on the point that ADC regime is a depleting regime and should be replaced by or merged with USO regime from 2008 – 2009 onwards..." . (See Para 24).

"....*since this is a depleting regime, therefore, the earlier calculated value of ADC has to gradually come down so that it becomes zero in the year 2008-09..."* (See Para 43).

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ANNEXURE B TO THE EXPLANATORY MEMORANDUM TO THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007

ANNEXURE B

(See paragraph 6.2 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007")

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS INDICATING THAT ADC CANNOT BE CONTINUED IN PERPETUITY, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES REGULATION, 2003"(4 OF 2003) DATED THE 29th OCTOBER 2003:

"….Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime. This would be similar to the situation in most other countries, where the ADC regime had been combined with the USO regime, rather than the ADC funding being provided through a separate ADC regime. (See Para 24).

"The Authority has also decided that it would obtain more detailed audited cost information to assess the relevant ADC for BSOs, and would also consider phasing it out after the next review. This phasing out may be earlier than the overall phasing out of the access deficit regime that the Authority will consider, merging the ADC regime into the USO regime after a few years….." (See Para 57).

"……Further, the ADC regime should ideally be merged with the USO regime over time, say in about 3 to 5 years……." (See Para 89).

"…..The Authority is of the opinion that the prevailing ADC regime should be made to transition within 3 to 5 years towards an USO type of regime." (See Para 98).

"*…Even the ADC regime that remains for BSNL is to be phased out in general and to be merged with USO regime in 3 to 5 years…"* (See Para 101).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS INDICATING THAT ADC CANNOT BE CONTINUED IN PERPETUITY, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (FOURTH AMENDMENT) REGULATION (1 OF 2005)" DATED THE 6th JANUARY 2005:

"….the Authority has already stated that the ADC regime will be phased out over time and will be merged with the USO regime…" (See Para 28).

".....and has also decided that the ADC will be progressively decreased to be phased out in a few years time..." (See Para 52).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS INDICATING THAT ADC CANNOT BE CONTINUED IN PERPETUITY, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (SIXTH AMENDMENT) REGULATION (1 OF 2006)" DATED THE 23rd FEBRUARY, 2006.

"....The ADC is given for a temporary period for rebalancing the tariff and it cannot continue in perpetuity if the rebalancing is not done or reversed rebalancing is resorted to...." (See Para 24).

"The Authority has given sufficient time for tariff rebalancing and the ADC is mainly for the historical cost and not for the futuristic cost. The Authority is of the opinion that if same amount of the ADC will continue for the incumbent or any other operator tariff rebalancing will never take place and this will put undue burden on the subscribers because of the continuity of ADC Regime in perpetuity...."(See Para 26).

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ANNEXURE C TO THE EXPLANATORY MEMORANDUM TO THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007

ANNEXURE C

(See paragraph 6.3 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007")

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS STATING THAT THERE IS NO NEED OF FRESH CALCULATIONS FOR THE ADMISSIBILITY OF ADC, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (SIXTH AMENDMENT) REGULATION (1 OF 2006)" DATED THE 23rd FEBRUARY, 2006.

"…Authority in its October, 2003 Regulation has done detailed calculations in consultation with BSNL for the total ADC amount based on historical costs and Authority does not consider it necessary to continue to do these calculations based on historical data again and again…" (See Para 26).

"…Since ADC was mainly on account of deficit in the wireline cost based rentals and the number of wireline subscribers is not changing. Therefore, the ADC amount estimated earlier by the Authority need not be calculated again but since this is a depleting regime, therefore, the earlier calculated value of ADC has to gradually come down so that it becomes zero in the year 2008-09…" (See Para 43).

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ANNEXURE D TO THE EXPLANATORY MEMORANDUM TO THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007

ANNEXURE D

(See paragraph 6.4 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007")

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO PHASING OUT OF ADC BY 2008 – 09 AND FUTURE SUPPORT IF REQUIRED THROUGH USO FUND, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES REGULATION, 2003"(4 OF 2003) DATED THE 29th OCTOBER 2003:

"*…Even the ADC regime that remains for BSNL is to be phased out in general and to be merged with USO regime in 3 to 5 years…"* (See Para 101).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO PHASING OUT OF ADC BY 2008 – 09 AND FUTURE SUPPORT IF REQUIRED THROUGH USO FUND, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (FOURTH AMENDMENT) REGULATION (1 OF 2005)" DATED THE 6th JANUARY 2005:

"….the Authority has already stated that the ADC regime will be phased out over time and will be merged with the USO regime…" (See Para 28).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO PHASING OUT OF ADC BY 2008 – 09 AND FUTURE SUPPORT IF REQUIRED THROUGH USO FUND, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (SIXTH AMENDMENT) REGULATION (1 OF 2006)" DATED THE 23rd FEBRUARY, 2006.

"----The Authority is of the opinion that by March 2008, i.e. next two years time frame any lines in rural segment having justification for funding access networks will be required to be considered through USO and ADC will be phased out…(See Para 23).

"…the earlier calculated value of ADC has to gradually come down so that it becomes zero in the year 2008-09…" (See Para 43).

"*--- ii) ADC Regime would be reduced to zero in next 2 years---"* (See Para 67).

ANNEXURE E TO THE EXPLANATORY MEMORANDUM TO THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (EIGHTH AMENDMENT) REGULATIONS, 2007

ANNEXURE E

(See paragraph 6.5 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Eighth Amendment) Regulations, 2007")

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO ADC SHOULD BE REPLACED OR MERGED WITH USO REGIME, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES REGULATION, 2003"(4 OF 2003) DATED THE 29th OCTOBER 2003:

"--Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime…." (See Para 24).

"---the Authority will consider, merging the ADC regime into the USO regime after a few years.----" (See Para 57).

"……Further, the ADC regime should ideally be merged with the USO regime over time, say in about 3 to 5 years……." (See Para 89).

"…..The Authority is of the opinion that the prevailing ADC regime should be made to transition within 3 to 5 years towards an USO type of regime." (See Para 98).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO ADC SHOULD BE REPLACED OR MERGED WITH USO REGIME, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (FOURTH AMENDMENT) REGULATION (1 OF 2005)" DATED THE 6th JANUARY 2005:

"….the Authority has already stated that the ADC regime will be phased out over time and will be merged with the USO regime…" (See Para 28).

"The Authority further noted that changeover to Revenue Share Regime and its merger with USO is indeed the final solution for taking care of all anomalies and issues associated with ADC…." (See Para 80).

EXTRACTS OF CERTAIN RELEVANT PARAGRAPHS RELATING TO ADC SHOULD BE REPLACED OR MERGED WITH USO REGIME, IN THE EXPLANATORY MEMORANDUM TO "THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES

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(SIXTH AMENDMENT) REGULATION (1 OF 2006)" DATED THE 23rd FEBRUARY, 2006.

"….The Authority is of the opinion that by March 2008, i.e. next two years time frame any lines in rural segment having justification for funding access networks will be required to be considered through USO and ADC will be phased out…(See Para 23).

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TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

TELECOM REGULATORY AUTHORITY OF INDIA

NOTIFICATION

New Delhi, the 27th March, 2008

THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (NINTH AMENDMENT) REGULATIONS, 2008 (2 of 2008)

File No. 409-22/2007-FN.---------- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations to further amend the Telecommunication Interconnection Usage Charges Regulation, 2003(4 of 2003) ,namely:-

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1. (1) These regulations shall be called the Telecommunication Interconnection Usage Charges (Ninth Amendment) Regulations, 2008.

(2) These regulations shall come into force with effect from the 1st day of April, 2008.

2. In the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), (hereinafter referred to as the principal regulations), in the regulation 5, after clause (iv), the following proviso shall be inserted at end, namely:-

"Provided that the provisions of this clause shall, on and after the 1st day of April,2008, have effect as if the words "ADC paid in the form of percentage of Adjusted Gross Revenue" had been omitted and the provisions in this clause relating to reporting requirement after the said date shall be construed accordingly:

Provided further that nothing contained in this clause shall apply on and after the 1st day of April, 2008.".

3. In Schedule III to the principal regulations,---

(a) in paragraph 3.1, ---

(i) in the opening portion, for the words "for International Incoming Calls" the words, figures and letter "for International Incoming Calls received during the period beginning on the 1st day of April,2008 and ending as at the 30th day of September,2008." shall be substituted.

(ii) in Table III,----

(A) in the heading, for the words "for International Incoming Calls" the words, figures and letter

"for International Incoming Calls received during the period beginning on the 1st day of April,2008 and ending as at the 30th day of September,2008." shall be substituted;

(B) in column (2), under the heading "Access Deficit Charge per minute", for the letters, figures, brackets and words "Rs. 1.00 (rupee One only)", the letters, figures , brackets and words "Re 0.50 (paise fifty only)" shall be substituted;

(iii) after Table III, the following Explanation shall be inserted, namely:-

"Explanation.---The Access Deficit Charge for International Long Distance Calls shall not be applicable on and after the 1st day October , 2008".

(b) in paragraph 3.2, after sub- paragraph 3.2.5, the following proviso shall be inserted, namely:-

"Provided that nothing contained sub- paragraphs 3.2.1, to 3.2.5(including payment of the Access Deficit Charge, by way of percentage of Adjusted Gross Revenue), shall apply on and after the 1st day of April, 2008 and the Access Deficit Charge payable on the basis of percentage of Adjusted Gross Revenue after the said date shall therefore cease to have effect.

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(R.K.Arnold)
Secretary

Note1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29th October 2003 (4 of 2003) and subsequently amended vide notifications Nos --

(i) 409-5/2003-FN dated 25th November 2003 (5 of 2003) (First Amendment);
(ii) 409-5/2003-FN dated 12th December 2003 (6 of 2003) (Second Amendment);
(iii) 409-5/2003-FN dated 31st December 2003 (7 of 2003) (Third Amendment);
(iv) 409-8/2004-FN dated 6th January 2005 (1 of 2005) (Fourth Amendment);
(v) 409-8/2004-FN dated 11th April 2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21st September, 2005 in appeal No. 7 of 2005;
(vi) 409-5/2005-FN dated 23rd February 2006 (1 of 2006) (Sixth Amendment);
(vii) 409-5-2005-FN dated 10th March 2006 (2 of 2006) (Seventh Amendment)
(viii) 409-2-2007-FN dated 21st March 2007 (2 of 2007) (Eighth Amendment)

Note 2. The Explanatory Memorandum explains the objects and reasons of these regulations.

Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Ninth Amendment) Regulations, 2008 (2 of 2008) dated the 27th of March, 2008.

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I. Background

1. Interconnection Usage Charges (IUC) and Access Deficit Charges (ADC) regimes were established by the TRAI through "The Telecommunication Interconnection Usage Charges Regulation 2003" (1 of 2003) dated the 24th January 2003. This regime came into effect from 01.05.2003. The above regimes were reviewed and the revised IUC and ADC regimes were notified through "The Telecommunication Interconnection Usage Charges Regulation, 2003" (4 of 2003) dated 29.10.2003 which superseded the earlier Regulations referred above and became effective from the 01.02.2004. This then became the principal regulation that was amended from time to time within the established framework.

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2. Further amendments to "The Telecommunication Interconnection Usage Charges Regulation" were carried out annually following proper consultation process with stakeholders on 6.1.2005, 23.2.2006 and 21.3.2007 which came into effect respectively on 1.2.2005, 1.3.2006 and 1.4.2007. Through the principal regulations and subsequent amendments a framework was established for initiation, continuance and phasing out of ADC through an elaborate consultative process. In a nutshell the framework briefly described the ADC regime as a depleting regime that would be phased out and, from the year 2008-09, any further support required would be from the Universal Service Obligation Fund (USOF).

3. The main decisions taken by the Authority and viewpoints expressed in Explanatory Memoranda to the Principal Interconnection Usage Charges Regulation and its subsequent

amendments are given in the Explanatory Memorandum to The Telecommunication Interconnection Usage Charges (Eight Amendment) Regulation 21.03.2007.

II Review of ADC for the Financial Year 2008-09

4. According to the framework established earlier, the present review is of great significance. In the light of the depletion of ADC, it's phasing out and eventual taking over of the responsibility by the USO fund this was purported to be decisive in many ways. The phasing out of ADC, support for sustenance of rural wireline network from USOF and growth of rural telephony were to be settled through a consultation process. With this as the background, the Authority issued a Consultation Paper on Access Deficit Charges (ADC) on 21.01.2008. The last date for receiving comments from stakeholders was 11.02.2008. This Consultation Paper inter alia recalls the established framework of ADC regime, that has been established by the Authority and reviewed from time to time. It not only discusses about doing away with the ADC in the present form but also discusses taking over of support provided through ADC by USO Fund for growth and sustenance of rural fixed line network and possible induction of positive features for increasing affordability of services for rural consumers. The main issues on which the comments were invited and subsequent discussions were held can be grouped into 3 categories:

Issue 1: Operationalizing phasing out of ADC from 1.4.2008
Issue 2: Providing support for BSNL rural wirelines from USOF
Issue 3: Induction of positive features including possible reduction in entry charges for rural mobile subscribers

5. The Authority received comments from 26 stakeholders which have been uploaded on the TRAI website. The Open House

Discussion was also held at New Delhi on 19.02.2008. Summary of comments and analysis are given below:

III Issue 1: Operationalizing phasing out of ADC from 1.4.2008

6. Summary of main comments

The **comments received showed an overwhelming response** in favour of phasing out ADC as proposed by the Authority. These comments are summarized below:

- *The concept of ADC was mooted to support networks in bucolic areas and not to make incumbent perpetually dependent upon support;*

- *Reduction in ADC has been one of the reasons for fall in tariffs over the years and the subscriber has been the prime beneficiary of the same;*

- *ADC does not put any obligation on receiver to use it for rural telephony;*

- *Does not promote investment in rural areas as no obligation on recipient to make investments in the rural areas;*

- *BSNL is not using ADC to rebalance tariffs but using it to launch predatory tariffs which only scuttle competition;*

- *It provides competitive advantage to the subsidized services;*

- *ADC results in unfair competitive advantage to a particular service and distort the market;*

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- *It is an unwanted burden on the consumers;*

- *It is a disproportionate enrichment of the incumbent at the cost of competing operators;*

- *It creates arbitrage and thereby result in grey market in international calls;*

- *The removal of ADC charges on international traffic is likely to encourage the further growth of international telecommunication services in India and the resulting benefits to the India's economy;*

- *Internationally, ADC regime has always been introduced as a depleting regime which relevant for India as well;*

- *Phasing out of ADC regime will enhance affordability of services;*

- *Customer could be able to see the proper presentation of international numbers in their incoming clip;*

- *Removal of redundant instruments of service obligation levy;*

- *Make incumbent to increase the Quality of Service offered since their philanthropists' are removed;*

- *BSNL role should be spelled out i.e. whether public operator or private operator. BSNL want ADC but it does not want to share its infrastructure;*

- *Benefits are flowing to BSNL and year after year its profit is increasing especially after 2003;*

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- *There is a no change in the telecom sector to justify any change in the declared policy and it is, therefore, suggested ADC should be phased out from 01.04.2008;*

- *USOF is meeting the requirement of all operators, there is no need to compensate a single operator;*

- *Number of other revenue streams are also available on wireline services such as broadband, internet and other value added services. BSNL may also generate more revenue by unbundling the last mile for other service providers.*

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Comments were also received **against the phasing out of ADC from 01.04.2008**. These comments are summarized below:

- *TRAI is aware and has recognized that cost based tariff cannot be implemented in basic service as it will make them unaffordable and non-competitive;*

- *Recognizing this, TRAI continue to regulate the tariffs of basic services in rural areas even till date, which are far below the cost based tariffs;*

- *At this stage, it is absolutely not feasible to rebalance the tariff. Such tariff rebalancing exercise could have been done only prior to opening of telecom sector for competition in India as has been followed in other countries;*

- *ADC is an integral part of IUC and cannot be abolished in isolation. Any change in ADC will necessarily require change in the complete IUC regime;*

- *The purposes of USOF and ADC are entirely different and ADC cannot be subsumed into USOF;*

- *Implicit subsidy is being provided to wireless operators by way of higher termination charges which needs to be corrected;*

- *There is an urgent need for making fresh calculation on actual cost basis for the admissibility of ADC to wireline services and its continuation;*

- *Even as on date, there is a requirement of ADC amount of approximately Rs.14,000 crores of the year 2008 – 09 for wireline services of BSNL;*

- *BSNL needs Rs.8774 crores per annum to just sustain the operations of its basic services in rural areas;*

- *BSNL once attempted to increase the rural tariff from Rs.50 to Rs.70 per month as prescribed by TRAI but was forced to withdraw this increase in the general public interest;*

- *BSNL is still discharging the social objective by providing wireline services at affordable rates below their actual cost, especially, in the rural areas where the tariff is still regulated and BNSL's tariffs are even lower than the TRAI's tariff;*

- *The tele-density, especially, in rural areas, will be adversely affected thereby further increasing the digital divide;*

- *Non-sustainability of the wireline networks, due to abolition of ADC, will severally affect the proliferation of broadband services in the country;*

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- *Abolition of ADC on international calls will give benefit to the foreign carriers only;*

- *TRAI will have to consider that wireline are basically for long term broadband services, wireline cannot be discontinued because it is costly;*

- *BSNL has more than 99% connections in rural areas, therefore, it should be compensated;*

- *The country has to recognize that BSNL is carrying a burden with it, the burden of past technology they are carrying with them;*

- *BSNL should be compensated for all the standard costs incurred by it for providing below cost services;*

- *The infrastructure with BSNL is because of ADC. Instead of making investments private operators are trying to use the infrastructure of BSNL;*

- *BSNL is earning huge profits is not correct. Rs.3000 – 4000 crores have been spent for absorbing the employees in BSNL from DOT;*

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Examination of the main comments

7. In addition to the comments made by the stakeholders, the Authority has also taken into account informal meeting with stakeholders and other available inputs into consideration and analysed the matter further. The views of the Authority on the main issues are as follows:

ADC is an integral part of IUC

8. An important comment made above is that ADC is an integral part of IUC and cannot be phased out in isolation and any change in ADC will require change in the complete IUC regime. The Authority analysed this comment in detail. In this regard, the Authority has also referred the definition of Interconnection Usage Charges given in first IUC Regulation dated 24.01.2003 and principal regulations dated 29th October 2003 which clearly spells out that Interconnection Usage Charges means the charge payable by one service provider to one or more service providers for usage of the network elements for origination, transit and termination of the calls. Relevant definition is reproduced below:

"2 (x) Interconnection Usage Charges (IUC) means the charge payable by one service provider to one or more service providers for usage of the network elements for origination, transit and termination of the calls."

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While calculating interconnection usage charges, no adjustment was made corresponding to ADC given to fixed line operators. Moreover, in fact altogether different principles were used for calculations of the IUC and ADC. These are clearly reflected from the following extracts of the Para 34 of the IUC regulation dated 29th October 2003:

"*Since the above WACC incorporates the concessions given by the Government to BSNL, it is appropriate for calculating the access deficit amounts that remain uncovered even after the provision of concessions by the Government. However, the above WACC is not appropriate for calculating the cost based IUC for carriage and termination, because these estimates have to be based on full relevant costs without any adjustment for concessions given to BSNL. Thus, for IUC calculations, the WACC without any effect of concessions given to BSNL is the appropriate parameter. For calculating the relevant cost based IUC (i.e. termination and carriage charges), the Authority has thus used the WACC without adjusting for the concessions provided to BSNL."*

[Note: 'WACC' in the above paragraph means Weighted Average Cost of Capital]

9. Therefore the principal followed by The Authority was that the every cost of all the elements of the network required for completion of a call has been accounted for in IUC and any deficit arising out of rentals and to make calls affordable was accounted for in ADC. Thus the purpose of ADC was different from IUC.

10. In this regard it may also be noted that in per minute based ADC regime, in most of the scenarios the ADC was to be paid to BSNL, even when no IUC is required to be payable to BSNL as it is not involved in the completion of the call. As an example, mobile to mobile inter circle calls, wherein the traffic originated in the mobile network of an operator in one circle, carried by an NLDO (Other than BSNL) and terminated on the network of the same operator in another circle, the ADC was to be paid to BSNL, irrespective of the fact that it is not involved in the call and no IUC is required to be paid to it. Similarly in the percentage of AGR based ADC regime all the NLDOs and ILDOs are paying ADC to BSNL, even some of them are not carrying voice traffic and not having interconnection with BSNL. In view of all above, the Authority found no merit in the argument that ADC is an integral part of IUC.

Tariff rebalancing

11. One of the significant comments made by the incumbent, who had been the beneficiary of the ADC, that it is neither desirable nor feasible to rebalance the tariff of basic services because the cost based tariff would become non-competitiveness and unaffordable vis-à-vis cellular and WLL mobile services. In their view any increase in tariffs of basic services in rural areas is not sustainable and will lead to surrender of telephones and increase in digital divide. They also said that TRAI continues to regulate tariffs of basic services in rural areas that are far below cost based tariffs. BSNL, being well aware of its social responsibilities are providing rural connections even below the tariffs prescribed by TRAI. In

addition they feel that wireless services have been given a very favourable regulatory environment in terms of free spectrum, higher termination charge and reduction in licence fee creating unfair competition.

The Authority has analysed various tariff plans, relating to voice services, filed by the incumbent and the new class of services being offered by the incumbent on the wireline access network. For example, As per the tariff plan "LAGGE RAHO BSNL DE NAAL" for basic telephone customer filed by BSNL for Punjab Telecom Circle consumers would be able to make unlimited calls to all other basic telephones of BSNL. Beside all calls from such basic telephones to the mobile phone of BSNL will have 180 second pulse in place of existing 60 second pulse. Therefore, BSNL is emerging as a price leader in some segments and is making efforts to boost their mobile services using significant market power of the landline. This cross subsidization is a traditional practice in the industry and most service providers use it in some form or the other. In addition, service providers, both fixed and mobile, are trying to improve their revenue by giving value added services to their customers. In the case of BSNL also, it has been observed that now they have plans to offer voice, Internet services and IPTV(i.e triple play) on the same line which will increase Average Revenue Per User(ARPU) of wireline services. Therefore, the Authority is of the opinion that BSNL has been able to open new streams of revenue that will have the same effect as that of rebalancing in allowing them to recover the cost of the wireline access.

Admissibility of ADC and support from USO:

12. The Authority examined the argument of a few stakeholders that the purpose of USOF and ADC are entirely different and ADC cannot be subsumed into USOF. The Authority recalled a key clarification regarding ADC and USO regimes given in the

Explanatory Memorandum to The Telecommunication Interconnection Usage Charges (Fourth Amendment) Regulation dated 06.01.2005 wherein it was recognized that though they are not exactly identical there is a considerable overlap among the objectives of the USO and ADC regimes. It was also noted that the Authority has already stated that the ADC regime will be phased out over time and will any further support shall be through the USO regime. The framework used by the Authority to calculate the ADC amount integrally links the USO and the ADC regimes in a way that as the assistance from USO Fund increases, the ADC amount reduces. In this regard the Authority also referred to the definition of Universal Service Obligation in the Indian Telegraph(Amendment Act), 2006(57 of 2006) "Universal Service Obligation means the obligation to provide access to telegraph services to people in the rural and remote areas at affordable and reasonable prices." From this definition it can be inferred that the recommendations being made by the Authority as a result of this consultation with regard to use of USO fund for sustenance of rural wireline services are in conformance with the basic definition of USO as given in the telegraph act. It may also be mentioned here that USO fund has been instituted as a non-lapsable fund to meet USO requirement and has sufficient fund availability to meet the requirements of the recommendations made by the Authority as per Annexure I.

13. As on earlier occasions, BSNL has again raised the requirement of Rs 14,000 crore as ADC. The Authority recalled that when this requirement was raised in 2003, the calculations of ADC in the principal regulation was done in consultation with BSNL based on the historical cost data and the estimated admissible amount arrived at was about Rs 4800 crores. This has been clearly explained in Para 24 of Explanatory Memorandum to the principal regulation that is as under:

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"24. The Authority noted that the difference between historical costs and forward looking costs would be large, and relying on costs based only on modern and forward looking technologies would imply a large burden from the stranded costs for BSNL. While the Authority feels that change over to FLLRIC model is imperative, it examined the implications of a sudden changeover against a gradual changeover. Since BSNL is the major supplier of telecom services in the country and has also contributed the maximum for achieving the targets of rural tele-density and in supporting low paying subscribers, a changeover to FLLRIC at present would adversely affect the services provided not only to rural and low paying subscribers but also the telecom industry in the country as a whole. The Authority noted that BSNL is already deploying latest technology and lower cost equipment in its expansion programme. Since wireless technology is being used, it is expected that some of the existing network will also be gradually replaced by such equipment. In short, the approach is to achieve full shift to FLLRIC cost in a gradual manner over a few years rather than a single year change. The latter would leave heavy stranded cost and would be quite impractical. The Authority therefore, decided to rely on costs for the current year, based on as recent audited costs as possible. For this purpose, it worked with more recent data than was used in the initial IUC exercise. The Authority was of the view that with the changes in technology and a reduction in equipment costs taking place rapidly, the amount of funding required for ADC would decline. Over time, within a few years, therefore, it may be possible to do away with the ADC regime, and the ADC regime could be merged with the USO regime. This would be similar to the situation in most other countries, where the ADC regime had been combined with the USO regime, rather than the ADC funding being provided through a separate ADC regime."

14. Presently, the Government is collecting the USO amount as 5% of the Adjusted Gross Revenue as part of revenue share licence fee. Prior to 1.4.2004 USOF was supporting all rural wirelines installed before 1.4.2002, and was stopped when support became available through ADC. As per the current policy USOF is being used for new lines and new infrastructure. It is however seen that the utilization of the fund is far lower than collections. Once the ADC is phased out these non-remunerative rural lines would need support for keeping them viable.

15. In the above context, the Authority, in Para 3 of the IUC Regulation dated 23rd February 2006, indicated that "The Authority would submit suitable recommendations to the Government on this issue so that finally USO regime takes care of support on account of ADC also." TRAI had already communicated to DOT vide its letter dated 20th September 2006 and subsequent reminder dated 22nd November 2006 and 27th Dec 2007(Copies of letters have been annexed with the recommendations in Annexure B) that DOT may like to consider further course of action in view of the fact that the ADC is a depleting regime and will be phased out at the end of financial year 2007-08. The present consultation paper has discussed role of ADC and USO in great detail. It was mentioned that TRAI has been proposing phasing out of ADC and taking over of the responsibility of support of rural wirelines by USOF, firstly, to avoid overshadowing of the positive fallout of ADC by pronounced ill-effects of the mechanism on the Indian telecom market and cause undue burden on the consumers. Secondly, continuance of support from USOF is desirable because of the concern of bridging urban-rural divide and sustenance of incumbents' rural operations. It is important to sustain and encourage rural operation not only for bridging urban-rural divide but also for smooth introduction and proliferation of broadband services on wireline in rural areas. The Authority had therefore forwarded a copy of the Consultation Paper through letter dated 25.1.2008 for necessary action by DOT. (Copy of the letter annexed with the recommendations in Annexure C)

16. In this regard, the Authority has also taken note of BSNL's submissions that BSNL still need the financial support to the tune of Rs.8774 crore per annum to just sustain its basic services in rural areas. While TRAI is receptive to the support to BSNL's fixed line network operations in rural areas through USOF, however, this amount of the financial support as calculated by BSNL on

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some assumptions deserved further examination to reach a realistic figure. This has been explained in the recommendations to the Government on taking over the responsibility of providing support for rural wirelines installed before 1.4.2002 by USOF being sent to the Government simultaneously with these regulations. Such a change in the method of subsidy may require modification in the USO rules and will be in line with the Authority's earlier communication with the Government wherein TRAI mentioned that if wireline in rural areas require some further support beyond 2007 – 08 due to below cost rental and local call charges it should be through USOF.

Termination Charge

17. BSNL has further argued that implicit subsidy is being provided to wireless operators by way of higher termination charge and this needs to be corrected. The Authority examined the principal regulation issued on 29.10.2003 wherein termination charges for fixed line and mobile were prescribed. It has been found that it is clearly mentioned in Explanatory Memorandum to the Interconnection Usage Charges Regulation dated 29.10.2003 that the cost based termination charge for BSNL has been estimated at Rs.0.23 per minute. Relevant Para is reproduced below:

"(i) Cost of call termination for fixed line

78. Taking account of the methodology mentioned earlier, the cost based termination charge for BSNL has been estimated as Rs. 0.23. per minute. This is the same estimates as in the previous exercise. In view of the decision for a common termination charge because it will ease implementation and limit the distortions in the competitive regime, the Authority has specified a termination charge of Rs. 0.30 for all calls. As mentioned above, the additional revenue accruing to fixed line (BSNL) on account of revenue exceeding costs has been taken into account in the calculation of access deficit, i.e. the access deficit has been adjusted downwards to account for this revenue."

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As far as the mobile termination charge is concerned the termination charge for cellular mobile came to Rs.0.26 for metros and Rs.0.30 for circles per minute. Relevant Para is reproduced below:

"80. On the basis of the above estimates, the termination charge for cellular mobile comes to Rs. 0.26 per minute for metros and Rs. 0.30 per minute for circles. Thus, a termination charge of Rs. 0.30 can be applied for cellular mobile also."

18. To have simplified IUC regime in place and prevent disputes in reconciliation between operators, the Authority has had specified uniform termination charge. In view of the decision for a common termination charge the additional revenue accruing to fixed line on account of revenue exceeding cost has been taken into account in the calculation of access deficit and the deficit has been adjusted downward to account for this revenue.

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19. Termination charges were further reviewed through the Consultation Paper issued on 17.03.2005 that covers Carriage Charges, Termination Charges and Access deficit charges. After consultation process and internal discussion the Authority deliberated upon the issue and decided to keep them same for both mobile as well as fixed termination charge. The detailed reasoning of keeping it at the same level is provided in IUC Regulation dated 23.02.2006. Relevant Para is reproduced below:

"h) Mobile Termination Charge and Fixed line Termination Charge

58. Due to increased volume of traffic, it is likely that the termination charges especially for mobile services may come down. The Authority has also estimated and found that mobile termination charges as well as fixed termination charges could be lower than the present specified level of Rs.0.3 per minute. In spite of this, the Authority did not reduce the mobile termination charges and fixed termination charges mainly on account of the following reasons:-

i. *With the increased growth of subscribers, the addition in capacity of the network also has to match both in terms of the radio equipment capacity and also switching and transmission equipment capacity. If these additions in capacity do not match with the growth of subscribers then the quality of service deteriorates which is also a major concern of the Regulator. Regulator expects that along with the growth the service providers adds to the capacity of networks so that there is no deterioration in the quality of service which is being experience now for various parameters which has been laid down by TRAI in its QoS Regulation dated 8th July, 2005.*

ii. *Mobile termination charges in India are not only equal to fixed termination charges but they are even lower than one US cent per minute, which is not only lowest in the world but also it is 12 to 24 times lower than mobile termination charges in other countries of the world.* ***(Indicated in the table below)*** *This also should be noted that in all countries, the mobile equipments are supplied by the same set of vendors.*

iii. *As mentioned earlier, the mobile coverage in terms of population in India is only about 35% of the population which is lowest in the world and mobile operators have to increase their penetration into rural areas and therefore, large investments are to be made to cover even the 77% (world average) of the country's population. As networks penetrate into interiors and there is evidence that this is happening.*

iv. *The exponential growth in mobile subscribers has been possible because of various innovative and competitive tariff schemes which may have a higher component of incoming calls. If mobile termination charges are decreased then the viability and sustainability of these tariff plans may not be possible and this may retard the growth of mobile subscribers in the country. It should be noted that the main concern of the Authority here is not to ensure the viability of a tariff plan because that is the main responsibility of service provider in an unregulated tariff regime but the Authority has a responsibility to achieve a higher growth and tele-density in the country, and therefore, it is a matter of concern.*

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Table - 11: Termination Rates per minute for mobile service in different countries (June, 2004)

Name of the country	**Termination rates per minute**	
	Fixed	**Mobile**
	(US$)	**(US$)**
Australia	0.016	0.152
Brazil	0.020	0.080
China	0.010	0.025
Switzerland	0.017	0.163
Japan	0.022	0.130
India	0.007	0.007

59. Further, the World Bank (InfoDev Division) in its Report on Regulating Competition, Interconnection and Prices dated December 23, 2005 has mentioned as follows:-

*"**c. Mobile Termination Charges, Mobile Penetration and Universal Service Goals** - Developing countries with low penetration levels are experiencing a growing tension between encouraging further penetration of mobile services with above-cost mobile termination charges and the downward pressures of mobile termination rates coming from market and regulatory forces. This is especially valid in low penetrated markets in which there could be theoretical and practical justifications of having mobile termination charges above cost in order to cross subsidized access to the service (basically the handset) and mobile-to-mobile and mobile-to-fixed calls…….*

……However, in most of developing countries where landline penetration is far less ubiquitous, mobile telephone development is enabling countries to achieve universal service goals to segments of populations where landline or other telecommunication services have not ever penetrated before. High-income segments of population within developing countries are easily penetrated in the first stages of mobile telephony. The great challenge of the mobile industry is to continue penetrating low-income segments of the population and it is there where the source of industry growth will be coming from in most of developing countries. Any regulatory intervention to reduce mobile termination charges should weight the effects of reducing interconnection revenues that are used to cross-subsidized handset prices (i.e. access to the network to poorer segments of population) and outbound mobile prices, against the purported benefits that a reduction of charges would produce."

Keeping all these facts in view, the Authority decided not to review the termination charges and keep them same for both mobile as well as fixed termination charges. The Authority expects that mobile service providers would increase their penetration into rural and remote areas and the Authority would continue to monitor their progress in this regard."

20. Therefore, the Authority took account of the fact that it has already deliberated on the issue of mobile termination and fixed termination charges in 2006. The present consultation process was limited to Access Deficit Charges only and review of termination charges was not part of the consultation process.

Phasing out of ADC on international calls

21. BSNL has also argued that abolition of ADC will mainly benefit the foreign carriers, who will save Re.1 per minute on all international calls carried by them from their countries which are of the order of 1200 crores minutes per annum. They further argued that the Indian consumer will hardly get any benefit on this account, on the other hand the estimated ADC at current rate in 2008-09 would be Rs 2000 crores and may provide enough cushion to support loss-making rural operations.

22. The Authority examined the proposition made by the BSNL and found that ADC on international incoming calls has always been considered a source of arbitrage that sustains grey market operation. Phasing out of ADC would, therefore, pave the path for all calls coming through legitimate routes and thereby increase the revenue of service providers. Evidence available with the Authority shows that the number of international minutes is increasing very fast through voice over IP. Therefore, it becomes more important to reduce arbitrage available for switched telephony for getting advantage of elasticity available in international incoming calls.

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23. It is a matter of fact that reduction in ADC from time to time on international incoming calls has exploited the elasticity available in international minutes and increased the international incoming minutes in a big way through legitimate routes. However, at this stage the Authority has to balance two main objectives viz. providing support for rural fixed line provided by BSNL and reduction in arbitrage available in international incoming calls. It is acknowledged that reduction in ADC rate for incoming international minutes will further depress the grey market and boost international minutes through legitimate route. As already said above the Authority has been continuously taking up the matter with DOT for providing support to BSNL for their rural wireline operations post phasing out of ADC. It is, therefore, presumed that some amount of preparedness would already be there on the part of the Government. However, the Authority is convinced that the planning, accounting, budgetary proposal, Parliamentary approval etc. may take some more time and therefore it is of the opinion that for this transition period partial support to BSNL through ADC on incoming ILD calls should continue. **The Authority has decided to continue the ADC on incoming international calls for a further period of 6 months i.e. up to from 1st of April, 2008 to 30th of September, 2008 at the rate of Re 0.50(paise fifty only) per minute. This amount shall not be adjusted from the subsidy given from USOF for the year 2008-09. It will be additional adjustment support to BSNL.**

Calculation of financial assistance required

24. In earlier amendments the Authority had taken a view that detailed calculation of ADC was done in 2003 and in later years this would come down according to the established principle of depletion and would be phased out and the responsibility will be taken over by USO Fund by 2008-09. The Authority is convinced on both the

counts that ADC needs to be phased out and also the fixed rural network operations need to be supported through USO fund. TRAI has assessed the operational cost and revenue accruals and consequently the losses incurred by incumbent for their wireline operations in rural from the data made available to them by BSNL. Details of these all assessment have been given in the recommendation to the Government being sent simultaneously with the issue of these regulations and are given in Annexure 1 of the explanatory memorandum.

Decisions of the Authority

25. The Authority has maintained that ADC is an instrument that has the positive effect of allowing incumbent to smoothly transition from a monopoly to a competitive regime by sustaining its fixed line operations. It is also known that prolonged ADC puts avoidable burden on the customers, creates market distortion, gives rise to grey market for international calls and is a hurdle for innovation of services if continued for a long time. ADC therefore is a double-edged sword that needs to be used judiciously and for an appropriate period. It was therefore envisaged to be a depleting regime that would eventually be phased out and taken over by USO by 2008-09. The Authority has now decided to phase out ADC as described below and recommend continuation of subsidy for rural wireline operations from USOF.

26. The phasing out of ADC has been discussed above**. ADC as a percentage of AGR would be phased out on 1.4.2008.**

27. Support to BSNL through ADC on incoming ILD calls for a further period of 6 months i.e. up from 1st April, 2008 to 30th September, 2008 at the rate of Re 0.50 (paise fifty only) per minute to ensure continuity and to provide time to DOT to

work out some definite support during this period of change of subsidy from ADC to USO.

IV Other issues in the consultation paper

Issue 2: Providing support for BSNL wireline rural network from USOF

28. This issue dealt with the question of providing support to BSNL from USOF for their wireline operations in rural areas and deciding the amount of subsidy. From the stakeholders' comments it was evident that there was general support for the idea of providing subsidy to BSNL from the USO fund. BSNL however contended that ADC should not be subsumed with USO and both should be available. However they said that if support for rural wireline services is to be provided from USOF then amendments to the USO policy will be required to be carried out the Government and it has to be ensured that payments of requisite amounts on the actual cost basis start flowing from the USO fund before phasing out of ADC.

29. The Authority has deliberated on the matter in sufficient detail. Appropriate calculations have been done and USO rules have been examined. The Authority has taken a view that BSNL should be provided support from USOF for the fixed rural lines that will be left unsupported after withdrawal of ADC. The framework for this has been enunciated in detail in the recommendations sent to the Government and given in Annexure 1. The Authority has also kept in mind that the Government may take some time for planning, preparing budgetary proposal, getting budgetary allocation and operationalizing subsidy from USOF and therefore has taken the decision given above so that continuity in the flow of funds is maintained. The amount paid through ADC on incoming international calls during the period 1st April, 2008 to 30th

September, 2008 shall not adjusted from the amount payable from USOF.

30. The recommendations sent to DOT in this regard are at Annexure I

Issue 3: Financial incentive for subscribers in view of phasing out of ADC

31. The Authority also deliberated on the issue of mandating provision of financial incentive for mobile subscribers in rural areas. Here the opinion was divided with Operators Associations and Service providers not being in favour of this reduction of charges for the reasons that cost of delivery in rural is more, there would be a possibility of misuse and forebearance policy in mobile tariff should continue. The consumer organizations were in favour of mandating such a reduction to make services more affordable in rural areas.

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32. Analysis showed that reduction of ADC in the earlier years had made available extra finances to the service providers but it has not been possible to establish a direct nexus between this reduction and passing on the benefit to the customer by way of lower tariff. With the current decision of phasing out of ADC as a percentage of AGR the service providers are going to retain funds to the tune of about 750 crores for 2008-09. The Authority noted that even if this money were fully passed on to all the mobile subscribers then the spread of benefit would have been miniscule and it would not have been a feasible option. The Authority therefore has appealed to the service providers to come with innovative and attractive plans to give financial incentives to the rural subscribers to increase rural teledensity and bridge rural-urban divide. The Authority would like the service providers to

declare the year 2008-09 as the year for increasing rural penetration.

33. The Authority has decided to phase out ADC on Adjusted Gross Revenue of telecom service providers from 1.4.2008. Thus the ADC will no longer be applicable in the domestic sector and all domestic calls will be free from the incidence of ADC. It has been the endeavour of the Authority to evoleve a framework which would ensure positive gains to consumers once the ADC is removed from the domestic sector. On the issue of induction of positive features including possible reduction in entry charges for rural mobile subscribers. The Authority has organized a series of consultation in this regard with the telecom associations i.e. AUSPI, COAI and also with the service providers. The concern of the Authority in this regard as also poor penetration in rural areas was conveyed effectively. One of the options actively considered by the Authority was for lowering of start-up expenses of the new rural subscribers. The two telecom associations have assured that they are actively consulting their members and would come up, within a week, with constructive proposals for the consumers. They would particularly focus on rural telecom subscribers. Therefore, the Authority has decided that any pro-active measure from the Authority should be deferred and the Authority would prefer to evaluate the proposals of the telecom companies. Nevertheless, the Authority has appealed to the service providers to come with innovative and attractive plans to give financial incentives to the rural subscribers so that it clearly conveys the message that the year 2008-09 is the year for substantially increasing rural penetration and reducing digital divide. The year 2008-09 may be declared **'the year of increasing rural teledensity"**. The Authority has sought cooperation of service providers to really give effect to the slogan **"Aao rural telephony aur aage badhaen"**

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Summary of the main decisions

1. **ADC as a percentage of AGR shall be phased out on 1.4.2008**
2. **ADC on international incoming minutes shall per continued @ Re 0.50(paise fifty only) for the period from 1st April, 2008 to 30th September, 2008.**
3. **Recommendations are being sent to the Government to provide subsidy from USOF for BSNL's rural wireline operations. The amount of annual subsidy has been estimated as Rs 2000 crore for a period of 3 years.**
4. **The Authority will take a decision on taking any proactive measures after evaluating the proposals of the telecom companies related to induction of positive features including possible reduction in entry charges for rural mobile subscribers**

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Annexure 1

Recommendation On Support for Rural Wireline Connections, Installed Before 1.4.2002 From USOF, On Phasing Out Of ADC

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Recommendation On Support for Rural Wireline Connections, Installed Before 1.4.2002 From USOF, On Phasing Out Of ADC

Introduction

1. Access to the telecom services is the key to development and growth. To quote from the National Telecom Policy 1999(NTP99): "*Access to telecommunications is of utmost importance for achievement of the country's social and economic goals. Availability of affordable and effective communications for the citizens is at the core of the vision and goal of the telecom policy.*" Information and Communication Technologies (ICTs) provide new and exciting opportunities to those who have access to them. However, existing economic imbalances and social inequalities will be deepened if access is unequally distributed. Thus equal opportunities are necessary to avoid widening of the rural and urban digital divide.

2. At present, Universal Service Obligation Fund (USOF) covers both public access through public or community telephones and provision of individual household telephones in identified net high cost rural / remote areas. Rural Direct Exchange Line (R-DEL) scheme of USOF is coming to an end in March 2008 after the current extension given to the service providers for this scheme, at a much reduced rate, expires. Since its inception on 01.04.2002, USOF is providing support to the new rural lines. It may be noted that the lines installed by BSNL prior to 01.04.2002 (no other service provider has installed R-DELs before this date) were supported by USOF for a period from 1.4.2002 to 1.2.2004 on the basis of the difference between regulated rental and actual rental. USO support for these R-DELs was withdrawn from 01.02.2004 since the scope of the Access Deficit Charge (ADC) was increased to take care of the deficit arising out of cost based rental and prevailing rental in rural areas.

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3. As per the data available with TRAI, BSNL has about 99.87% wirelines in rural areas. In many areas this is the only mode of communication. In the absence of any support, sustainability of existing wireline operations of the incumbent in rural areas could be hampered. Because of intense competition in the market BSNL as a commercial entity may not like to maintain these at high cost and net loss without any compensatory financial assistance. In case there is no financial assistance the shortfall may be made up from the increase in tariff or the service provider may decide to exit from the business. In both the situations the rural urban divide would further widen thereby defeating the principle of universal access propounded in the NTP 1999 and USO policy. Sustainability of these lines is also very important from another viewpoint. This legacy fixed wireline network is an important national asset that offers a number of advantages. Digital Subscriber Line (DSL), the current dominant broadband technology, works on copper and would also ultimately be key to pushing forward broadband penetration. Though proliferation of broadband in rural areas will take some time to build-up but when it does, BSNL may be able to increase ARPU by offering value added services like IPTV, telemedicine, e-learning etc and make these line self sustaining. To make this happen it needs to be ensured that wireline connections are supported and their maintenance is taken care of through an appropriate subsidy.

4. Within the framework established through earlier regulations, the Authority invited stakeholders for a consultation on the issues of phasing out of ADC, support to rural wireline from USOF and growth of rural mobile telephones by requiring the operators to use resultant savings for developing rural network and promoting subscription for mobile services. It is expected that a larger part of the growth in the next three years would be from rural areas.

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There was overwhelming support for ADC being phased out and support for rural wirelines being extended from USOF. This would allow the negative impacts of subsidy, in the form of ADC, to be obliterated and at the same time continue legitimate and much needed support to rural telephony. A subsidy for maintenance of rural wireline network will also ensure level playing field with other service providers who do not, like BSNL, have any high maintenance legacy network in rural areas and also have no compulsion to meet social obligations which allows them to make investment on the basis of sound business cases. In arriving at the recommendations contained in the following sections, the Authority has duly considered the inputs provided during the public consultations.

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5. It is expected that these recommendations would help sustainability of rural wireline operations in the country after abolition of ADC through utilization of the non-lapsable Universal Service Obligation Fund towards meeting Universal Service Obligation.

Framework of the IUC/ADC regulations

6. Interconnection Usage Charges (IUC) and Access Deficit Charges (ADC) regimes were established by the TRAI through "The Telecommunication Interconnection Usage Charges Regulation 2003" (1 of 2003) dated the 24th January 2003. This regime came into effect from 01.05.2003. The Authority reviewed the above regime and the revised IUC and ADC regimes notified by "The Telecommunication Interconnection Usage Charges Regulation, 2003" (4 of 2003) dated 29.10.2003 superseded the earlier Regulations referred above and became effective from the 01.02.2004. This then became the principal regulation that was amended from time to time within the established framework and reflect contemporary industry situation.

7. The Authority amended the above Regulation vide "The Telecommunication Interconnection Usage Charges Regulation" dated 06.01.2005 effective from 01.02.2005. The Authority further amended the Regulation vide "The Telecommunication Interconnection Usage Charges Regulation" dated 23.02.2006 effective from 01.03.2006. In the Explanatory Memorandum to the above Regulation the Authority has already indicated that it would submit suitable recommendations to the Government on the issue so that finally USO regime takes care of support on account of ADC also.

8. The Authority further amended the IUC Regulation on 21.03.2007 as a part of its annual review and extended support to BSNL in the form of the ADC. With this amendment the per minute ADC component on all the calls originated by Indian consumers was removed to minimize the ill-effects of per minute ADC regime and paved the path for lower call charges.

9. The present consultation paper reiterates views of TRAI enunciated in the earlier amendments. It is proposed that ADC be phased out and USOF may take over of the responsibility of support of rural wirelines. This would not only be in line with undesirability of continuing with the ADC regime and also ensure that support from USOF is continued to meet the concern of bridging urban-rural divide in general and sustenance of incumbents' rural operations in particular.

Phasing out ADC and giving support through USOF

10. It has been said in the consultation paper that with liberalization and competition the cross subsidy available to local

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call charges for basic services from the surplus margin available in national and international long distance calls has effectively vanished. The situation called for a regime to manage the sustainability of the fixed line operations and to facilitate the incumbent to smoothly transit from a monopoly to a competitive regime. To facilitate this transition the Telecom Regulatory Authority of India (TRAI) put the Access Deficit Charge (ADC) regime in place. This ADC support during transition was necessary for the network in the bucolic areas and more importantly one that was focused on important social objectives in the telecom sector.

11. It is also undisputed that prolonged ADC puts avoidable burden on the customers, creates market distortion, gives rise to grey market for international calls and is a hurdle for innovation of services. ADC therefore is a double edged sword that needs to be used judiciously and for an appropriate period. It was therefore envisaged to be a depleting regime that would eventually be phased out and the responsibility of financial assistance to rural wirelines be transferred to USOF by 2008-09.

12. Having said the above, the Authority feels that there is still a case for supporting fixed line network of BSNL in rural areas. Further, because of the unwanted effects attached with ADC the support is proposed through USOF.

13. BSNL is maintaining a network with a large footprint and providing services in remote and far-flung areas. The fixed line rural network that existed prior to 1.4.2002 was primarily set-up with government funding at high cost and was always supported by USO or ADC since inception of these regimes. These lines are expensive to maintain and their operating expenses generally exceed the revenue. Their viability is further threatened by

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increasing competition in national and international long distance segments and also from mobile network. The Authority is, therefore, of the view that some form of assistance would still be needed to support incumbent in sustaining their non-remunerative operation and this support should be given from the USO Fund to BSNL.

14. In the above context, the Authority, in Para 3 of the IUC Regulation dated 23rd February 2006, indicated that

"The Authority would submit suitable recommendations to the Government on this issue so that finally USO regime takes care of support on account of ADC also."

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In pursuance of the above stipulation, TRAI had already communicated to DOT vide its letter dated 20th September 2006 and subsequent reminder dated 22nd November 2006 and 27th Dec 2007(Copies of letters have been annexed at Annexure B) that DOT may like to consider further course of action in view of the fact that the ADC is a depleting regime and will be phased out at the end of financial year 2007-08. The present consultation paper has discussed role of ADC and USO in great detail. It was mentioned that TRAI has been proposing phasing out of ADC and taking over of the responsibility of support of rural wirelines by USOF, firstly, to avoid overshadowing of the positive fallout of ADC by pronounced ill-effects of the mechanism on the Indian telecom market and cause undue burden on the consumers. Secondly, continuance of support from USOF is desirable because of the concern of bridging urban-rural divide and sustenance of incumbents' rural operations. It is important to sustain and encourage rural operation not only for bridging urban-rural divide but also for smooth introduction and proliferation of broadband services on wireline in rural areas. The Authority had therefore

forwarded a copy of the Consultation Paper through letter dated 25.1.2008 for necessary action by DOT. (Copy of the letter annexed at Annexure C)

15. Overwhelming opinion from the stakeholders was received in favour of phasing out of ADC from 01.04.2008 and if justified support to BSNL from the USO Fund. **The Authority has analysed the comments in the detail and is of the view that support for sustainability of rural wirelines may be extended to BSNL for three years**. The subsidy is proposed to be time limited so that BSNL gets time to and makes efforts to increase revenue by giving value added services and reducing cost of operations. The scheme should not provide incentive for incurring losses but should improve the performance of the service provider.

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16. As already said above the Authority has been continuously taking up the matter with DOT for providing support to BSNL for their rural wireline operations post phasing out of ADC. It is, therefore, presumed that some amount of preparedness would already be there on the part of the Government. However, the Authority is convinced that the planning, accounting, budgetary proposal, Parliamentary approval etc. may take some more time and therefore it is of the opinion that for this transition period support to BSNL through ADC on incoming ILD calls should continue. The Authority has decided to continue the ADC on incoming international calls for a further period from 1.4.2008 to 30.9.2008 at the rate of Rs 0.50(paise fifty only) per minute. This is being impelemented by appropriate amendment to the IUC/ADC regulations**. This amount shall not adjusted from the subsidy given from USOF.**

17. The Authority has analysed various possibilities like providing subsidy to all rural lines, wireline only, line installed

before 01.04.2002 and the lines which are not getting any support in any of the scheme of the USO. In this context the Authority noted, Stream-II (a) of USO covers support from USOF to RDELs installed prior to 1.4.2002. This support was given from USOF for a limited period of 22 months (1.4.2002 to 31.1.2004). Under Stream –II (b) of USO schemes, Rural Household DELs provided after 1.4.2002 in the 1685 net cost positive SDCAs out of 2647 SDCAs, are given support through a competitive bidding process to the successful bidder. The support in these 1685 SDCAs takes into account the Capital recovery, Operational expenses and Revenue to determine the net cost. Since the selection of Universal Service Provider and the rate at which reimbursement from USOF is determined through a multi-stage, informed bidding process; any support to rural fixed lines in these SDCAs could lead to vitiation of the bid process. Issue of verifiability under two different schemes covering the same period could also arise. RDELs installed after 1.4.2002, in the remaining 962 SDCAs are not being given any support as these SDCAs are net cost negative. It is therefore felt that the wirelines installed before 01.04.2002 would be left without any support after abolishment of ADC.

Amount of support from USOF for sustenance of BSNL fixed wirelines installed before 1.4.2002

18. BSNL has submitted before the Authority that it needs Rs 8,774 Crore per annum for sustaining the operation of its basic services in rural areas. It has been observed that BSNL has arrived at this figure after making assumptions for the data that may be not readily separately available in their books of accounts. Infact, such data has not even been furnished to TRAI in the accounting separation reports submitted. This may be understandable to a certain degree as BSNL has a vast pan India network which has been developed and deployed over a long period of time since when

the operations were with DOT then with DTS and finally when the operations were transferred to BSNL. It has also been intimated by BSNL in a separate communication to TRAI that in view of the fact that their's being a legacy system where the same exchange equipment and manpower are used for providing various services, it is practically not feasible to maintain dedicated segregated books of accounts.

19. In the situation mentioned above any service provider would use the available data and make assumptions to suit its case. However, taking a balanced view the Authority examined the data and calculation of BSNL on various parameters and it is found that there is wide variation in the data furnished now when compared with the information for the financial year 2006-07 filed under the Accounting Separation Regulation, 2004 and other data filed by the BSNL on the same subject from time to time.

20. As per BSNL's submission there is a shortfall of Rs. 472 per rural subscriber per month during the financial year 2006-07. The shortfall is the difference between operating expenditure and revenue recovered from its rural subscribers. BSNL has also submitted that the operating expenditure and revenue per subscriber per month for rural subscriber is Rs 643 and 171 respectively. It has also been noted that in arriving at the rural Opex, a mark-up on its average Opex per line cost by 50% had been carried out.

21. The Authority examined the calculations of Opex per line for the financial year 2006-07 of BSNL and noted that the cost information taken in calculation of Opex for basic services is not in consonance with the cost information provided in the accounting separation reports for the same period to the Authority.

22. The Authority analyzed the cost structure of BSNL for basic services and finds that generally three cost components i.e. Electricity, Fuel &Power and Network operating cost may higher in rural areas as compared areas. These costs constitute only about 16% of total Opex of Basic service. Therefore, the Mark-up factor of 1.5 cannot be applied on the whole Average Opex of Basic services but should be limited to these three cost components. According to these reasonable assumptions, the Opex cost for rural fixed line would be about Rs. 425 per month.

23. BSNL has also submitted the financial year–wise total revenue from rural telephony. BSNL has indicated that the Average revenue recovered per line per month from its rural fixed lines during 2006-07 comes to Rs.171 with rental component of Rs.68 and call charges revenue of Rs.103. BSNL has now provided, during the consultation process, the figure of rural revenue of Rs.3202 for the year 2004-2005 which does match with the data provided earlier. Similar discrepancies were also noted for the figures provided, during consultation, for financial year 2005-2006 which do not tally with the information furnished in the Accounting Separation Reports. Based on the data available in the Accounting Separation Reports 2005-06, the Authority calculated revised ARPU of rural wire line telephony which comes to Rs 307 per month per subscriber. As for the financial year 2006-07, BSNL has not provided its revenue from rural wire-line subscriber of Basic services in its Accounting separation reports, therefore, the Authority has estimated ARPU based on trends indicated in the BSNL submissions and this ARPU for Wireline comes to Rs 279 per month per subscriber for the financial year 2006-07.

24. The Authority noted that BSNL has taken into account 1.54 Crore rural wirelines (including WLL) as on 31st March 2007 to arrive at

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the estimated loss on account of rural operations. As mentioned in an earlier para R-DELs installed after 1.4.2002 are receiving support under the ongoing USO scheme through a bidding process. Computation of support required has therefore been limited to R- DELs installed prior to 1.4. 2002 (i.e. 0.90 Crore rural wirelines).

25. The Authority also noted that BSNL has deducted total revenue (Rental +Call Revenue) from the operating expenditure to arrive at the shortfall in rural operation. As per the generally accepted practice, the Authority considered only operating revenue against the operating expenditure to assess the operational sustainability of the service providers. As per this principle, it is estimated that there is a shortfall of Rs 214 per month per rural wireline subscriber, requiring a support of about Rs 2300 crore for rural lines installed before April 2002. **To address the disconnection of lines over a period of time, the amount can be restricted to Rs 2000 crore per annum for 3 years.**

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Modifications in the rules and suggested method of release

26. In accordance with the Indian Telegraph (Amendment) Rules, 2004 framed under the Indian Telegraph Act, 1885, support for rural household DELs has been provided under two schemes from the Universal Service Obligation Fund (USOF). Stream-II (a) of USO covers support from USOF to RDELs installed prior to 1.4.2002. This support was given from USOF for a limited period of 22 months (1.4.2002 to 31.1.2004). The Rules also recognize need for support till such time the ADC takes into account such difference. Only a modification to the Indian Telegraph Rules for support from USOF to RDELs installed prior to 1.4.2002 would be required in order to take care of reimbursement based on operational sustainability with net cost being determined taking into account

opex and revenues excluding rental, as the Indian Telegraph Rules(ITR) provided for reimbursement towards the difference in rental actually charged from rural subscribers and rent prescribed by TRAI. Suggested insertion in the **Indian Telegraph(Amendment) 2004 Rule 525 (2) (ii) (a) is given at Annexure A.**

27. The Funds may be released in four quarterly installments at the beginning of each quarter. BSNL should furnish a certificate for funds having been utilized towards operation and maintenance of RDELs provided prior to 1.4.2002, before the release of next quarterly installment.

28. In so far as availability of funds is concerned, till FY 2006-07, the contribution from service providers towards USO has been approx. Rs 15,000 crores, out of which a sum of Rs. 5000 crore (approx.) has been spent over the same period. Taking into account the ongoing schemes and the annual disbursement from USOF, the annual fund utilization would be around Rs 2000 crore. Considering the amounts collected so far towards USO, the annual collections and annual disbursements, sufficient funds would be available to meet the additional requirement for support towards RDELs installed prior to 1.4.2002, without the need for augmentation through increase in the USO levy.

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Summary of the recommendations

1. **The Authority recommends that BSNL should be provided support for sustenance of fixed rural wirelines installed before 1.4.2002**
2. **This amount should be Rs 2000 crores per year for a period of 3 years effective from 1.4.2008**

3. **The amount would be payable in four quarterly installments paid in the beginning of each quarter.**
4. **BSNL should furnish a certificate for funds having been utilized towards operation and maintenance of RDELs provided prior to 1.4.2002, before the release of next quarterly installment.**

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Annexure A

" Provided from the financial year 2008-09 for household Direct Exchange lines installed prior to 1st day of April, 2002, eligible service provider shall be reimbursed Rupees two thousand crores (Rs. 2000 crore) per annum for a period of three years.

Provided that the Central Government may after seeking recommendation of TRAI, on review; continue the reimbursement at the same rate or at a lower rate beyond three years, for a period as may be decided by the Central Government from time to time.

Explanation- For the purpose of item (a) of Stream II, "eligible operator" means Bharat Sanchar Nigam Limited."

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Annexure B

No.409-12/2006-FN Dated 20th September 2006

To

The Secretary,
Department of Telecommunication,
Sanchar Bhawan,
New Delhi – 110 001.

Subject:- Universal Service Obligation Fund (USOF) – Alternative to Access Deficit Charge (ADC) from FY 2008 – 09.

Sir,

In October 2003, the Access Deficit Charge (ADC) regime was put in place by the Telecom Regulatory Authority of India (Authority) as a part of its Interconnect Usage Charge (IUC) Regulation, so as to ensure the sustainability of the operations of the fixed lines in an environment where on account of social requirement the access charges are below cost. This support is particularly important for network with substantial rural coverage, specially to keep the rural rental as well as local call charges affordable. However, the ADC is generally a depleting subsidy regime and was introduced mainly to give time to the incumbent for rebalancing its tariffs during the transition period and was planned to be phased out over time.

2. Keeping in mind the fact that ADC is a type of subsidy and therefore cannot be continued in perpetuity, TRAI in its Interconnection Usage Charges (IUC) Regulation dated 23rd February 2006 and earlier had indicated that the ADC shall be phased out from the FY 2008 – 2009. Therefore, to meet the social objective of below cost rural rental and to keep the local call charges within affordable limit, some other option to meet the above policy objective, is required to be explored. The Authority also indicated in its IUC Regulation dated 23rd February 06 that it will submit suitable recommendations to Government on this issue so that finally USO Regime takes care of support on account of ADC also (para 3 of explanatory memorandum).

3. The Authority is of the view that since there is already an instrument available to support the rural telecom service in India i.e. USO, there is a case for utilizing this fund for the purpose of supporting the below cost rural rentals and call charges. In many other countries, to support the affordable rural telephony only one of such instruments is used.

4. In this context, it is mentioned that DOT is already providing USO support towards installation of Rural Household Direct Exchange Lines to the individual customers in rural areas for 1685 short distance charging areas (SDCA), which are high cost low income (Net Cost) areas out of a total 2647 SDCA in the country. Although both ADC and USO are two separate schemes, they have some commonality in the objective and are overlapping as regards to admissibility.

5. In the light of the above, Authority is of the view that in case it is considered that the fixed lines in rural areas require some further support beyond 2007 – 08 due to below cost rental and local call charges from national policy perspective, it could be considered for support through alternative mechanism like USO. DOT may like to consider further course of action in view of the fact that the ADC is a depleting regime and will be phased out by March 2008.

6. This issues with the approval of Authority.

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Yours faithfully,

Sd/-
(Rajendra Singh)
Secretary

No.409-12/2006-FN Dated the 22nd November, 2006

To

The Secretary,
Department of Telecommunications,
Sanchar Bhawan, New Delhi.

Subject:- Universal Service Obligation Fund (USOF) – Alternative to Access Deficit Charge (ADC) from FY 2008 – 09.

Sir,

Please refer to TRAI's letter of even number dated 20th September, 2006 on the above subject (copy enclosed). The main thrust is in para 5 of the letter wherein the Authority conveyed that in case it is considered that the fixed lines in rural areas require some further support beyond 2007 – 08 due to below cost rental and local calls charges from national policy perspective, it could be considered for support through alternative mechanism like USO. DOT was accordingly requested to consider further course of action keeping in view the fact that the ADC is a depleting regime and will be phased out by March, 2008.

Since TRAI is in the process of reviewing the IUC/ADC Regime for the year 2007-08, the Authority proposes to issue consultation paper on this subject by December 31, 2006. It will be highly appreciated if TRAI is apprised of the status of the action being taken on its letter dated 20.9.2006 referred above.

Yours faithfully,

Sd/-
(Rajendra Singh)
Secretary

Enclosure: As above

REMINDER

F.No.409-12/2006-FN Dated the 27th December, 2007

To

The Secretary,
Department of Telecommunications,
Sanchar Bhawan,
New Delhi.

Subject:- Universal Service Obligation Fund (USOF) – Alternative to Access Deficit Charge (ADC) from FY 2008 – 09.

Sir,

Please refer to TRAI's letter of even number dated 20.9.2006 and subsequent reminder dated 22.11.2006 on the above subject (copies enclosed). The Authority had stressed that in case it is considered that the fixed lines in rural areas require some further support beyond 2007-08 due to below cost rental and local calls charges from national policy perspective, it could be considered for support through alternative mechanism like USO.

2. It is requested that TRAI may be apprised of the status of the action taken on its letters referred to above.

Yours faithfully,

Sd/-
(R.N. Choubey)
Secretary In-charge

Encl: as above

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Annexure C

D.O. No.402-4/2005-FN (Pt.)
January 25, 2008

Dear Shri Behura,

As you are aware the Telecommunications Interconnection Usage Charge Regulation, 2003 was issued on 29th October, 2003. The ADC regime has since been reviewed on 6th January, 2005, 23rd February 2006 and 21st March, 2007 to reflect the changes determined in the ADC regime. A fresh consultation paper on Access Deficit Charge (ADC) has been issued on January 21, 2008 and a copy of the paper along with a copy of press release was sent to you vide D.O. letter No. 409-22/2007-FN dated 21st January, 2008. The Consultation paper is for necessary action.

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With regards,

Yours sincerely,

(Nripendra Misra)

Shri Siddhartha Behura,
Secretary
Department of Telecomunications,
Sanchar Bhavan,
New Delhi.

TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (TENTH AMENDMENT) REGULATIONS, 2009
(2 of 2009)

TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION

New Delhi, the 9th March, 2009

File No. 409-12/2008-FN.---------- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Usage Charges Regulation, 2003(4 of 2003), namely:-

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1. (1) These regulations may be called the Telecommunication Interconnection Usage Charges (Tenth Amendment) Regulations, 2009.

(2) They shall come into force with effect from the 1st day of April, 2009.

2. In the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), (hereinafter referred to as the principal regulations), --------

(a) in regulation 4, after the entry "Schedule III - Access Deficit Charge (ADC)", the following entry shall be inserted, namely:-

"Schedule IV - Interconnect Usage Charge (IUC) for Short Message Service (SMS)";

(b) in regulation 5, after sub-regulation (iv), the following sub-regulations shall be inserted, namely:-

"(v) **Reporting Requirement for carriage charges for long distance calls within India specified under paragraph (a) of Schedule II**. Every National Long Distance Operator shall, on quarterly basis, report to the Authority the per minute rate of carriage charge and the total amount of such carriage charge for long distance calls within India received by it from every BSO/CMSP/UASL/ILDO, separately, and every BSO/CMSP/UASL/ILDO shall, on quarterly basis, report to the Authority, the per minute carriage charges for long distance calls within India and the total amount of such carriage charge for long distance calls within India paid by them to every National Long Distance Operator, separately, and such quarterly report shall be submitted to the Authority within thirty days of the end of the previous quarter.

(vi) **Reporting Requirement of Interconnection Usage Charge for Short Message Service (SMS) specified under paragraph (1) of Schedule IV**. Every BSO/CMSP/UASL/NLDO/ILDO shall, on quarterly basis, report to the Authority, the rate of Interconnect Usage Charge for SMS and the total amount of such Interconnect Usage Charge for SMS received by it from other BSO/CMSP/UASL/NLDO/ILDO and paid by it to other BSO/CMSP/UASL/NLDO/ILDO, separately, and such quarterly report shall be submitted to the Authority within thirty days of the end of the previous quarter.".

3. In Schedule I to the principal regulations, for paragraph 1, the following paragraph shall be substituted, namely:-

"1. Termination Charges

Termination charge for Local and National Long Distance voice calls to Fixed Wireline, Wireless in Local Loop (Fixed), Wireless in Local Loop(Mobile), Cellular Mobile Telephone Service (both 2G and 3G) shall be uniform at the rate of Re. 0.20(twenty paise only) per minute and the termination charge for incoming International Long Distance voice calls to such Fixed Wireline, Wireless in Local Loop (Fixed), Wireless in Local Loop(Mobile), Cellular Mobile Telephone Service (both 2G and 3G) shall be uniform at the rate of Re. 0. 40 (forty paise only) per minute.".

4. In Schedule II to the principal regulations,-------

(a) in paragraph (b), for the words and figures "should be lower than Rs. 0.20 per minute", the words and figures "shall be less than Re. 0.15(Fifteen paise only) per minute" shall be substituted;

(b) after paragraph (c), and before Notes to the Schedule II, the following paragraphs shall be inserted, namely:-

"(d) **Trunk Automatic Exchange (TAX) transit charges**. Trunk Automatic Exchange transit charge in all cases, other than transit charge for accessing the Cellular Mobile Telephone Service of Bharat Sanchar Nigam Limited by Cellular Operators which is governed by the Telecom Regulatory Authority of India (Transit Charges for Bharat Sanchar Nigam Limited's CellOne Terminating Traffic) Regulation, 2005 (10 of 2005), shall be less than Re.0.15 (Fifteen paise only) per minute and, subject to the said limit, may be decided by the concerned service providers through mutual commercial arrangement.

(e) **Transit Carriage Charge from Level II Trunk Automatic Exchange (TAX) to SDCA.** Transit carriage charge for carriage of intra-circle traffic handed over from Cellular Mobile networks to Fixed network, from Level II Trunk Automatic Exchange (TAX) of LDCA in which the call is to be terminated, to SDCA, shall be Re. 0.15 (Fifteen paise only) per minute, irrespective of distance.**"**.

5. After Schedule III to the principal regulations, the following Schedule shall be inserted, namely:-

"Schedule IV

INTERCONNECT USAGE CHARGE (IUC) FOR SHORT MESSAGE SERVICE (SMS)

Interconnect Usage Charge (IUC) for Short Message Service (SMS).- Interconnect Usage Charge (IUC) for Short Message Service (SMS) shall be under forbearance:

Provided that such charges shall be transparent, reciprocal and non-discriminatory.".

(Lav Gupta)
Principal Advisor
(Interconnection & Fixed Network Division)

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Note1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29th October 2003 (4 of 2003) and subsequently amended vide notifications Nos --

(i) 409-5/2003-FN dated 25th November 2003 (5 of 2003) (First Amendment);
(ii) 409-5/2003-FN dated 12th December 2003 (6 of 2003) (Second Amendment);
(iii) 409-5/2003-FN dated 31st December 2003 (7 of 2003) (Third Amendment);
(iv) 409-8/2004-FN dated 6th January 2005 (1 of 2005) (Fourth Amendment);
(v) 409-8/2004-FN dated 11th April 2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21st September, 2005 in appeal No. 7 of 2005;
(vi) 409-5/2005-FN dated 23rd February 2006 (1 of 2006) (Sixth Amendment);
(vii) 409-5-2005-FN dated 10th March 2006 (2 of 2006) (Seventh Amendment);
(viii) 409-2-2007-FN dated 21st March 2007 (2 of 2007) (Eighth Amendment);
(ix) 409-22/2007-FN dated 27th March 2008 (2 of 2008) (Ninth Amendment).

Note 2. The Explanatory Memorandum explains the objects and reasons of these regulations.

TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (ELEVENTH AMENDMENT) REGULATIONS, 2015 (1 of 2015)

TELECOM REGULATORY AUTHORITY OF INDIA NOTIFICATION

New Delhi, the 23rd February, 2015

File No. 409-8/2014-NSL-1 ---------- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

1. (1) These regulations may be called the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015 (1 of 2015).

(2) They shall come into force with effect from the 1st day of March, 2015.

2. In Schedule I of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), for paragraph 1, the following paragraph shall be substituted, namely:-

"1. Termination Charges

The following termination charge shall be applicable for Local, National Long Distance and International Long Distance calls:-

Type of Call	Type of traffic	Termination charge
(1) Local and National Long Distance Call	Wireless to wireless	Re. 0.14 (paise fourteen only) per minute
	Wireless to wireline	0 (Zero)
	Wireline to wireline	0 (Zero)
	Wireline to wireless	0 (Zero)
(2) International call	International incoming call to wireless and wireline	Re. 0.53 (paise fifty three only) per minute

Note-Wireless means full mobility, limited mobility and fixed wireless access services."

(Sudhir Gupta)
Secretary

Note 1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29.10.2003 (4 of 2003) and subsequently amended vide notifications Nos. --

(i) 409-5/2003-FN dated 25.11.2003 (5 of 2003) (First Amendment);

(ii) 409-5/2003-FN dated 12.12.2003 (6 of 2003) (Second Amendment);

(iii) 409-5/2003-FN dated 31.12.2003 (7 of 2003) (Third Amendment);

(iv) 409-8/2004-FN dated 06.01.2005 (1 of 2005) (Fourth Amendment);

(v) 409-8/2004-FN dated 11.04.2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21.09.2005 in appeal No. 7 of 2005;

(vi) 409-5/2005-FN dated 23.02.2006 (1 of 2006) (Sixth Amendment);

(vii) 409-5/2005-FN dated 10.03.2006 (2 of 2006) (Seventh Amendment);

(viii) 409-2/2007-FN dated 21.03.2007 (2 of 2007) (Eighth Amendment);

(ix) 409-22/2007-FN dated 27.03.2008 (2 of 2008) (Ninth Amendment);

(x) 409-12/2008-FN dated 09.03.2009 (2 of 2009) (Tenth Amendment).

Note 2. The Explanatory Memorandum explains the objects and reasons of The Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015 (1 of 2015).

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Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015"

A. Interconnection and Interconnection Usage Charges

1. Interconnection means the commercial and technical arrangements under which service providers connect their equipment, networks and services to enable their customers to have access to the customers, services and networks of other service providers.

2. Interconnection is extremely important from a consumer perspective. Telecom users cannot communicate with each other or connect with services they demand unless necessary interconnection arrangements are in place. Commercial and technical arrangements must be made to facilitate interconnection between network operators. A number of issues must be agreed upon by the operators or determined by the regulator in order to finalize these arrangements. The most important commercial issue for a successful interconnection arrangement is the Interconnection Usage Charge (IUC). A brief description of the various components of IUC is given below.

(1) Termination Charge

3. Termination charges are the charges payable by an access provider, whose subscriber originates the call, to the access service provider in whose network the call terminates. In a calling-party-pays (CPP) regime, the calling party subscriber pays for the call to his access provider and the calling party's access provider usually pays termination charge to the called party's access provider to cover the interconnection/ network usage cost.

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(2) International Termination Charge

4. International termination charges are the charges payable by an International Long Distance Operator (ILDO), which is carrying calls from outside the country, to the access provider in the country in whose network the call terminates.

(3) Transit Charge

5. When two telecom networks are not directly connected, an intermediate network is used through which calls are transmitted to the terminating network. Such an intermediate network is known as a transit network and the charges to be paid to the transit network to cover the interconnection/ network usage cost are called transit charges.

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(4) Carriage Charges

6. Access providers in India can offer access services within the Licensed Service Areas (LSAs), also known as circles; the inter-circle traffic is required to be routed through a National Long Distance Operator (NLDO). The charges to be paid by an access provider to the NLDO to cover the cost for carrying the inter-circle calls are called carriage charges.

(5) Origination Charges

7. The calling party's access provider collects call charges from the calling party (i.e. his subscriber) as per the applicable tariff. From the amount so collected from the subscriber, the access provider has to pay termination charges to the called party's access provider and carriage charges (in case of an inter-circle call) to the NLDO. The access provider retains the balance amount to cover the cost of originating the call. The amount so retained by the calling party's access provider is called an origination charge. In India, origination charges have not been specified and are under forbearance.

(6) International Settlement Charge

8. International settlement charges are the charges exchanged between foreign service providers and Indian ILDOs for exchanging international traffic. The international settlement charge includes international carriage charge, national carriage charge (if any) and the termination charge applicable in the respective country.

B. Framework for IUC in India

9. The framework of Interconnection Usage Charges was established by the Authority through 'The Telecommunication Interconnection Usage Charges (IUC) Regulation, 2003 (1 of 2003)' dated 24.01.2003. This Regulation, which became effective from 01.05.2003, introduced the CPP regime in India. It is widely believed that the CPP regime is a major factor contributing to the fast growth of the telecom services sector in the country.

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10. The origination charge, carriage charge and termination charge were specified through this Regulation. The charges were based on the type of network in which the call originated or terminated and the distance travelled in a service provider's network. In case of the cellular network, the charges were also based on whether the destination network was in a metro or a non-metro city. While termination charges varied from Re. 0.15 to Re. 0.50 per minute depending on the distance, carriage charges varied from Re. 0.20 to Re. 1.10 per minute.

11. On the basis of the feedback received from various stakeholders about the IUC regime put in place through the Telecommunication Interconnection Usage Regulation, 2003, the Authority initiated a consultation process in May, 2003. After completing the consultation process, a revised IUC regime was notified through 'The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003)' dated the 29.10.2003 superseding the earlier

Regulation. This Regulation came into effect from 01.02.2004. At present, this Regulation is the principal IUC Regulation. In this Regulation, a uniform termination charge of Re. 0.30 per minute was prescribed irrespective of distance for all types of calls viz. fixed-line, wireless in local loop and full mobility. The carriage charges remained distance based.

12. The Authority conducted another review of IUC regime based on its consultation paper dated 17.03.2005. Based on the consultation process and discussions with industry, the Authority notified an amendment regulation dated 23.02.2006, through which the ceiling on carriage charges was fixed while other IUC components were kept at the same level as before. The change in the carriage charge regime provided a strong basis to the telecom service providers (TSPs) to reduce long-distance tariffs and to offer uniform STD tariffs across the country.

13. Subsequently, another IUC review was conducted in 2008-09. Based on the detailed consultation process, the Authority notified a revised IUC regime on 09.03.2009 which became effective from 01.04.2009. Through the revised regime, the following charges were prescribed:

(i) Termination charge of Re. 0.20 per minute for local and national long-distance voice calls to fixed-line and mobile (revised downwards from the erstwhile charge of Re. 0.30 per minute)

(ii) Termination charge of Re. 0.40 per minute for international long-distance call (revised upwards from the erstwhile charge of Re. 0.20 per minute)

(iii) A ceiling carriage charge of Re. 0.65 per minute (unchanged)

(iv) Transit carriage charge of Rs. 0.15 per minute (revised downwards from the erstwhile charge of Re. 0.20 per minute)

C. Need for the present review

14. Some TSPs challenged the IUC Regulation dated 09.03.2009 before the Telecom Disputes Settlement & Appellate Tribunal (TDSAT) on various grounds. TDSAT passed its judgment on 29.09.2010 and directed TRAI to consider determining the IUC afresh, on the basis of its observations and directions.

15. TRAI filed an appeal in the Hon'ble Supreme Court challenging the order of TDSAT dated 29.09.2010 on various technical and legal grounds including, *inter-alia*, the principal legal issue whether the validity of TRAI's Regulation framed in exercise of powers conferred under section 36 of the TRAI Act, can be challenged before the TDSAT under section 14 of the TRAI Act, 1997. TRAI also prayed the Hon'ble Supreme Court to allow the appeal and set aside the final judgment and order dated 29.09.2010 passed by TDSAT.

16. On 29.07.2011, the Hon'ble Supreme Court passed the following order:

"… Before taking up the matter for final hearing, this Court would like the Regulator to compute the IUC with the inclusion of capital cost and without inclusion of the capital cost. In this case, the TRAI, which is the original Authority, has taken the view as a matter of law/regulation that capital cost should not be taken into account in the matter of fixation of IUC, whereas the Telecom Disputes Settlement and Appellate Tribunal [`TDSAT', for short] has taken a contrary view saying that the capital cost should be taken into account in the matter of fixation of IUC. Therefore, we want the Regulator to give us the computation of the IUC to be worked out on both the basis, namely, what would be the IUC if capital cost is taken into account and what would be the IUC if the capital cost is not taken into account?...
…The Regulator will give its working by 31st October, 2011. …"

17. Accordingly, TRAI filed its report in the Hon'ble Supreme Court on 29.10.2011. The relevant paras of the order of Hon'ble Supreme Court dated 06.12.2013 are as follows:

"3. When the cases were listed before this Bench, learned counsel for the parties agreed that a preliminary issue relating to jurisdiction of the Telecom Disputes Settlement Appellate Tribunal (TDSAT) to entertain challenge to the regulations framed by the Authority may be decided …… Thereupon, the Court decided to hear the arguments on the following question:

"Whether in exercise of the power vested in it under Section 14(b) of the Act, TDSAT has the jurisdiction to entertain challenge to the regulations framed by the Authority under Section 36 of the Act."

……

……

64. In the result, the question framed by the Court is answered in the following terms:
In exercise of the power vested in it under Section 14(b) of the Act, TDSAT does not have the jurisdiction to entertain the challenge to the regulations framed by the Authority under section 36 of the Act.
…
As a corollary, we hold that the contrary view taken by TDSAT and the Delhi High Court does not represent correct law. …"

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18. Since neither TDSAT nor the Hon'ble Supreme Court had stayed the applicability of the IUC regime which was put in place through the amendment in the IUC Regulation of 2009, the changes to the IUC regime put into effect by the Regulator have remained in force since 2009. In the past, revisions in the IUC regime have been undertaken on a regular basis with an interval of two to three years. However, as the matter was pending before the Hon'ble Supreme Court since 2010, the IUC review could not be conducted though it was due. As a significant amount of time (5 years) has elapsed since the last review, the Authority initiated this review of the IUC regime in the country in November, 2014.

19. As a precursor to the exercise, the Authority asked wireless access providers, wire-line access providers and NLDOs through letters of 30.04.2014 and 05.06.2014 to submit information related to network usage and costs. Subsequently, the Authority issued a

Consultation Paper (CP) on IUC dated 19.11.2014 to seek the views of stakeholders on various aspects of IUC. Stakeholders were asked to submit written comments by 11.12.2014 and counter-comments by 18.12.2014. On the request of some stakeholders, the dates for submission of comments and counter-comments were extended up-to 22.12.2014 and 29.12.2014 respectively. Written comments were received from two industry associations, 15 TSPs and 47 other stakeholders, including companies, organizations, firms and individuals. Counter-comments were received from six TSPs and one individual. The comments and the counter-comments received from the stakeholders were placed on the TRAI's website– www.trai.gov.in. An Open House Discussion was held on 09.01.2015 in Delhi with stakeholders. The issues raised in the CP and the views of stakeholders thereon are examined in the succeeding paragraphs.

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D Analysis of the Key Issues Raised in the Consultation Paper

20. In the CP dated 19.11.2014, the Authority had sought the views of stakeholders on the following broad issues related to IUC:

(i) Should Mobile Termination Charge (MTC) and Fixed Termination Charge (FTC) be cost-oriented (or cost-based) or should they be under the Bill-and-Keep (BAK) arrangement?

(ii) Which methodology is most appropriate for prescribing MTC and FTC in case a cost-oriented or cost-based approach is chosen?

(iii) What is the most appropriate level of International Termination Charge (ITC)?

(iv) Which methodologies are appropriate for determination of domestic carriage charges and transit carriage charges?

21. An analysis of these issues based on the comments and inputs received from stakeholders is presented below.

(1) Should MTC and FTC be cost-oriented or under BAK arrangement?

22. The two industry associations, a majority of the TSPs and a few other stakeholders have favored a regime of cost-oriented termination charges. They have argued that in India, where the CPP regime has been adopted for retail tariffs, market players can be compensated for their work done in terminating off-net incoming calls only through a cost-oriented termination charge regime. On the other hand, a few TSPs and other stakeholders have favoured a BAK regime. They have argued that since the last review, network usage has increased significantly and network costs have reduced extensively; however, the benefits have not been reflected in retail tariffs because the termination charge, which acts as a floor for off-net traffic, has remained high. They also contend that a BAK regime would prevent incumbent TSPs from recovering their costs of operations from their competitors and, thereby, would enable greater competition in the sector.

23. Before examining the issue on hand, it is appropriate to mention that since 2003, when the IUC regime was first put in place in the country, the Authority has generally followed the principle of a cost-oriented IUC regime. While devising regulatory frameworks for telecom services in the country, the Authority has always aimed to balance the following twin objectives, viz.

(i) to protect the interests of consumers - by way of ensuring adequate choice and affordable services to them by promoting competition and efficiency in the market, and;

(ii) to create incentives for TSPs - by way of ensuring adequate (fair) returns on investment so as to stimulate orderly growth and innovation in the sector.

24. In this backdrop, let us first examine the issues pertaining to MTC. Against a global average of about 96, the wireless tele-density[1] in India is only 75.43. Though rural penetration of wireless telephony in both population and coverage terms has improved with the passage of time, it has remained lower than expected. As against an urban wireless tele-density of 142.46, the rural wireless density was only 45.47 as on 31.12.2014. The tele-density figures indicate the proportion of number of SIMs[2] in use and not the number of wireless users. As per a report[3], globally, on an average, each mobile subscriber owns two SIMs. Thus the proportion of wireless users to the total population in rural India is far lower than the tele-density figure of 45.47. In coverage terms too, wireless penetration has remained inadequate; though wireless telephony was introduced in India about two decades ago, about 50,000 villages are yet to be covered by wireless networks i.e. there are still so many villages without basic connectivity.

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25. The alternative telecom facility in the form of wireline telephony is practically non-existent in rural India. Only 0.63% of the rural population use wireline phones. In effect, no TSP except for the state-owned BSNL provides wireline services in the rural areas. The number of wireline subscribers in the country has dwindled for reasons such as (i) higher costs of operation than wireless telephony, and, (ii) wireless telephony allows mobility to subscribers which wireline telephony cannot. Though Digital Subscriber Line (DSL) broadband Internet has, to some extent, saved wireline telephony from a free fall, it does not appear likely that wireline telephony will provide an affordable alternate telecom service to the rural masses. Clearly, wireless telephony will remain the most effective mode to bridge the rural-urban divide in terms of telecom services.

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[1] Tele-density is the number of telephone connections for every hundred individuals living within an area.
[2] SIM is an acronym of 'Subscriber Identity Module'.
[3] Report titled 'Winning with Real-time Insights in a Multi-SIM Market', Mahindra Commviva, March 2013

26. Businesses naturally have a propensity to invest in those ventures and those geographies which are likely to yield higher returns on investments (ROIs). Urban areas not only provide higher ROIs to the TSPs, but also a greater ease of conducting business. As a result, for a long time, wireless access providers in the country focused only on urban areas. This underwent change only when competition heated up and these areas started showing signs of saturation.

27. Typically, the telephony business yields increasing returns to scale (IRTS) once a TSP acquires a critical mass (in terms of subscriber base)[4]. As a result, there has been a rush amongst TSPs to sign up new subscribers, sometimes even at a huge upfront cost of acquisition. The underlying hope is to attain positive customer-lifetime-value (CLV) in the long-run. As urban areas in India began saturating, the TSPs started building telecom networks in rural areas, albeit cautiously. Investments in the rural telecom networks have lacked momentum because the TSPs have realized that the CLV of rural customers is far lower than that of urban customers because of (i) the level of utilization of the radio access network remains much lower in rural areas (i.e. the cost of servicing per customer is much higher in rural areas) for a considerably long period and (ii) the average rural customer's willingness-to-pay (WTP) for consumption of telecom services is relatively lower due to lower per capita income and higher incidence of poverty in rural areas (i.e. average revenue per rural customer is lower). Thus, break-even levels on investment in rural areas come much later than they do in urban centres. The net result has been that the 'push' for wireless telecom services from the TSPs by way of investment in rural areas has not met expectations. As a consequence, network coverage and performance have remained patchy and inadequate in rural areas. Owing to these reasons, wireless telephony has <u>not</u> been able to

[4] In theory, the high capital cost of setting up a network can lead to a natural monopoly , the same high capital costs can also constitute as a barrier to entry.

enter into the rapid growth path through the virtuous cycle of supplier's push and buyer's pull in rural India. Thus, while promoting investments in rural telecom networks remains an important public policy priority, it needs to be recognized that wireless TSPs have shown far less enthusiasm in investing in rural areas.

28. When a TSP intends to provide network access to the 'marginal subscribers', who have either low income or who are currently not served by the telecom networks (these features together characterize the majority of rural subscribers), it lures such subscribers by way of offering attractive tariff packages to them in which call rates are much cheaper than standard rates during the initial period. Thus, a TSP might initially have to incur losses, when it serves outgoing voice call activity of such subscribers. In case there is an IUC regime in which cost-oriented mobile termination charges are paid by the calling party's service provider to the called party's service provider, the TSP serving marginal subscribers can be assured of receiving the cost of the 'work done' in carrying the off-net incoming calls. In short, while it may be incurring losses on outgoing calls initially, this would be partially offset by receiving fair and reasonable use-based returns on the off-net incoming calls. This would provide at-least some incentive for TSPs to invest in rural areas. Hence, a cost-oriented MTC regime could induce TSPs to expand their footprints in rural areas and, thereby, increase the overall value of the telecom networks. A corollary is that setting MTC at a level which does not recover the 'work-done' by the called party's service provider in terminating the call carries the risk of hindering the expansion of telecom networks in rural areas.

29. Besides, in case MTC is set below cost, TSPs would just not have sufficient incentives to carry off-net incoming calls on their networks. They may choose not to maintain the same standards of quality for off-net incoming calls as they do for their outgoing calls

by not augmenting required number of E1 ports at point of interconnection. This would degrade consumer experience and, in turn, make telecom networks much less valuable. This risk is accentuated when MTC is set as zero (i.e. BAK arrangement) because in this case, the wireless access provider would get no reimbursement at all for the underlying costs in terminating off-net incoming minutes. Therefore, they would have absolutely no incentive to carry off-net incoming calls on their networks.

30. It has been pointed out that the BAK arrangement is best suited in an environment in which traffic flow between the networks is balanced i.e. the off-net outgoing minutes and off-net incoming minutes are fully or nearly balanced. In such a situation, the BAK regime is unlikely to distort incentives for the TSPs in carrying off-net incoming calls. In India, the TSPs are at different stages of growth. While some networks are nearly two decades old, some others are only six to seven years old. Therefore, their sizes and particularly the profiles of their customers are vastly different. As a result, the traffic flows between the TSPs are significantly asymmetric. The following figure provides the distribution of total off-net minutes by decomposing them into off-net outgoing minutes and off-net incoming minutes in 2013-14 for access providers offering full-mobility services.

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Figure 1: Distribution of off-net minutes in the F.Y. 2013-14 for the access providers offering full mobility services

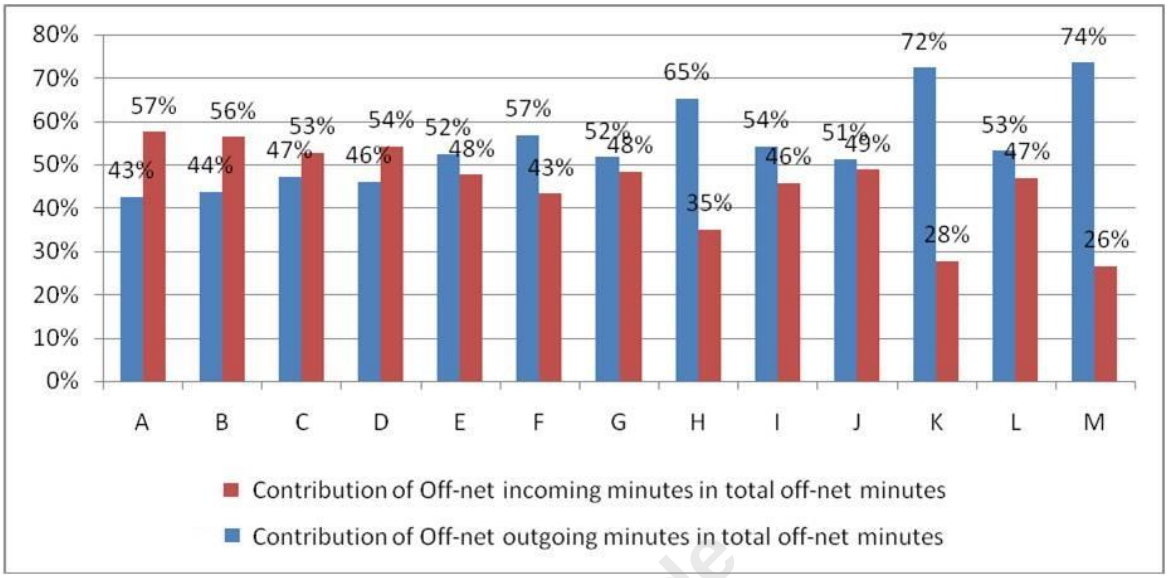
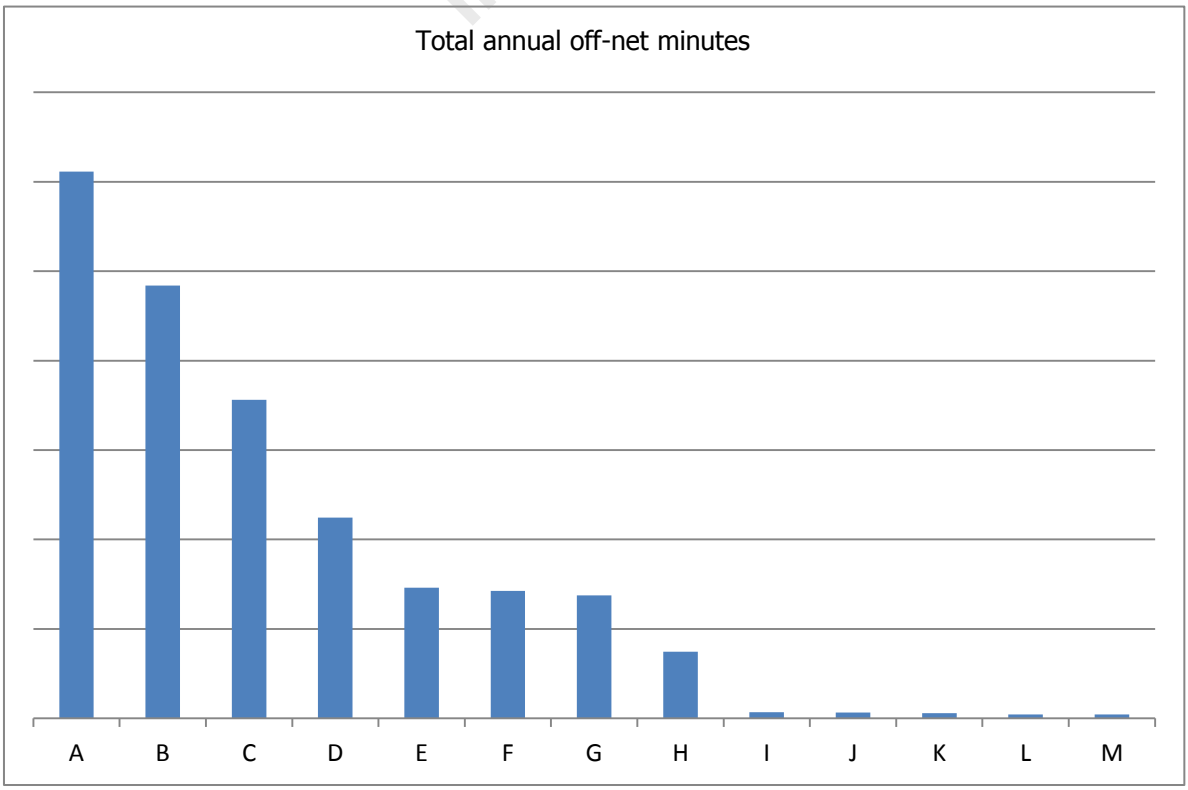


Figure 2: Comparison of annual off-net minutes carried by access providers offering full mobility services in the F.Y. 2013-14



A, B, C,...M are the legends for the access providers offering full mobility service.

31. In the report filed by the Authority in the Hon'ble Supreme Court on 29.10.2011, it was stated that it would take another two years for the asymmetries in the traffic flows to converge to some form of equilibrium between the new and old TSPs and it was opined that the BAK arrangement may, therefore, be implemented after two years. However, as can be seen from the above figure, traffic flows remain vastly asymmetric even as recently as 2013-14.

32. International experience shows that not many countries have adopted the BAK arrangement. BAK has not yet been mandated by regulatory fiat even in those jurisdictions which have matured telecom networks. In countries where the BAK arrangement has been adopted, it has, generally, happened not by a regulatory action but through voluntary action of the TSPs themselves. BAK regime has been implemented in some countries where the CPP regime has not been put in place; instead, a Mobile-Party-Pays (MPP) regime (in which both calling party and receiving party pay for the call) is in force in such geographies. In view of the fact that the CPP regime is the prevailing regime in India since 2003 and a significant asymmetry in traffic flows between the TSPs still exists, the case for implementation of the BAK regime remains weak even in the present day conditions of the telecom market.

33. Since a large part of rural India is still waiting to be connected[5], building and enhancing telecom infrastructure in rural areas continues to be a policy and regulatory priority. The Authority is of the view that, in the present day telecom market, the MTC should be fixed at a level which compensates TSPs adequately for the work done by them in terminating off-net incoming calls. The absence of a cost-oriented MTC (including one where 'MTC=0' as in the BAK regime) would discourage TSPs from investing in rural areas and maintaining network quality standards to the optimum.

[5] 50,000 villages

Accordingly, the Authority has decided to continue to prescribe a cost-oriented MTC in the country.

(2) Which methodology is most appropriate for determination of Mobile Termination Cost?

34. On this issue, stakeholders have expressed widely divergent views. While some stakeholders have favoured the Fully Allocated Cost (FAC) model, many others are in favor of the Long Run Incremental Cost (LRIC) models.

35. The supporters of the FAC model opined that this model assures the recovery of the entire cost, including historical costs, and is a more credible method because it relies on the actual data furnished by the TSPs. They have contended that most variants of the LRIC model consider only incremental cost and, therefore, do not entirely (or, adequately) compensate the full cost; besides, the LRIC model is based on a large set of assumptions on network parameters and, therefore, lacks robustness and is not as sturdy as the FAC model.

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36. A few stakeholders have stated that amongst the variants of the LRIC model, the LRIC+ is the most suitable. On the other hand, many stakeholders have favored the Pure LRIC model stating that this model would yield the smallest MTC which would, in turn, help the TSPs to provide competitive tariffs in the market. It is worth mentioning that many TSPs and the Cellular Operators Association of India (COAI), who have supported the FAC model in the present consultation process, had favoured the use of LRIC models in TRAI's consultation process of 2008-09.

37. As indicated in the preceding section, the Authority has decided to fix the MTC on a cost-oriented basis. This is to ensure that the MTC compensates a TSP adequately for the work done by it in terminating off-net incoming calls. Accordingly, the issue at hand of identification of the most appropriate methodology for

determination of MTC is reduced to: Which methodology amongst FAC and variants of LRIC would capture the cost of the 'work done' in carrying off-net incoming minutes most faithfully in the present day telecom market? It needs to be pointed out that the Authority has used a modified version of the FAC model for determination of MTC in its past IUC review exercises.

38. In most countries of the world, the MTC was traditionally determined with the help of FAC models using historical costs. Most regulators seek Accounting Separation Reports (ASRs) from the TSPs in their respective countries. These reports contain, *inter-alia*, segregated costs for various services. Based on the ASRs, many regulators computed MTC per minute as 'the relevant annual cost for providing voice telephony' divided by 'annual voice minutes'. However, as telecom markets started growing, the traffic increased manifold while the relevant costs, particularly the network-related costs, started declining owing to the march of technology and economies of scale. Though market costs of telecom networks declined significantly, incumbent TSPs continued to carry historical costs, albeit depreciated, on their balance sheets. Since the incumbent TSPs had an incentive for gold-plating their costs, the information on costs furnished by them in the ASRs started becoming more and more removed from the actual level of current costs. Further, ironically, the incumbent TSPs were being rewarded for their inefficiencies, if any, in running their networks; this is because <u>full historical costs</u> were being recovered through the MTC.

39. Intuitively, the MTC per minute would be best captured when the network is valued with the help of replacement costs as on date i.e. on the basis of current costs, and <u>not</u> historical costs. This is especially so because these are the costs are to be borne by competing and non-cooperating operators. In view of the inherent limitations of the FAC model and the growing consensus on the view that the inefficiencies of incumbent operators should not be

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passed on to interconnecting TSPs, many country regulators have developed variants of the Long Run Incremental Cost (LRIC) model for estimation of MTC. As the LRIC models have started acquiring acceptance, most regulators in the world have slowly but steadily moved away from the use of the FAC model for determining MTC.

40. In view of the above, the Authority is of the view that the case for using the FAC model to estimate MTC is not strong in the present day telecom market. Before proceeding to evaluate the fitness of the variants of the LRIC models, it would be appropriate to discuss the basic characteristics of these models.

41. In any generic LRIC model, the MTC is determined on the following basic assumptions:

(i) The model is run for an equivalent operator[6] i.e. a TSP who has a fair share in the relevant market.

(ii) This TSP incurs costs that would occur in a competitive market. Thus the model uses present costs i.e. forward looking costs.

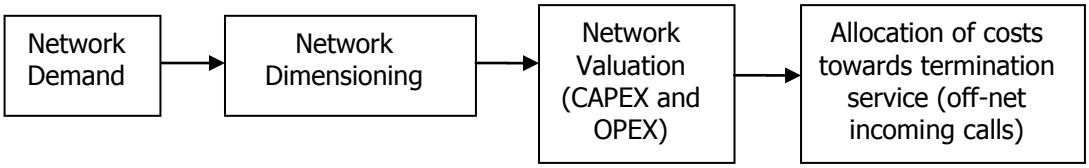
(iii) The method of costing is long-run costing i.e. the size of the network deployed is reasonably matched to the level of network demand; any over- or under- provisioning would be leveled out in the long-run.

(iv) The model allocates the costs to wholesale services i.e. off-net incoming calls.

42. A block schematic diagram of the LRIC model for computation of termination cost is given below:

[6] An equivalent operator is a representative TSP in each LSA. It has an average size, which can be determined through the Herfindahl-Hirschman Index (HHI).

Figure 3: Block Schematic Diagram of LRIC Model



43. In the LRIC model, the network demand for an equivalent operator is identified. In order to meet this demand, an efficient network is dimensioned. The costs of the various network elements are then computed on the basis of present costs. These costs are then allocated to wholesale service (i.e. off-net incoming minutes) using a routing table in order to determine termination cost per minute.

Mobile termination cost as per LRIC model = (Total annualized termination cost computed on a long-run incremental cost basis) *divided by* (No. of off-net incoming minutes to be served by in the year)

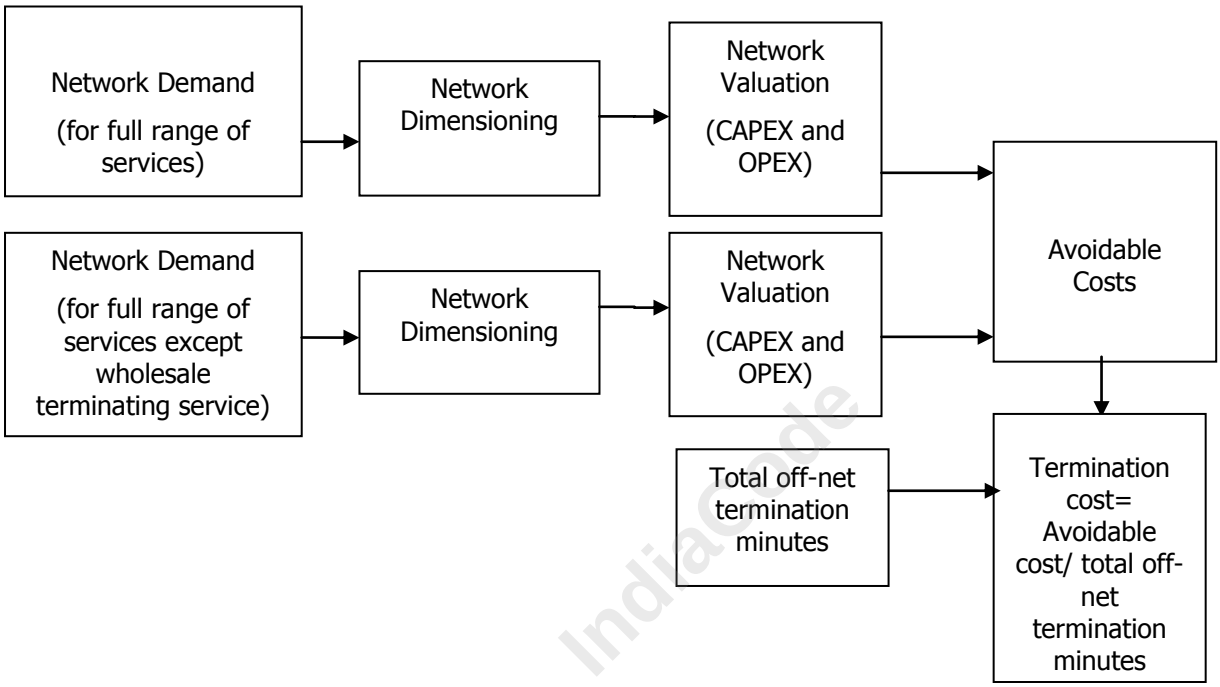
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44. In the LRIC+ model, a certain portion of the common costs is also allocated for the purpose of computation of termination cost. The costs that are common to both the wholesale business and the retail business of the TSPs are termed common costs e.g. costs pertaining to the corporate office, head offices etc. The reason for including a part of these common costs is that these costs are indeed incurred by TSPs while providing mobile termination service. This add-on is called the mark-up for common costs.

The mobile termination cost as per LRIC+ model = (Mobile termination cost as per LRIC model) *plus* (Mark-up for common costs)

45. In the pure LRIC model, the relevant increment is the wholesale call termination service and it includes only avoidable costs. A block schematic diagram of the pure LRIC model is given below.

Figure 4: Block schematic diagram of Pure LRIC Model



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Mobile termination cost as per Pure LRIC

= (Avoidable cost if wholesale termination service is not provided) *divided by* (No. of total off-net incoming minutes)

= (Total annualized cost for providing entire range of services *minus* Total annualized cost for providing entire range of service excluding wholesale termination minutes) *divided by* (No. of total off-net incoming minutes)

46. A summary of the foregoing discussion yields the following conclusions:

(i) The LRIC model allows recovery of direct costs of providing the termination service.

(ii) The LRIC+ model not only allows recovery of direct costs of providing the termination service but also a reasonable

portion of the common costs is allocated to the termination service.

(iii) The Pure LRIC model allows recovery of only avoidable costs. This model approximates, as closely as possible, the textbook measure of marginal cost of providing termination service.

47. In the present day telecom market, the off-net incoming minutes are about 30% of the total minutes of usage (MOU). This is a significantly high proportion. When making capital investment decisions, a TSP has to necessarily take into account the off-net incoming traffic. A model based on textbook theory of marginal costs, which allows recovery of only avoidable costs, would not adequately reimburse the costs of providing a termination service to the TSPs. In India, the wireless telecom infrastructure has not yet reached many far-flung areas. It would be erroneous to predicate the computation of termination costs on the premise that the telecom market has matured. Even in many matured markets like Germany and Malaysia, the Pure LRIC method has not been accepted yet.

48. Unless TSPs are assured of cost recovery of the wholesale services (such as termination service) provided to competing TSPs, there would be little incentive to invest and grow in areas where connectivity is far from adequate. The case for using a Pure LRIC model for estimation of mobile termination cost is not strong given the present day development of the telecom sector and keeping in view the public policy imperative of enhancing rural tele-density.

49. As discussed earlier, the LRIC+ model estimates the direct costs which can be allocated to the termination service along with a reasonable allocation of the common costs to the termination service. By including the direct costs and a portion of the common costs, the LRIC+ model approximates the costs of 'work done' in carrying off-net incoming minutes by the TSP in a competitive

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market. Based on this reasoning, the Authority is of the view that that the cost of the 'work done' in carrying off-net incoming minutes would be most faithfully estimated using the LRIC+ model. Accordingly, the Authority has decided to determine the MTC using the LRIC+ model in the present exercise.

50. For computation of mobile termination cost using the LRIC+ method, the Authority made use of the information furnished by the TSPs offering full mobility services using GSM technology. Broadly, the following method has been employed:

(i) The model has been built for an equivalent operator and not for any specific TSP.

(ii) The equivalent operator has an average size in terms of subscriber base in each LSA.

(iii) The usage profile of its customers matches that of an average customer in the LSA.

(iv) The equivalent operator's network in each LSA has been designed using the information furnished by the TSPs.

(v) The costing of the LSA-wise network, has been done on the basis of the recent cost information furnished by the TSPs.

(vi) The LSA-wise costs so computed have been allocated to the termination service using a routing table.

(vii) The total cost allocated to the termination service in the LSA is divided by the total off-net incoming minutes in the LSA to arrive at the cost per minute in each LSA.

(viii) A weighted average of the LSA-wise costs per minute (on the basis of the weights of off-net terminating minutes) has been computed to arrive at as average cost per minute.

(ix) Besides this cost, a mark-up for common cost has also been allowed as 10% of the cost so computed. In the past, the TSPs and their associations have computed the mark-up for common costs in the range of 10 to 15% of the cost per minute.

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(x) Together with the mark-up for common cost, the cost per minute so derived is termed the MTC.

51. A brief description of the LRIC+ model may be seen in the **Annexure** to this Explanatory Memorandum. As is clear from the above description, the LRIC+ model has been built on the basis of information submitted by the TSPs themselves and industry-best practices, wherever needed. The use of arbitrary assumptions has been avoided to make the model mirror reality as closely as possible.

Inclusion of spectrum cost in determination of MTC

52. On this issue, stakeholders have expressed divergent views. A few TSPs and other stakeholders are of the view that costs paid for acquisition of spectrum must be factored in while determining MTC. On the other hand, a few TSPs and other stakeholders have opined that spectrum costs should not be included in determining MTC.

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53. Access spectrum is the most critical network resource which is used for serving wireless subscriber's traffic including off-net incoming minutes terminating in the access provider's network. Earlier, access spectrum was given to the TSPs as a part of the licence viz. spectrum was bundled with the licence. However, in the recent past, the Government has started assigning access spectrum to the TSPs through an auction process. The cost of spectrum acquired through auction is significantly high. At present, a few TSPs have only administratively allotted spectrum; a few others hold only the spectrum acquired through an auction. However, many TSPs have spectrum of both varieties viz. administratively assigned and also that acquired through auctions.

54. The cost of spectrum, acquired through the recent auction processes in India, is significantly higher when compared to auction determined price of spectrum in some developed countries. In view

of the fact that the cost of spectrum acquired through the auction process is considerably high, the non-inclusion of this cost in determination of MTC would result in non-recovery of a significant cost item. As indicated before, the Authority is of the view that the entire cost of the 'work done' on carrying off-net incoming calls ought to be recovered from the MTC. Hence, inclusion of the cost of spectrum is necessary for ensuring full recovery of the cost incurred for the work done on termination service.

55. In the LRIC model, the network has been built for an equivalent operator which has an average size in terms of subscriber base in each LSA. The spectrum holding of the equivalent operator is likely to be similar to the spectrum holding of an average TSP. The following table presents the LSA- wise amount of spectrum in 900 MHz and 1800 MHz bands assigned to the TSPs through the auction process as a proportion of the total spectrum held by the TSPs as on date (in %) and the expected amount of spectrum through the auction process after taking into consideration licenses expiring in 2015-16 as a proportion of total spectrum (in %).

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Table 1: % Spectrum in 900 MHz and 1800 MHz bands acquired in auction process

S. No.	Name of LSA	Amount of spectrum acquired through auctions as a proportion of total assigned spectrum as on date (in percent)	Likely amount of spectrum acquired through auctions as a proportion of total assigned spectrum after taking into consideration licenses expiring in 2015-16 (in percent)
1	Andhra Pradesh	37%	61%
2	Assam	38%	50%
3	Bihar	26%	39%
4	Delhi	55%	55%
5	Gujarat	34%	59%
6	Haryana	28%	49%
7	Himachal Pradesh	22%	46%

8	Jammu & Kashmir	30%	30%
9	Karnataka	33%	56%
10	Kerala	39%	59%
11	Kolkata	60%	60%
12	Madhya Pradesh	37%	57%
13	Maharashtra	30%	54%
14	Mumbai	50%	50%
15	North East	47%	68%
16	Orissa	32%	43%
17	Punjab	28%	53%
18	Rajasthan	19%	44%
19	Tamilnadu	33%	48%
20	Uttar Pradesh (East)	30%	42%
21	Uttar Pradesh (West)	25%	39%
22	West Bengal	36%	47%
	Total	**36%**	**51%**

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56. The above table brings out that about 36% spectrum in the 900 MHz and 1800 MHz bands held by the TSPs has been acquired in the auction process. This is likely to increase to 51% in 2015-16. As the present IUC review exercise is being conducted for the period starting from the fiscal year 2015-16, it seems appropriate to consider that half of the spectrum holding of an equivalent operator has been obtained through an auction. Accordingly, in the present exercise, 50% of the spectrum held by the equivalent operator is assumed to have been acquired through the auction process.

57. As the Government grants 'the right to use' of the access spectrum to the TSPs for a period of 20 years, the cost incurred by the TSPs in acquiring the spectrum has to be annualized for the purpose of determining its contribution to the termination cost. In case a TSP borrows from commercial banks for making the periodic payments to the Government, the annualized cost of spectrum for the TSP would be the equated annual installment (EAI) paid by it to the creditors. Accordingly, the annualized cost on spectrum has been

computed as the EAI using the SBI-base rate. The annualized cost of spectrum so calculated has been divided by the total annual traffic minutes in order to compute spectrum cost per minute. This cost has been added on to the cost computed in the previous step viz. the LRIC+ method described in paras 43 and 44.

MTC = Cost per minute from LRIC model + Mark-up for common costs + Spectrum cost per minute

58. Based on the afore-mentioned approach, mobile termination cost has been computed as below:

Sl. No.	Item	Legend	Cost per minute (in Paise)
1	Cost per minute as per LRIC model	(a)	11.83
2	Mark-up for common cost	(b)= (a) * 10%	1.18
3	Spectrum cost per minute	(c)	0.78
4	Mobile termination cost	(d)= (a)+(b)+(c)	13.79

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59. Keeping in view the mobile termination cost as computed above, the Authority has decided to fix the Mobile Termination Charge as Re. 0.14 (paise fourteen only) per minute.

Fixed Termination Charge and a special case of MTC viz. calls originated from wireline network and terminating on wireless networks

60. In India, of the total minutes terminating on wireless networks, about 3% minutes are originated from wireline networks. As on 31.12.2014, as against a wireless tele-density of 75.43, wireline tele-density stood at a mere 2.16. Since the beginning of the new millennium, while wireless penetration rate has witnessed exponential growth, the wireline penetration rate has dwindled in

the country. The issues pertaining to the decline of wireline telephony in the country need careful examination.

61. Wireless networks were introduced in India in 1994. As wireless telephony grew in the country, it led to an initial increase in the wireline network traffic (due to complementarities) and then a steady decline in the wireline network (due to dominance of substitution effects). The wireline-to-wireless substitution happened primarily because of the following:

(i) Wireline networks in India remained under-developed in the pre-wireless era because of a lack of investment. In the absence of a fully developed wireline alternative, creation of a wireless substitute was much easier.

(ii) With innovations in wireless access network technologies, it became cheaper to run the operations of wireless networks as compared to wireline networks. Thus, while wireless telephony became increasingly cheaper with innovations and infusion of competition in the wireless segment, wireline telephony did not see much of a decline in tariff levels.

(iii) The mobility feature of wireless telephony made it an irresistible choice when compared to wireline telephony.

62. While consumers have embraced wireless networks for a voice solution, it needs to be remembered that wireline networks have some inherent strengths which cannot be matched by wireless networks -

(i) In the event of catastrophes, when wireless radio networks could be choked or unavailable altogether, wireline networks become a robust alternative.

(ii) Wireline telephone handsets connected through copper pair are powered by the central exchanges and, therefore, continue working even during prolonged power cuts.

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(iii) As more and more customers are seeking high speed data (Internet) services, wireless networks are increasingly finding it tough to meet the ever-rising data demand, particularly in a spectrum constrained sector. Wireline networks, on the other hand, can deliver much higher speeds of data transfer. As a matter of fact, the base stations of wireless networks have only a limited data speed capability (constrained by the type of radio access technology in use and access spectrum resource available to them) and wireless subscribers have to compete for data speeds from this limited capability of base stations (rivalrous character). On the other hand, wireline networks can deliver much higher data speeds to subscribers because the central equipment (e.g. network edge routers) and wireline cables have much larger bandwidth capacities. Besides, subscribers do not have to compete for data speeds because an individual subscriber consumes services on an exclusive dedicated wireline connection reaching his premises. It is widely believed that ubiquitous broadband access can be made possible only through wireline infrastructure (built on copper pair and optical fiber cable) because of its capacity and, therefore, when it comes to broadband, wireless networks will remain a complement to, rather than a substitute for, wireline networks. In a nutshell, wireline networks promise much better delivery of high-speed data services to consumers than the presently available wireless networks.

63. The President and CEO of CTIA[7]-The Wireless Association in USA has summed up the difference in capabilities of wireline networks and wireless networks as below.

"Due to the science and physics of spectrum use, there is only so much capacity that is available. This differs dramatically from

[7] CTIA is an acronym of 'Cellular Telecommunications and Internet Association'.

landline and cable broadband service. One strand of fiber has more capacity than the entire electromagnetic spectrum. So even if we were able to get all the spectrum available in the U.S., we still wouldn't be able to have the same capacity as a single strand of fiber."

64. As per a survey report[8] from Ericsson, apart from calls and messaging, consumers perform more digital activities, such as watching TV/videos, work or study related activities and online shopping, when they are indoors (i.e. in home, office, school etc.). This is because people spend a major part of their time indoors; in fact, the ratio of time spent indoors versus outdoors is 7:1.

65. If consumer behavior in India is anywhere similar to the consumer behaviour claimed in the survey report from Ericsson, the requirement of high-speed data can be offloaded to wireline networks when subscribers are indoors rather than choking the already bandwidth constrained wireless networks. In many countries around the world, where wireline networks are at a much more developed stage as compared to India, wireline networks are already being used for off-loading data traffic from wireless networks.

66. In India, where several lakhs kilometers of copper cable is buried underground, the wireline-to-wireless substitution, has slowly but steadily rendered much of it out of use with the passage of time. However, as consumer preferences are changing from predominantly voice consumption to exponentially rising data consumption and wireless networks are increasingly finding it difficult to cater to the ever-rising consumer demand for high-speed data, there is a crying need for robust wireline networks which are maintained and upgraded on an ongoing basis. Since the Government is poised to build country-wide digital infrastructure with the aim to connect one and all under the state-sponsored

[8] Ericsson Consumer Insight Summary Report October 2014.

'Digital India' campaign, India simply cannot afford to let the wireline telephony infrastructure (which was primarily built from the exchequer's money) to languish in the current pitiable state. Indeed, the revival of wireline networks in the country is an important policy and regulatory priority to complement the Government's mission.

67. In this backdrop, the Authority, while revising the IUC regime, examined the options available to it to help revive wireline networks in the country. The Authority is conscious of the following: (i) The market for any product or service can grow only when buyer's pull and supplier's push co-exist, and, (ii) the role of a regulator/ policymaker is limited to that of a facilitator. While international experience may suggest that a wireline network is the best vehicle for provisioning broadband services in the country, the regulator can only go to a certain distance beyond which the wireline segment will have to take care of itself.

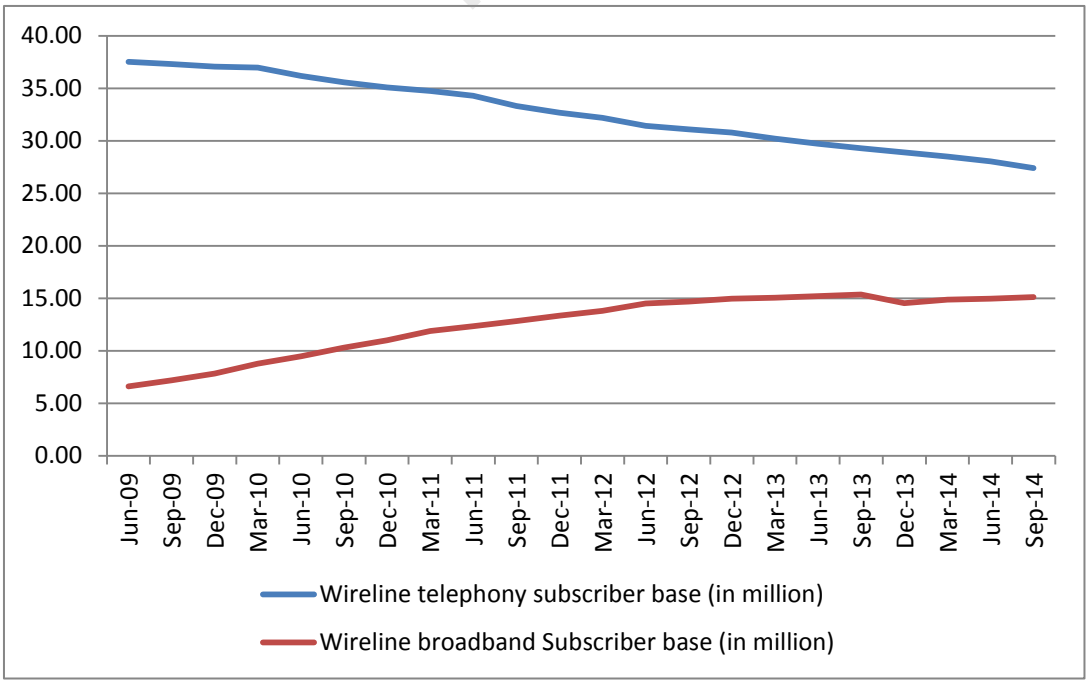
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68. The wireline networks in India traditionally offered voice telephony to consumers using Plain-Old-Telephone Services (POTS). In the middle of 1990s, Internet access through dial-up became possible in India. However, such Internet access remained sub-optimal for two reasons: (a) Consumers experienced very low speeds of data transfer through dial-up Internet, and, (b) Consumers were deprived of the use of the telephone when they were accessing Internet. From the year 2004 onwards, wireline access providers in the country started providing high-speed Internet using DSL technology. This technology, not only offered broadband Internet (speeds of 256 kbps and more), but also enabled simultaneous use of the voice telephony and Internet access. Many consumers, particularly those in urban areas, subscribed for wireline connections for accessing broadband Internet. This was also the time when wireless networks were beginning to make steady growth in the country. As a result, while consumers looking for broadband

Internet got drawn towards wireline connections, many wireline consumers, who were primarily consuming voice telephony service, abandoned wireline telephony and switched to wireless telephony. The hitherto unconnected consumers opted for wireless telephony. As a result, broadly two kinds of customers remained on wireline networks: (i) Enterprises, because they consider wireline networks to be more secure, reliable and cost effective, and, (ii) individual users who consume high-speed data service. However, the anchor which saved wireline networks from virtual extinction has essentially been the wireline network's ability to provide broadband Internet. The following figure shows the manner in which broadband subscriber base has increased in the country even as the wireline telephony subscriber base has declined in the past five years.

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Figure 5: Comparison of wireline telephony subscriber base and wireline broadband subscriber base in India



69. The declining trend in the wireline network suggests that neither consumers nor suppliers see enough value in wireline telephony. The TSPs have to incur a significant upfront cost when they go to

serve a wireline subscriber but they do not see an assured positive CLV in the face of the onslaught from competing wireless networks. For consumers, wireline telephony service is much more expensive than wireless telephony service. The average outgo per outgoing minute for wireless access services is only about Re. 0.50 per minute; in contrast, the average outgo per outgoing minute for wireline access services is more than Re. 1 per minute.

70. Based on the above analysis, it becomes clear that unless subscribers start looking at wireline access services as an affordable solution for both voice telephony and broadband services and, in turn, TSPs start gaining traction from the segment, the mere capability to provide high-speed data services will not be able to save the wireline networks in the country. In this context, the Authority examined the suitability of an IUC regime in which MTC for calls originating from wireline networks and terminating on wireless networks and fixed termination charge (FTC) is set to zero. The Authority is of the opinion that in case the MTC is set to zero for wireline to wireless calls, wireline access providers would be able to provide innovative tariff packages (e.g. flat rental plans with unlimited or a significantly large number of outgoing calls) which is likely to stimulate usage and prevent the trend of churn-out of wireline connections. Similarly, in case the FTC for calls originating from wireless networks and terminating on wireline networks is set to zero, this would propel wireless access providers to offer cheaper tariffs for wireless-to-wireline calls. In turn, the adoption of wireline phones for receiving calls would improve and wireline telephones may be able to see a revival across households. Further, in view of the fact that the majority of wireline networks are run by the state-owned TSPs - BSNL and MTNL - and the traffic flow between wireline access providers is largely balanced, the case for prescribing FTC as zero for wireline to wireline calls is also strong. The Authority believes that these steps together would help make

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wireline telephony a viable venture for market players and would also make wireline telephony an affordable voice and data solution for consumers.

71. To promote investment in, and adoption of, wireline networks (so that they may become an effective vehicle for the delivery of high-speed Internet in the country), the Authority has decided to prescribe FTC as well as MTC for wireline to wireless calls as zero.

(3) International settlement rate

72. Some TSPs had represented that some countries have fixed a very high settlement rate (especially Middle-East countries) for calls to their country. Therefore, in the CP, a specific question was raised whether the Authority's intervention was necessary in the matter of international settlement rates. Most TSPs are of the view that these rates should continue to be left open for mutual negotiation between the Indian ILDOs and foreign TSPs. According to these TSPs, the International Termination Charges (ITC) should be revised upward, which will strengthen Indian ILDOs to negotiate a higher settlement rate with foreign operators. One TSP suggested that the settlement may be on the basis of reciprocal arrangements with other countries.

73. The issue has been examined. It is observed that prescribing a settlement rate between an Indian ILDO and a foreign ILDO does not fall under the jurisdiction of TRAI. Further, prescribing any settlement rate would take away the flexibility of negotiation of an Indian ILDO when dealing with a foreign operator. Moreover, fixing rates on a reciprocal basis in a global market where all ILDOs are mesh-connected to each other would neither be practical nor feasible as it may create arbitrage opportunities for routing the call from the country where the international settlement rate is very

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low. Therefore, the Authority has decided not to prescribe any settlement rate.

(4) International carriage charge

74. Another issue raised in the CP was the need, if any, for fixing a floor for international carriage charge for incoming international traffic or prescribing some revenue share between the access provider and the ILDO to safeguard the interests of the ILDO. There were mixed responses on this issue from the TSPs. While some TSPs are in favour of continuing the present forbearance on international carriage charge, other TSPs suggested fixing an international gateway charge at a suitable level for incoming international calls. A few TSPs suggested that if the Authority decides to keep an asymmetric termination charge for domestic and international calls, the additional amount charged over and above the domestic termination charge should be divided in a 60:40 ratio between the ILDO and the access provider.

75. The issue has been carefully considered. International carriage charge has been under forbearance since the inception of IUC regime. The cost structure of various ILDOs, carrying incoming international voice minutes, was also examined through their Accounting Separation Reports (ASR). It was noted that the cost of international carriage varies from 2 paise per minute to 72 paise per minute. This may be because of the use of different drivers by ILDOs for allocating cost in different heads as the same infrastructure which is being used for providing voice services is also being used for providing other services like international leased circuits etc. Similarly, the per minute net revenue realization amongst various ILDOs also varies from 3 paise to 65 paise per minute; this again is a function of how revenues are booked between an Indian ILDO and their foreign affiliated companies.

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76. Keeping in view the complex structure of cost, the wide disparity in both costs and revenue, the varying methods of cost-booking and revenue accrual and net revenue realization of Indian ILDOs, it is not possible to fix a cost-based floor or ceiling for International Carriage Charge. Moreover, it has remained under forbearance since the IUC regime was instituted. Since there is no evidence of market failure in carrying international calls to India, there is no good reason to move away from forbearance. Therefore, the Authority is of the view that International Carriage Charge should remain under forbearance.

(5) International termination charge

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77. Another important issue raised in the CP for ILD segment was the appropriate value at which the ITC should be fixed. On this issue, TSPs are generally of the view that ITC should be increased from the present level. They have suggested values which vary from 60 paise per minute to Rs.3.50 per minute. During the consultation process, the TSPs emphasized the fact that termination charge for an international call fixed by TRAI during the last review of IUC put them at a hugely disadvantageous situation vis-à-vis foreign operators, as they have to pay 8-10 times higher termination charges for international outgoing calls compared to what they receive as charge for international incoming calls. The minority view was that the ITC should be estimated purely based on the work done principle and should be the same as the domestic termination charge. These TSPs were of the view that any asymmetric ILD termination rates may lead to a grey market.

78. The first issue that needs to be analysed is whether there is a case for fixing the ITC at the same level as the domestic termination charge.

79. Setting the ITC equal to the Domestic Termination Charge (DTC) has the following advantage: since the cost involved in terminating an international call is the same as that of a domestic call, setting one charge equal to the other meets this cost-based criterion. There are, however, some other aspects that need to be taken into consideration:

(a) For the past six years (since 2009), the ITC has been set at a level different from the domestic termination charge i.e. the practice that has been in vogue is that the ITC is not equal to the DTC.

(b) While the DTC applies to all TSPs falling within Indian regulatory jurisdiction, the ITC is different. The DTC set by TRAI has to be paid/settled amongst Indian access service providers. In contrast, as brought out in the CP, the ITC is set independently across two separate regulatory jurisdictions viz. the ITC applicable in India is set by TRAI while in other countries it is set by the Government/the Regulator or left to the operators of those countries.

(c) While the DTC is paid by domestic subscribers, all within the domestic regulatory jurisdiction, the ITC is paid for incoming calls by foreign consumers in an external regulatory jurisdiction.

80. If ITC were set equal to the DTC, it would not ensure any parity for Indian TSPs vis-a-vis their foreign counterparts. This is because the foreign TSPs would continue charging higher fees for terminating calls (over which TRAI has no regulatory authority). And, the Indian TSPs would be obliged to continue paying these higher charges. Thus, Indian subscribers would continue to pay higher charges for their outgoing international calls even as foreign subscribers enjoy the benefits of lower overall tariffs for calling Indian subscribers, at least partly because of the much lower Indian ITC. The CP brings

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out that the ratio of international incoming calls to outgoing calls has worsened significantly over the last six years. It now stands at 18:1. This impacts domestic consumers (as discussed above); but, it also adversely impacts domestic TSPs. As brought out in para 77, the high overseas ITC becomes means for capture of international traffic by overseas operators viz. the differential in incoming overseas ITC vis-à-vis the outgoing ITC payable for calls to India incentivizes outgoing calls for the overseas operators. If some degree of balance were restored to this ratio then domestic TSPs would earn revenues from both incoming and outgoing calls. Clearly, what matters is the tariff faced by consumer. While the ITC is only part of that overall tariff, for domestic subscribers, the high overseas ITC partly explains why overall tariffs for outgoing calls are high. Obviously, the domestic ITC impacts foreign subscribers. The Authority has already taken action to lower tariffs for outgoing international calls through a Regulation on Calling Cards. The Regulation prescribes an access charge of 40 paise per minute for international outgoing calls to be paid by ILDOs to the Access Service Providers. This will be of direct benefit to domestic subscribers making international calls. As pointed out above, keeping the Indian ITC at a level far short of that prevailing in other countries effectively means that domestic consumers are subsidizing their foreign counterparts; and, this is abundantly clear from the adverse international incoming-outgoing calls ratio. There is, therefore, a need to address this problem.

81. There is another dimension to the problem of international call traffic. In 2009, the ITC was revised from 30 paise per minute to 40 paise per minute, though the domestic termination charge was brought down to 20 paise. Since then there has been one major development, namely, the significant increase in international traffic being carried by OTT players such as Skype. This has adversely impacted the revenues of TSPs the world over. The major reason for

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this diversion of traffic is that OTT players either carry the calls free of charge or charge very low fees as compared to the traditional TSPs. And, there is a regulatory imbalance because communications OTTs entirely bypass the domestic regulatory (licensing) regime. As per one estimate[9], Skype carried 214 billion minutes of international 'on-net' (i.e. calls made from Skype to Skype applications) calls in 2013. Skype's traffic was almost 40% the size of the entire conventional international telecom market and in growth terms, it now far outpaces the combined growth in voice minutes of the global telecom industry.

82. Therefore, the moot question is: What should be the level for the ITC? This charge has to be fixed at such a level that it neither creates arbitrage opportunities for operation of the grey market nor diverts more traffic towards OTT players such as Skype, Viber etc. The two options that are available are the following:

(i) Leave the ITC under forbearance.

(ii) Continue to regulate the ITC (as has been done before) and set it at an appropriate level.

There are serious difficulties associated with the exercise of complete regulatory forbearance on the ITC. All call termination is a monopoly. Further, when it occurs across two different regulatory jurisdictions and it is not known whether the foreign jurisdiction is levying the ITC on the directions of the Government and/or as a result of regulatory practice, it would be imprudent to leave this to be settled between players in the market. Such negotiations may become protracted and may lead to uncertainty and disputes in the market. An access provider who has market power would always try to obtain a higher termination charge from the ILDOs which may lead to a situation of non-settlement and therefore, non-completion of the call.

[9] Telegeography report executive summary.

83. During the discussions, some TSPs also mentioned the adverse impact arising from the depreciation of the rupee. When the ITC of 40 paise/minute was fixed, the exchange rate for the US dollar was Rs 47 per dollar[10]. That rate is now Rs. 62 per dollar. The international currency value of the ITC has fallen viz. the TSPs' earnings in foreign exchange from ITC have declined. Therefore, in international markets, they are further disadvantaged viz. effective foreign currency tariffs for calls to India have fallen (or foreign operators are making larger profits because of the resultant savings on the India ITC).

84. The Authority further noted that the recently issued Regulation on calling card prescribes an access charge of 40 paise per minute for international outgoing calls to be paid by ILDOs to the access service providers. During the discussions, some access providers stated that the Calling Card Regulation would impose large costs on them; since their margins on outgoing calls would decline sharply, they may be compelled to revise tariffs for domestic calls. This would imply that the general domestic subscribers would end up subsidizing domestic subscribers who make international calls. And, the latter are a small minority. Clearly, this would not be a desirable outcome. A higher ITC may help TSPs earn additional revenues to rebalance their tariffs without imposing any additional burden on domestic calls in the post-calling card regulation period. To the extent additional revenues earned from ITC and passed on to consumers, there could be the following benefits:

(a) The lower international call tariffs; and

(b) No pass through to general domestic tariffs.

In fact, an increase in ITC (to be paid by foreign customers) may also enable Indian TSPs to reduce tariffs for domestic calls if the TSPs share pass-through at least partly the increased revenue

[10] Average for 2009

realized through this. The possibility of stalled negotiation, which is likely if the ITC is kept under forbearance, would also be averted.

85. In view of the foregoing discussions, the Authority is of the opinion that the ITC should be fixed at a level which meets three objectives viz. (a) encourage TSPs to reduce tariffs on outgoing international calls and prevent any pass-through to domestic tariffs of revenue losses arising from the calling card Regulation; (b) prevent the diversion of traffic towards OTT players such as Skype, Viber; and do not create arbitrage opportunity for grey market, (c) neutralize the effect of the foreign exchange rate variation.

86. If the ITC were to completely neutralize the variation of the rupee vis-à-vis the US dollar, the ITC would need to be set at a level of 53 paise/minute only on the foreign exchange variation.

87. Therefore, after careful consideration of the circumstances in entirety, the Authority has decided that the termination charge for international call shall be Re. 0.53 (paise fifty three only) per minute. The Authority would closely monitor foreign exchange rate variations, implementation of the International Calling Card Service Regulations (Access Charges) 2014, the trends and patterns of international outgoing and incoming calls; and, if there appears to be any distortions in the ILD market, the Authority would not hesitate to take appropriate steps including review and downward fixation of the termination charges for international calls.

E. Review of termination charges

88. The termination charges framework plays an important role in the telecom sector, given its potential effects on capturing network externalities as well as on retail tariffs. Changes in technology, cost structures and other market dynamics mandate that a periodic regulatory recalibration of these charges is undertaken so that industry concerns are balanced against consumer benefits. The

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Authority is of the view that setting a specific timeline for undertaking such a review would impart a modicum of certainty which is in the interest of all stakeholders. Hence, the Authority has decided that it shall review the termination charges regime two years after it has been in force, i.e., the review will be undertaken and concluded in financial year 2017-18.

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Annexure to the Explanatory Memorandum

LRIC+ Model for Determination of Mobile Termination Cost

1. At present, voice telephony in India is offered using GSM (2G), WCDMA (3G) and CDMA technologies. However, the predominant technology continues to remain GSM. Nearly all wireless access providers which offer telecom services using GSM technology, hold spectrum in the 1800 MHz band (apart from spectrum in 900 MHz band). The Mobile Termination Cost has been computed, using the LRIC+ model, on the basis of the network of an equivalent operator offering full mobility services in GSM (1800 MHz band) in each LSA in the country.

2. An equivalent operator in an LSA is a GSM operator which has a fair share of the GSM subscribers in that LSA. The characteristics of an equivalent operator in any LSA are:

   (i) It has an average size in terms of subscriber base. The average size has been computed on the basis of the Herfindahl–Hirschman Index (HHI).

   No. of GSM subscribers of the equivalent operator in an LSA
   = (Total no. of GSM subscribers in the LSA) *multiplied by* (HHI of the GSM market in the LSA)/ 10,000

   HHI of the GSM market in an LSA has been computed as below:

   HHI= $\sum_{i=1}^{n} (s_i^2)$ where s_i is the percent market share of the i^{th} GSM operator in the LSA, and 'n' is the number of GSM operators in the LSA.

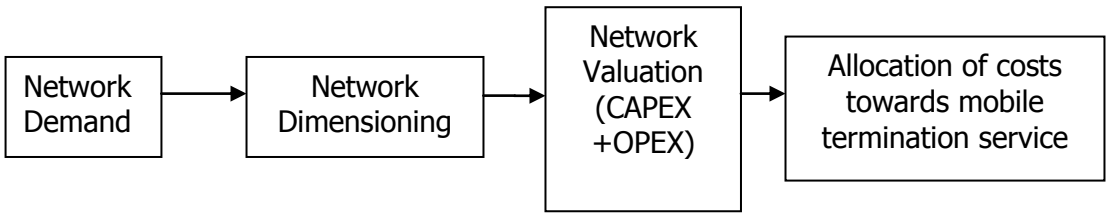
   (ii) The usage profile of its subscriber matches that of the average customer in the LSA. Thus, the average voice Minutes of Usage (MOU), SMS and data usage per subscriber per month in the LSA reflects the usage profile of the equivalent operator.

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(iii) It operates efficiently. It has deployed modern GSM technology in its network, its network design is optimal, and its costs reflect the present costs.

3. A block schematic diagram of the LRIC model for computation of Mobile Termination Cost is given below:

Fig. 1: Block Schematic Diagram of the LRIC Model



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4. As shown in the above diagram, Mobile Termination Cost (MTC) is been computed on the basis of the network of an equivalent operator providing GSM-full mobility services using the following steps:

(i) **Estimation of the network demand** i.e. coverage requirement and the capacity requirement of the equivalent operator in each LSA as on 01.04.2014

(ii) **Dimensioning of the network** on the basis of network demand (derived in the first step) and the network-related information provided by the operators and industry benchmarks;

(iii) **Valuation of the network** (dimensioned in the second step) using the current prices of the network elements as furnished by the operators

(iv) Allocation of costs towards mobile termination service on the basis of a routing table as explained in the subsequent section.

Description of LRIC Methodology

5. The following steps describe the LRIC methodology used in the present exercise.

(1) Data Collection

6. The Authority, through a letter dated 30.04.2014, asked all wireless access service providers to furnish the following information about their networks:

(i) Voice, SMS and Data Traffic

(ii) Land coverage based on geo-types

(iii) Average radius of a BTS cell

(iv) Frequency reuse factor in radio access network

(v) No. of network elements

(vi) No. of various types of BTS sites

(vii) No. of transmission links

(viii) Average length of transmission links

(ix) Average capacity of transmission links

(x) Capital cost of network equipment

(xi) Annual operating cost of passive equipment per BTS site

(xii) Annual operating cost of active equipment of BTS and other core equipment

(xiii) Annual Leasing cost of transmission bandwidth

(xiv) Annual operating cost of network management system (NMS)

(xv) Any other relevant capital cost or operating cost which may be allocated to wireless access services

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(2) Estimation of Network Demand

7. The network demand of the equivalent operator has been modeled as a combination of (i) coverage requirement and (ii) capacity requirement.

8. **Coverage Requirement**: In order to estimate the coverage requirement of the equivalent operator, each LSA was divided into four geo-types, based on the population density as below:

Table 1: Geo-type wise Population Density

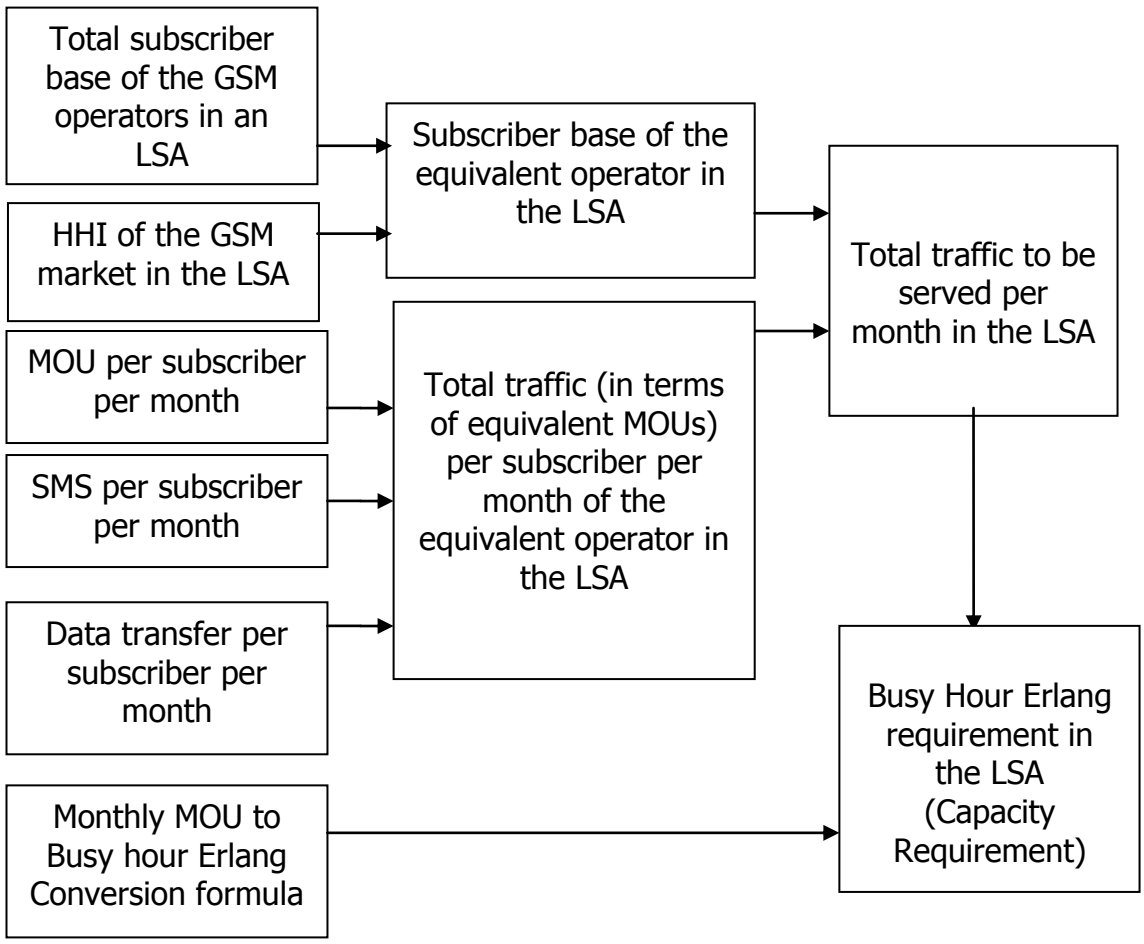
S. No.	Geo-type	Population Density (Population per sq. km)
1	Dense Urban (DU)	More than or equal to 20,000
2	Urban (U)	More than or equal to 8,000 but less than 20,000
3	Semi Urban (SU)	More than or equal to 400 but less than 8,000
4	Rural (R)	Less than 400

9. The coverage requirement of an equivalent operator (i.e. land area covered in various geo-types) has been estimated on the basis of the information on the land area covered in the various geo-types, as furnished by the operators.

10. **Capacity Requirement:** The following block schematic diagram depicts the method to determine the capacity requirement of the equivalent operator in an LSA:

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Fig. 2: Block Schematic Diagram of Capacity Requirement



11. As discussed earlier, the subscriber base of the equivalent operator in an LSA

= (Total GSM subscriber base in the LSA) * (HHI of the GSM market in the LSA)/10,000

12. The total traffic (in terms of equivalent MOUs) per subscriber per month has been computed as below:

Total equivalent MOU per subscriber per month

= Voice MOU + SMS converted to MOU + Data usage converted to MOU

13. Based on the hourly traffic information submitted by the operators, MOUs per month have been converted into busy hour erlangs. With the help of this information, the capacity requirement of the LSA (i.e. total busy hour erlang requirement in the LSA) has been computed.

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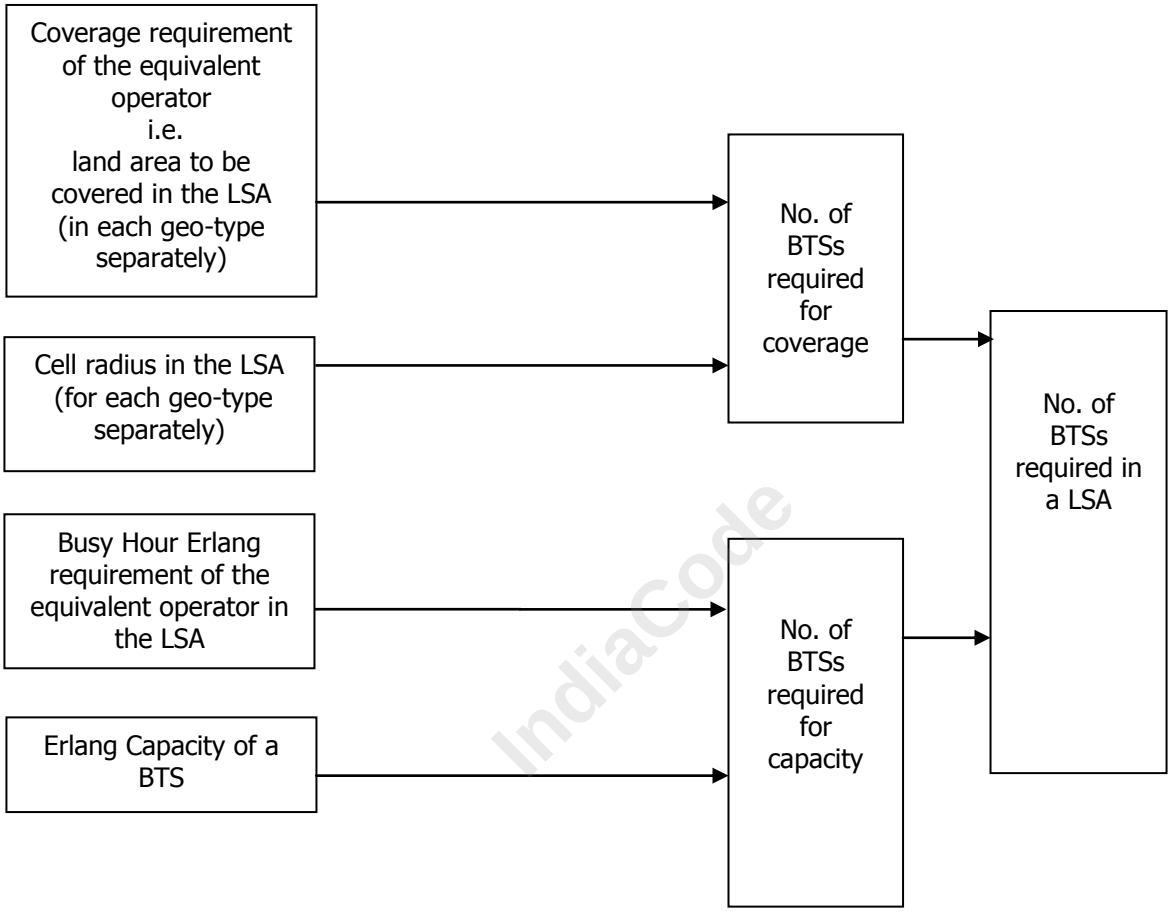
(3) Network Dimensioning

14. Based on the estimation of the network demand (in terms of coverage requirement and capacity requirement), the number of Base Transceiver Stations (BTSs) of the equivalent operator in an LSA has been dimensioned as per the block schematic diagram given in Fig: 3.

15. **No. of BTSs required for coverage:** The cell radii of the equivalent operator for the various geo-types have been estimated on the basis of cell radii furnished by the operators. Based on the cell radius for a particular geo-type, the no. of BTSs required for coverage in GSM (1800 MHz band) has been estimated.

16. **No. of BTSs required for capacity:** The throughput per TRX and average number of TRXs per BTS in the LSA along with the total busy hour erlang requirement of the LSA has been used to estimate the number of BTSs required for capacity in the LSA.

Fig. 3: Block Schematic Diagram for Estimation of BTS Sites



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17. **No. of BTSs required:** BTS required in a LSA has been computed based on number of BTSs required for coverage and no. of BTSs required for capacity as computed above.

18. **No. of other Network elements in an LSA:** On the basis of subscriber base and number of BTSs required for an equivalent operator, the information on network design furnished by the operators and industry benchmarks, the number of following network elements in an LSA have been estimated:

    (i) No. of Base Station Controllers (BSCs)

    (ii) No. of BTS - BSC links

    (iii) No. of Mobile Switching Centers (MSCs)

    (iv) No. of Gateway Mobile Switching Centers (GMSCs)

(v) No. of MSC - GMSC links

(vi) Other network elements such as HLR, INs etc.

(4) Network Valuation

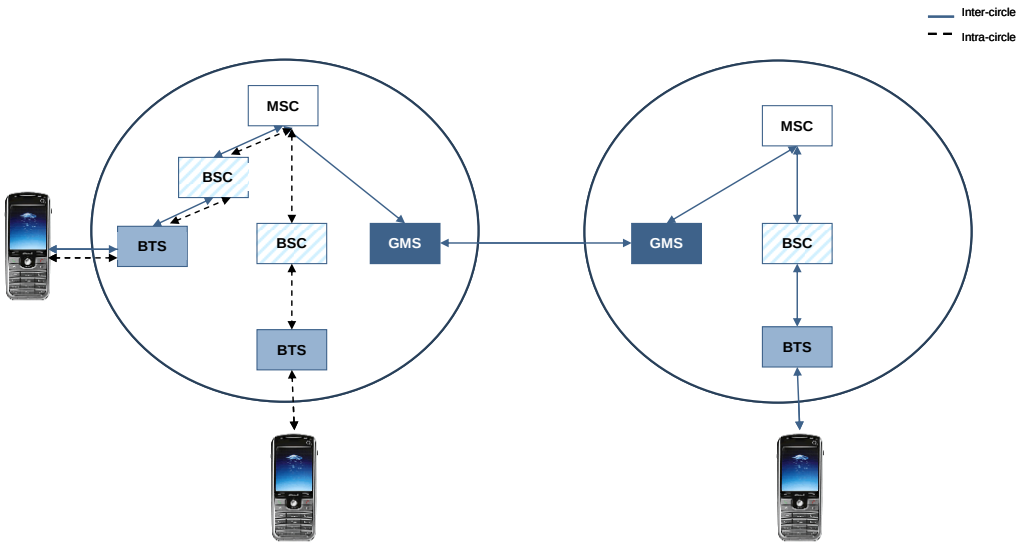
19. The annualized CAPEX and OPEX of each network element (viz. BTS, BSC, BTS to BSC link, MSC etc.) has been computed on the basis of the information furnished by the operators on capital cost, useful life, and operating cost of the network elements. The annualized CAPEX has been computed on the basis of annual depreciation (using straight line method of depreciation) and a Weighted Average Cost of Capital (WACC) of 15% per annum.

(5) Allocation of costs towards mobile termination service

20. Voice calls may be categorized as 'on-net calls' and 'off-net calls'. An on-net call is a call between the same operator's network i.e. both calling party and called party are on the same operator's network. On the other hand, an off-net call is a call between different operator's networks. Off-net calls may further be categorized as 'off-net outgoing calls' and 'off-net incoming calls'. While an off-net outgoing call for an operator means a call originating from its network and terminating on another network, an off-net incoming call for an operator means a call originating from some other network and terminating on its network. In order to allocate the network related costs to the off-net incoming calls, a routing table has been used. The following diagram illustrates the equipment used in various types of calls.

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Fig. 4: Equipment Used in Various Types of Calls



21. After discussions with several service providers at various stages, the routing table used for allocation of costs towards termination service, is as below.

Table 2: Routing Table

Service Types	**BTS**	**BTS - BSC**	**BSC**	**BSC - MSC**	**MSC**	**MSC-GMSC**	**GMSC POI**	**SMSC**	**GSN**	**NMS**	**HLR**	**IN**
Voice on-net	2	2	2	2	1.67	0.37	0.37			1	1	1
Voice Off-net outgoing	1	1	1	1	1	1	1			1	0	0.9
Voice Off-net incoming	1	1	1	1	1	1	1			1	1	0.1
SMS incoming	0.01	0.01	0.01	0.01			0.01	0		0.01	1	0
SMS Outgoing	0.01	0.01	0.01	0.01			0.01	1		0.01	0	0.9
GPRS data downloads	1	1							1	1	1	0

22. The annualized CAPEX and OPEX costs determined in the previous stage have been allocated to the off-net incoming minutes with the help of the aforementioned routing table. The Mobile Termination Cost as per LRIC methodology has been computed by dividing the total allocated cost towards off-net incoming minutes by the total off-

net incoming minutes for each LSA. The weighted average Mobile Termination Cost for each LSA as per the relative weights of the LSAs (in terms of off-net incoming MOU) has been used to compute the pan-India Mobile Termination Cost as per LRIC methodology.

Mark-up for common costs to arrive at Mobile Termination Cost as per LRIC+ model

23. The costs that are common to both the wholesale business and the retail business of the TSPs are termed as common costs e.g. costs pertaining to the corporate office, head offices etc. A part of these common costs is added in order to determine Mobile Termination cost because these costs are incurred by TSPs while providing mobile termination service. This add-on is called the mark-up for common costs.

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24. In the present exercise, a mark-up for common cost has been considered to be equal to 10% of Mobile Termination Cost computed through the LRIC model.

The mobile termination cost as per LRIC+ model = (Mobile termination cost as per LRIC model) *plus* (Mark-up for common costs) = 1.1 *multiplied by* (Mobile termination cost as per LRIC model)

TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (TWELFTH AMENDMENT) REGULATIONS, 2015
(2 of 2015)

TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION
New Delhi, the 24th February, 2015

File No. 409-8/2014-NSL-I **----------** In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

1. (1) These regulations may be called the Telecommunication Interconnection Usage Charges (Twelfth Amendment) Regulations, 2015.
(2) They shall come into force on the 1st day of March, 2015.
2. In Schedule II of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), in paragraph (a), in Table-I, for words and figure **"Rupees 0.65 per minute"**, words and figure, "**Rupee 0.35 (thirty five paise) per minute"** shall be substituted.

(Sudhir Gupta)
Secretary

Note 1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29.10.2003 (4 of 2003) and subsequently amended vide notifications Nos. --

(i) 409-5/2003-FN dated 25.11.2003 (5 of 2003) (First Amendment);

(ii) 409-5/2003-FN dated 12.12.2003 (6 of 2003) (Second Amendment);

(iii) 409-5/2003-FN dated 31.12.2003 (7 of 2003) (Third Amendment);

(iv) 409-8/2004-FN dated 06.01.2005 (1 of 2005) (Fourth Amendment);

(v) 409-8/2004-FN dated 11.04.2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21.09.2005 in appeal No. 7 of 2005;

(vi) 409-5/2005-FN dated 23.02.2006 (1 of 2006) (Sixth Amendment);

(vii) 409-5-2005-FN dated 10.03.2006 (2 of 2006) (Seventh Amendment);

(viii) 409-2-2007-FN dated 21.03.2007 (2 of 2007) (Eighth Amendment);

(ix) 409-22/2007-FN dated 27.03.2008 (2 of 2008) (Ninth Amendment);

(x) 409-12/2008-FN dated 09.03.2009 (2 of 2009) (Tenth Amendment);

(xi) 409-8/2014-NSL-I dated 23.02.2015 (1 of 2015) (Eleventh Amendment).

Note 2. The Explanatory Memorandum explains the objects and reasons of The Telecommunication Interconnection Usage Charges (Twelfth Amendment) Regulations, 2015 (2 of 2015).

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Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Twelfth Amendment) Regulations, 2015"

Framework for IUC in India

1. The framework of Interconnection Usage Charges was established by the Authority through 'The Telecommunication Interconnection Usage Charges (IUC) Regulation, 2003 (1 of 2003)' dated 24.01.2003. This Regulation became effective from 01.05.2003. A revised IUC regime was notified through 'The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003)' dated the 29.10.2003 superseding the earlier Regulation. This Regulation came into effect from 01.02.2004. In these Regulations the carriage charges were distance-based.

2. The Authority notified an amendment Regulation dated 23.02.2006, through which a ceiling on carriage charges was fixed. The change in the carriage charge regime provided a strong basis to the telecom service providers (TSPs) to reduce long-distance tariffs and to offer uniform STD tariffs across the country.

3. Subsequently, another IUC review was conducted in 2008-09. Based on the detailed consultation process, the Authority notified a revised IUC regime on 09.03.2009 which became effective from 01.04.2009. Through the revised regime, the ceiling carriage charge of Re. 0.65 per minute was continued and the transit carriage charge was revised and reduced from Re. 0.20 per minute to Re. 0.15 per minute.

4. To review the IUC regime, the Authority initiated this review of the IUC regime in the country in November, 2014.

5. As a precursor to the exercise, the Authority asked wireless access providers, wire-line access providers and NLDOs through letters of 30.04.2014 and 05.06.2014 to submit information related to network

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usage and costs. Subsequently, the Authority issued a Consultation Paper (CP) on IUC dated 19.11.2014 to seek the views of stakeholders on various aspects of IUC. Stakeholders were asked to submit written comments by 11.12.2014 and counter-comments by 18.12.2014. On the request of some stakeholders, the dates for submission of comments and counter-comments were extended up-to 22.12.2014 and 29.12.2014 respectively. Written comments were received from two industry associations, 15 TSPs and 47 other stakeholders, including companies, organizations, firms and individuals. Counter-comments were received from six TSPs and one individual. The comments and the counter-comments received from the stakeholders were placed on the TRAI's website– www.trai.gov.in. An Open House Discussion was held on 09.01.2015 in Delhi with stakeholders. In the CP dated 19.11.2014, the Authority had sought the views of stakeholders on the various issues related to Mobile Termination Charge (MTC), Fixed Termination Charge (FTC), International Termination Charge (ITC), domestic carriage charges and transit carriage charges.

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6. The Authority has issued an amendment to the IUC regulation on MTC, FTC and ITC on 23.02.15. Hence, this Regulation deals with the remaining IUC components i.e. Carriage Charge, Transit Charge and Transit Carriage Charge.

(1) Domestic Carriage Charge

7. Access licensees in India can offer access services within the Licensed Service Area (LSA). Inter-LSA calls have to be routed through a National Long Distance Operator (NLDO). The charges to be paid by a TSP to the NLDO to cover the cost for carrying inter-LSA calls are called carriage charges.

8. In the principal Regulation of 29.10.2003, the carriage charges for long distance calls within India, were specified as Re. 0.20, Re. 0.65, Re. 0.90, Rs. 1.10 per minute for the slabs of 0-50 Kms., 50+ to 200 Kms., 200+ to 500 Kms. and above 500 Kms. respectively. On the specified carriage charges, TSPs were allowed to negotiate a value within +/- 10% of the long distance call carriage charges.

9. The carriage charges were reviewed and the Regulation of 23.02.2006 stipulated a ceiling of Rs 0.65 per minute. These charges were reviewed again in 2008-09 and the Authority decided to retain the ceiling of Rs.0.65 per minute.

10. In the CP, a specific question was raised on the methodology for determining the domestic carriage charge. Stakeholders were also requested to provide their comments on the need for a separate carriage charge ceiling for some specific geographic regions, and how these geographic regions could be identified.

11. During the consultation process, service providers were generally of the view that there is no need for introducing asymmetric carriage charges for different geographic regions and the charge should be uniform across the country irrespective of region. Most service providers submitted that the ceiling of the domestic charge should be reduced. Some service providers submitted that it should continue to be at 65 paise per minute. These service providers contended that the continuation of the present ceiling of 65 paise will cater to all geographic regions as well as specific geographic regions on a mutual agreement basis. Many other stakeholders argued that the ceiling of 65 paise per minute was fixed in 2006; since then, with the increase in competition in the NLD segment as well as in NLD traffic, the cost of carriage has come down. Associated costs have also reduced substantially over time on account of economies of scale, improvements in network architecture, and advances in network

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equipment. Service providers who argued for a reduction in the ceiling on carriage charges, suggested carriage charges varying between 8 paise per minute and 30 paise per minute.

12. The comments and suggestions made by the stakeholders have been carefully examined. The Authority is of the view that domestic carriage charges to be paid by the TSP to the carriage network (i.e. NLDO) for carrying inter-LSA voice traffic should be based broadly on the principle of work done by the NLDOs. Further, the ceiling of 65 paise for carriage charge was fixed in 2006. Thereafter, many developments have taken place (as referred to in para 11 above). New TSPs have entered the NLD segment. NLD traffic has increased significantly. The increase in traffic and the resultant lowering of costs cannot be ignored. Therefore, the Authority is of the view that there is a strong case to review the carriage charge.

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13. The prevailing rate of carriage charges in the market was also taken into account. It was observed that there is a large variation i.e., some NLDOs offer carriage charges as low as 9 paise per minute while a few others charge at the ceiling rate, i.e., 65 paise per minute. The difference in rates reflects both the different levels of competition in certain dense traffic routes vis-à-vis other routes, and also the relative inelasticity of prices for traffic to remote locations. At the same time, prices that are near or equal to the ceiling charge point to the perverse incentive available to TSPs, especially those that are vertically integrated, to book higher revenues from NLDO operations that are not subject to levy of spectrum usage charges (SUC) unlike access service licences. The potential misuse of a high ceiling is another reason prompting a review of the carriage charge regime.

14. To analyse the matter further, the profits of major NLDOs were examined[1]. The profitability of the top 6 NLDOs [measured by minutes carried as well as adjusted gross revenue (AGR), other than BSNL[2]] for their voice operations were computed. It was found that their PBIT margin (PBIT/AGR) is 38-91% (Table-6).

Table-6: PBIT margins of top 6 NLDOs

Sl.No.	Service provider	PBIT margin
1.	NLDO-1	74%
2.	NLDO-2	86%
3.	NLDO-3	91%
4.	NLDO-4	78%
5.	NLDO-5	38%
6.	NLDO-6	55%

15. Using the information provided in the Accounting Separation Reports (ASRs), further analysis was undertaken. The carriage cost per minute of top 7 NLDOs including BSNL (based on minutes carried as well as AGR), which together carried around 96% of NLD traffic in 2013-14, was assessed. The cost per minute (Capital Expenditure plus Operating Expenditure) of these 7 NLDOs ranges between 3 paise per minute and 84 paise per minute and the average carriage charge is about 31 paise per minute. For the entire industry (11 NLDOs), the average carriage charge is about 30 paise per minute.

16. It was noted that the average for the industry excluding BSNL was about 21 paise per minute. One of the reasons for the higher cost of carriage in the case of BSNL is that BSNL carries a significant amount of traffic to remote and rural areas. At the same time, unreasonable costs emanating from the legacy network and employee and operating costs booked

[1] The analysis was done for 11 NLDOs carrying voice traffic, covering about 99% of the market by minutes carried as well as AGR.

[2] The Annual Report 2013-14 of BSNL indicates that the revenues from basic services and CMTS services are distributed to NLD (and ILD) segments on the basis of a formula adopted during 2010-11. In the absence of actual revenue information for the segment, BSNL has not been included in the calculation in Table 6.

against NLDO operations are also responsible for higher carriage costs reported by BSNL. In response to a previous consultation paper on IUC issued by TRAI on 27.04.2011, BSNL had submitted that the cost of providing carriage services in rural areas generally comes to about 1.5 times of the cost of providing carriage to other areas.

17. In this backdrop, the following methodology has been used for calculation of domestic carriage cost of the NLDOs carrying inter-LSA voice traffic (carriage of calls):

a) Fully Allocated Costing methodology has been followed.

b) Data from Accounting Separation Reports[3] for the year 2013-14 related to revenue, costs and capital investment in NLD service and other reports/returns submitted by TSPs have been used in the costing exercise.

c) In the domestic carriage cost computation, costs incurred on the product "voice" have been considered. Costs incurred on non-voice related products i.e. leased circuits and others, have not been considered while calculating the carriage cost.

d) Sales and marketing costs (along with other relevant costs) incurred by NLDOs have also been considered relevant in the computation of carriage charge. Since a TSP is free to decide on the NLDO for carrying of its inter-LSA traffic, sales and marketing costs form part of relevant costs.

e) Data in Accounting Separation Reports of NLD service does not provide segregated revenue and costs of voice services for different distances of domestic carriage (for example, metro-LSA to metro-LSA or to remote location in less developed LSAs such as North East LSA). Therefore, the computation of the carriage cost per minute has been

[3] Submitted by TSPs in compliance to 'The Reporting System on Accounting System Regulations, 2012 (7 of 2012).

arrived at for India as a whole irrespective of the distance the call is carried.

f) The sum of the relevant costs and return on capital employed (RoCE) at 15% has been divided by the minutes carried by NLDOs, to derive the carriage cost per minute which is denoted below:

$$\textbf{Carriage Cost Per Minute (without LF)} = \frac{X_1 + X_2}{Y_M}$$

Where

X_1 *represents operating costs;*

X_2 *is return on capital employed at 15% and;*

Y_M *represents minutes carried by NLDOs.*

g) License fee (8%) has been loaded on the carriage cost per minute [computed in (f) above] to arrive at the total carriage cost per minute to be paid by the access service provider to the NLDOs:

$$\textbf{Carriage Cost Per Minute (including LF)} = \frac{\textbf{Carriage Cost per minute (without LF)}}{\textbf{(100 - LF rate)}}$$

h) Based on the above methodology, the industry carriage cost per minute excluding BSNL comes to 21 paise. When BSNL is included, the average carriage cost comes to about 30 paise as shown in the following Table:

Table-7

(Rs. in crore)

Particulars	Industry
(A) Operating Costs (including depreciation)	7603
(B) Capital Employed	28878
(C) Return on Capital Employed (RoCE) @ 15%	4332
(D) Total Cost including RoCE ….(A+C)	11935
(E) Minutes carried by NLDOs (in crore)	42680
(F)Carriage Cost (including RoCE) per minute (in paise)…(D/E)	28
Carriage Cost per minute after loading LF (8%) (in paise)	**30**

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18. Taking into account the earlier submission of BSNL (see para 16), the average cost of providing carriage services for rural and remote areas could be taken as 1.5 times of 21 paise per minute which comes to about 32 paise per minute. In this context, one option available is to fix a separate, higher ceiling for rural and remote areas. However, the Authority noted that fixing two separate ceilings would make carriage of calls to rural and remote areas costlier in practice, and further disincentivise calls to these areas. Hence, the Authority decided to set a single ceiling for NLD carriage, albeit with a markup, to reckon for any variations that could arise due to averaging or from differing cost allocations by TSPs as indicated in para 17 above. The Authority notes that a ceiling charge provides enough headroom and flexibility for TSPs to set actual interconnection prices in accordance with the work done, after taking into account market considerations.

19. The Authority is of the view that since carriage charges are regulated through a ceiling and NLDOs have to operate in a competitive NLD market for acquiring business (NLD traffic), it would be reasonable to fix the ceiling for carriage charges at 35 paise per minute (after giving a mark-up of about 10% on the carriage costs derived above).

20. Carriage charges play an important role in determining the long distance (STD) tariffs. In view of impending technological changes including full migration to IP in the core network, the carriage cost structure is also likely to change. Hence, the Authority has decided that it shall review the carriage charges regime two years after it has been in force, i.e., the review will be undertaken and concluded in financial year 2017-18.

(2) Transit carriage charge

21. According to the present regulatory framework intra-LSA mobile traffic from all TSPs to fixed lines of BSNL is being handed over at the Level-II

TAX in the fixed line network of BSNL. From Level-II TAX to SDCA level traffic is being carried by BSNL for all TSPs and BSNL levies a regulated charge of 15 paise per minute on the TSPs. The CP raised a specific question with regard to segregating of cost data of transit carriage from BSNL's ASR along with the method and costing details for estimating the transit carriage charge.

22. The TSPs are generally of the view that there should not be any transit carriage charge as the beneficiary operator (BSNL) has indicated the point at which it will accept a call terminating on its network; it can only recover a termination charge. Once the call has been handed over to the terminating operator, the concept of any additional transit carriage charge does not arise. These TSPs further submitted that BSNL does not provide POIs at any SDCA and has declared Level-II as the only point for termination for intra-circle calls from mobile to fixed line of BSNL. One service provider submitted that if the charge for usage of access network (whether mobile or fixed) for a call is already determined (i.e. fixed termination charge) there should not be a separate charge for the same service, just because a point of handover is unilaterally decided by BSNL. These TSPs further submitted that the Authority should either (a) direct BSNL to provide connectivity at all terminating points (SDCA), failing which level-II should be treated as the handover point of termination; or (b) allow the access providers to use private NLDOs for their intra-circle long distance calls for terminating at SDCA. Some service providers including BSNL submitted that the cost of providing transit carriage charge cannot be separated in the ASR since distance-based data is not captured in the ASR. One TSP has estimated a cost-based transit carriage charge of 2 paise per minute taking into account the recent ceiling fixed by TRAI for domestic leased circuits (DLC). The service provider further submitted that BSNL is shifting from its old switches to IP switches which would further reduce the transit carriage charge.

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23. The Authority noted that the primary issue in transit carriage charges is the point of handing over of intra-LSA mobile to fixed call. A number of service providers have also focused on the point of handing over of these calls, than on the applicable charges. The Authority also noted that the question of handover of various types of calls is the subject matter of licensing conditions and other determinations of TRAI on interconnection. The present IUC Regulation deals only with the applicable charges, including for transit carriage. The Authority noted that the handover of intra-LSA mobile to fixed call was prescribed by the TRAI determination dated 08.01.2001. Subsequently, in 2001/2002, a similar clause was also inserted in the Cellular Mobile Telephone Service License. The relevant para of TRAI's determination dated 08.01.2001 is as follows:

"Para 7 ……. …….. the normal routing hierarchy for all types of inter-circle and inter-network calls is to handover the calls to a Level-I TAX, which in turn routes the incoming traffic lower down the hierarchy i.e. to Level-II and then to the local network at the SDCA level. This normal hierarchy should be followed for calls originated in mobile network and terminated in a fixed network. However, for traffic terminating in the LDCA, the gateway MSCs may at the request of the interconnection seeker, be directed connected to Level-II TAXs, i.e. bypassing Level-I TAX, in order to give the cellular operator greater flexibility and smoother flow of traffic. POIs below TAX and tandem level may also be provided with mutual agreement."

24. In effect, the condition governing the handover of these calls has become a part of the CMTS license condition. Subsequently, however, the UAS and UL licenses did not contain this stipulation; nevertheless, since a number of CMTS licences were in operation, this condition was not revisited by the Authority. Significant time has elapsed since the determination of the point of handover of these calls. Further, TSPs have time and again requested the Authority to change the point of handover of intra-LSA mobile to fixed calls. The Authority is of the view that the primary issue of handover of these calls needs to be settled first. Since

the present Regulation is limited to prescribing the relevant charges, the Authority does not propose, at this juncture, to review/ amend the existing Regulation with respect to transit and transit carriage charge. The Authority shall issue a separate Consultation Paper to determine the point of handover of these calls.

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THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (THIRTEENTH AMENDMENT) REGULATIONS, 2017

(5 of 2017)

TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION

New Delhi, the 19th September 2017

File No. 10-8/2016-BB&PA --- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

1. (1) These regulations may be called the Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017 (5 of 2017).
(2) They shall come into force with effect from the 1st October, 2017.
2. In Schedule I of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), in the table under column "1. Termination Charge", for the words and figures "Re. 0.14 (paise fourteen only) per minute", the words and figures --- "(a) Re. 0.06 (paise six only) per minute with effect from the 1st October, 2017 to the 31st December, 2019; and (b) 0 (Zero) with effect from the 1st January, 2020" shall be substituted.

(S.K. Gupta)
Secretary

Note 1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29.10.2003 (4 of 2003) and subsequently amended vide notifications Nos. --

(i) 409-5/2003-FN dated 25.11.2003 (5 of 2003) (First Amendment);

(ii) 409-5/2003-FN dated 12.12.2003 (6 of 2003) (Second Amendment);

(iii) 409-5/2003-FN dated 31.12.2003 (7 of 2003) (Third Amendment);

(iv) 409-8/2004-FN dated 06.01.2005 (1 of 2005) (Fourth Amendment);

(v) 409-8/2004-FN dated 11.04.2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21.09.2005 in appeal No. 7 of 2005;

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(vi) 409-5/2005-FN dated 23.02.2006 (1 of 2006) (Sixth Amendment);

(vii) 409-5/2005-FN dated 10.03.2006 (2 of 2006) (Seventh Amendment);

(viii) 409-2/2007-FN dated 21.03.2007 (2 of 2007) (Eighth Amendment);

(ix) 409-22/2007-FN dated 27.03.2008 (2 of 2008) (Ninth Amendment);

(x) 409-12/2008-FN dated 09.03.2009 (2 of 2009) (Tenth Amendment);

(xi) 409-8/2014-NSL-1 dated 23.02.2015 (1 of 2015) (Eleventh Amendment);

(xii) 409-8/2014-NSL-1 dated 24.02.2015 (2 of 2015) (Twelfth Amendment);

Note 2. The Explanatory Memorandum explains the objects and reasons of The Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017 (5 of 2017).

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Explanatory Memorandum to the "The Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017"

A. Interconnection

1. Interconnection allows subscribers, services and networks of one service provider to be accessed by subscribers, services and networks of the other service providers. If networks are efficiently interconnected, subscribers of one network are able to seamlessly communicate with those of another network or access the services offered by other networks. Without an effective interconnection, the market would develop as discrete islands and economic benefits associated with market expansion and liberalization would be limited. For competition to develop and the market to evolve efficiently, it is essential that subscribers of one network communicate with those of another network.

2. In a broader sense, the term interconnection refers to the technical and commercial arrangement under which service providers connect their equipment, networks and services to enable their subscribers to have access to the subscribers, services and networks of other service providers. Interconnection is the lifeline of telecommunications. It is one of the foundations of viable competition which in turn is the main driver for growth and innovation in telecommunications markets. Good interconnection arrangements promote efficient infrastructure development, providing incentives for operators to build networks and use other networks.

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B. Interconnection usage charges (IUC)

3. Interconnection Usage Charges (IUC) are wholesale charges payable by a Telecom Service Provider (TSP) to another telecom service provider (TSP), for terminating or transiting/carrying a call from its network to the network of the receiving TSP. The IUC mainly consists of termination charges, origination charges and carriage/transit charges. Briefly these are as follows:

(1) Termination Charges

4. These are the charges payable by the originating service provider, whose subscriber originates the call, to the terminating service provider, in whose network the call terminates. When the customer of a TSP calls a customer on the network of a mobile or a fixed line operator, the TSP pays a wholesale charge to

the applicable mobile or the fixed line operator. These rates are known as "mobile termination charges" (MTC) and "fixed termination charges" (FTC) respectively. The method of collection of such charges varies by type of interconnection arrangement in place. If the mobile subscriber has to pay for both outgoing and incoming calls it is called Mobile Party Pays or MPP regime. In another regime called Calling Party Pays (CPP) regime, the subscriber who initiates the call only pays for the call.

(2) International Termination Charge

5. International termination charges are the charges payable by an International Long Distance Operator (ILDO), which is carrying calls from outside the country, to the access provider in the country in whose network the call terminates.

(3) Origination Charges

6. The call-originating service provider pays the carriage and termination charges for the calls from the tariff collected from the consumer and retains the residual towards the expenses of originating the call. This residual amount is called the origination charge. Where consumer tariff is under forbearance, origination charge is not specified. Keeping the origination charge under forbearance provides flexibility to the service provider in offering tariff.

(4) Carriage/transit charges

7. Inter-circle calls are carried by National Long Distance Operator (NLDO). The charges to carry calls from one service area to another service area are called carriage charges. When two telecommunication networks are not directly connected, an intermediate network is used through which the calls are transmitted to the terminating network. Such an intermediate network is known as the transit network and the corresponding charges are transit charges. <u>These charges were not part of this consultation process.</u>

C. Arrangements before inception of IUC Regulations in India

8. Initially, the Department of Telecom (DOT) was the sole provider of telecommunication services in India and therefore there was no need to share any revenue between telecom service providers. Subsequently, the telecom market was opened for private participation. Since more than one service

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providers were now involved in completion of a call, there was a need to prescribe the manner in which revenue derived from telecommunication services would be shared between them. A revenue share regime was therefore put in place by the TRAI vide "The Telecommunication Interconnection (Charges on Revenue Sharing) Regulation 1999". Revenue sharing arrangements for calls originated from a mobile service provider's network terminating in a basic service provider's network, were specified. Revenue sharing arrangements were also prescribed between access service providers (both mobile and fixed) and long distance/international long distance service providers for carrying long distance/international long distance calls. Mobile subscribers were required to pay for receiving calls.

D. Evolution of IUC Regulations:

9. TRAI issued the first IUC Regulation on 24th January 2003 which laid down cost-based interconnection usage charges replacing the earlier revenue sharing arrangements. The Regulation became effective from 01.05.03. In this Regulation, the Interconnection Usage charges differed on the basis of type of network in which the call originated or terminated and the distance travelled in a particular network. However, in the process of implementation, various concerns with respect to the IUC regime such as sustainability of the IUC regime over time, consistency among the different Schedules of the IUC Regulation etc. were raised by service providers. For improving and streamlining the IUC regime further, TRAI issued a revised IUC Regulation on 29.10.2003. This Regulation superseded the IUC Regulation dated 24.01.2003 and came into effect from 1.2.2004. This Regulation prescribed a uniform termination charge of Re.0.30 per minute for all types of calls.

10. In 2006, TRAI reviewed the IUC after following a public consultation process and discussions with the industry. TRAI notified an amendment to the IUC Regulation on 23rd February 2006, which was implemented on 1st March, 2006. In this amendment to the Regulation, TRAI decided to place a ceiling on carriage charges while other IUC components were kept the same.

11. The next review of IUC components was undertaken by TRAI by issuing a consultation paper dated 31st December 2008. Amendment to the IUC Regulation was notified on 9th March 2009. This amendment became effective on 1st April 2009. In this amendment, the termination charge for local and national long-distance voice calls to fixed-line and mobile was revised

downwards from the erstwhile charge of Re.0.30 per minute to Re.0.20 per minute.

12. Some TSPs challenged the above regulations before the Hon'ble TDSAT. Hon'ble TDSAT passed its judgment on 29.09.2010 and directed the Authority to consider determining the IUC afresh, on the basis of its observations and directions. The Authority filed an appeal in the Hon'ble Supreme Court challenging the order of Hon'ble TDSAT on various technical and legal grounds including, inter-alia, the principal legal issue of whether the validity of TRAI's Regulation framed in exercise of powers conferred under section 36 of the TRAI Act, can be challenged before the Hon'ble TDSAT under section 14 of the TRAI Act, 1997. The Authority also prayed the Hon'ble Supreme Court to allow the appeal and set aside the final judgment and order dated 29.09.2010 passed by Hon'ble TDSAT. The Hon'ble Supreme Court passed an order that the Hon'ble TDSAT does not have jurisdiction on TRAI's regulations framed in exercise of powers conferred under section 36 of the TRAI Act.

13. As per Order of the Hon'ble Supreme Court, the Authority filed a report in the Hon'ble Supreme Court on 29.10.2011.Since neither Hon'ble TDSAT nor the Hon'ble Supreme Court had stayed the applicability of the IUC regime, which was put in place through the amendment in the IUC Regulation of 2009, the changes to the IUC regime put into effect by the Authority remained in force.

E. Prevailing IUC Regulations

14. After following a due consultation process, the Authority issued the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015 dated 23.02.2015, through which, the termination charges w.e.f. 01.03.2015 were prescribed as below:

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Table : Termination Charges prescribed through the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015

Type of call	Type of traffic	Termination charge
Local and national long distance call	Wireless to wireless	₹ 0.14 per minute
	Wireless to wireline	0 (Zero)
	Wireline to wireline	0 (Zero)
	Wireline to wireless	0 (Zero)
International call	International incoming call to wireless and wireline	₹ 0.53 per minute

* Wireless means full mobility, limited mobility and fixed wireless access services.

15. Subsequently, through the Telecommunication Interconnection Usage Charges (Twelfth Amendment) Regulations, 2015 dated 24.02.2015, which became effective from 01.03.2015, the Authority prescribed a ceiling for domestic carriage charge as ₹ 0.35 per minute.

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F. Regimes for retail charging of telecommunication services

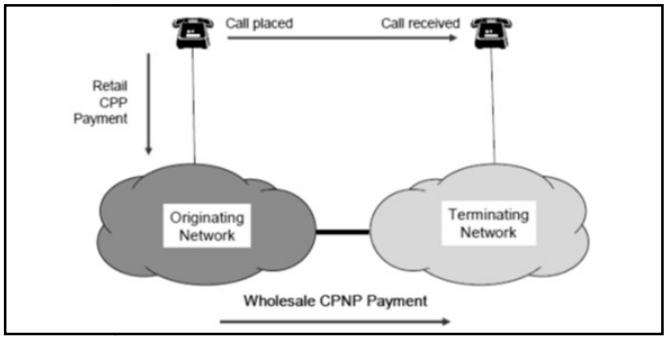
16. For retail charging of telecommunication services, there are predominately two regimes as outlined below:
    (i) **Calling Party Pays (CPP) Regime**: Under CPP, the calling party pays to his/her service provider for the call, while the called party does not have to pay for the call.
    (ii) **Receiving Party Pays (RPP) Regime**: Under RPP, the called party also pays for the call.

17. With retail charging regime as CPP, either of the following two regimes can be used for wholesale charging between TSPs:
    (i) Calling-Party-Network-Pays (CPNP) regime
    (ii) Bill-and-Keep (BAK) regime

(1) CPNP regime

18. Under the CPNP regime, the originating TSP pays termination charge for terminating calls in the networks of other TSPs as indicated in the following figure.

Figure: CPP and CPNP charging regimes



19. Internationally, the CPNP regime is generally, implemented by setting cost-oriented or cost-based termination charges i.e. the termination charges are set to recover appropriate costs in roughly the manner in which the TSPs incur them. Cost-oriented or cost-based termination charges have an economic rationale; however, there is no single, simple way to estimate the termination cost. Such estimation is a complex exercise, even more so because most of the costs incurred by the TSPs may not even be relevant in the context of estimating relevant costs for terminating traffic. The moot question in a cost-based exercise is what are the relevant costs to be taken into account for determining the termination charge. A related issue is whether current costs or historical costs have to be considered. Lastly, there are a number of methodologies like Fully Allocated Cost (FAC), Long Run Incremental Cost (LRIC) plus and Pure LRIC, which are used in various jurisdictions across the globe. Therefore, the regulator has to choose the methodology to be used for determining IUC.

(2) BAK Method

20. In this method, a TSP does not have to pay any termination charge to its interconnecting TSP. Each TSP bills its own subscribers for outgoing traffic that it sends to other interconnecting TSPs and keeps all the revenue received from its subscribers.

G. Prevalent Costing methods for estimation of cost-based or cost-oriented termination charges

21. The two most commonly used methods for estimation of domestic termination charges are (i) Fully Allocated Cost (FAC) Method and (ii) Long Run Incremental Cost (LRIC) Method. LRIC also has variants such as LRIC+ Method and pure LRIC Methods. These methods are briefly described below.

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(1) FAC method

22. The core idea in the FAC method is to simply divide the total cost that the service provider incurs amongst the services it provides to arrive at termination charges. FAC is, generally, based on historic costs because accounting data reflect the firm's actual costs. In this method, shared and common costs are assigned to individual services or service elements. This method is generally used with top-down costing methodology. It uses accounting data submitted by service providers in their balance sheet, profit & loss account and accounting separation report.

(2) LRIC method:

23. In any LRIC method, termination cost is estimated on the basis of the following basic assumptions:

(i) The dimensioning of network is done for an equivalent TSP[1] i.e. a TSP who has a fair share in the relevant market.

(ii) This TSP incurs costs that would occur in a competitive market. Thus the method uses present costs i.e. forward looking costs.

(iii) The method of costing is long-run costing i.e. the size of the network deployed is reasonably matched to the level of network demand.

(iv) The method allocates the costs to wholesale services i.e. off-net incoming calls.

24. In the LRIC method, the network demand for an equivalent TSP is identified. In order to meet this demand, an efficient network is dimensioned. The costs of the various network elements are then computed on the basis of present costs. These costs are then allocated to wholesale service (i.e. off-net incoming minutes) in order to determine termination cost per minute.

Termination cost as per LRIC method = (Total annualized termination cost computed on a long-run incremental cost basis) *divided by* (No. of off-net incoming minutes to be served in the year)

25. In the LRIC+ variants, a certain portion of the common costs is also allocated for the purpose of computation of termination cost. The costs that are common to both the wholesale business and the retail business of the TSPs are termed common costs e.g. costs pertaining to the corporate office, head offices etc. This add-on is called the mark-up for common costs.

[1] An equivalent TSP is a representative TSP in each LSA. It has an average size, which can be determined through the Herfindahl-Hirschman Index (HHI).

Termination cost as per LRIC+ method = (Termination cost as per LRIC method) *plus* (Mark-up for common costs)

26. In the pure LRIC variant, the relevant increment is the wholesale call termination service and it includes only avoidable costs.

Termination cost as per Pure LRIC = (Avoidable cost if wholesale termination service is not provided) *divided by* (No. of total off-net incoming minutes) = (Total annualized cost for providing entire range of services *minus* Total annualized cost for providing entire range of service excluding wholesale termination minutes) *divided by* (No. of total off-net incoming minutes)

27. A summary of the foregoing discussion yields the following conclusions:

(i) The LRIC method allows recovery of direct costs of providing the termination service.

(ii) The LRIC+ variant not only allows recovery of direct costs of providing the termination service but also a common costs is allocated to the termination service.

(iii) The Pure LRIC variant allows recovery of avoidable costs and is the most appropriate as it reflects the true cost of providing a service.

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H. Consultation process:

28. The Authority issued a Consultation Paper (CP) for Review of Interconnection Usage charges on 05.08.2016 to seek the views of stakeholders on various aspects of IUC. Stakeholders were asked to submit written comments by 05.09.2016 and counter-comments by 19.09.2016. On the request of some stakeholders, the dates for submission of comments and counter-comments were extended up-to 17.10.2016 and 31.10.2016 respectively. Written comments were received from five industry associations, 12 TSPs and 6 other stakeholders, including companies, organizations, firms and individuals. Counter-comments were received from four TSPs and one association. The comments and the counter-comments received from the stakeholders were placed on the TRAI's website– www.trai.gov.in.

29. In the CP dated 05.08.2016, the Authority had sought the views of stakeholders on the following broad issues related to IUC:

a. In view of the recent technological developments in the telecommunication services sector, which of the following approaches is appropriate for prescribing domestic termination charge (viz. mobile termination charge and fixed termination charge) for maximization of consumer welfare (i.e. adequate choice, affordable tariff and good quality of service), adoption of more efficient technologies and overall growth of the telecommunication services sector in the country?

(i) Cost oriented or cost based termination charges; or

(ii) Bill and Keep (BAK)?

Please provide justification in support of your response.

b. In case your response to the Q1 is 'Cost oriented or cost based termination charges', which of the following methods is appropriate for estimating mobile termination cost?

(i) LRIC+

(ii) LRIC

(iii) Pure LRIC

(iv) Any other method (please specify)

Please provide justification in support of your response.

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c. In view of the fact that the estimates of mobile termination cost using LRIC method and LRIC+ method yielded nearly the same results in year 2011 (as filed in the Hon'ble Supreme Court on 29.10.2011) and in year 2015 (as estimated for the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015 dated 23.02.2016), would it be appropriate to put to use the estimates of mobile termination cost arrived in the exercises of year 2011 and year 2015 in the present exercise?

d. If your response to the Q3 is in the negative, whether there is a requirement of running the various LRIC methods afresh using the information on subscriber, usage and network cost for F.Y. 2015-16 for estimation of mobile termination cost?

e. In what manner, the prescription of fixed termination charge as well as the mobile termination charge from wire-line networks as 'zero' through the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015 is likely to impact the growth of the Indian

telecommunication services sector as a whole? Please support your viewpoint with justifications.

f. Whether termination charges between different networks (e.g. fixed-line network and wireless network) should be symmetric?

g. Which approach should be used for prescribing International Termination Charge in the country? Should it be kept uniform for all terminating networks?

h. Whether, in your opinion, in the present regulatory regime in the country, the stand-alone ILDOs are not able to provide effective competition owing to the presence of integrated service providers (having both ILDO and access service licenses) and, therefore, there are apprehensions regarding sustainability of the stand-alone ILDOs in the long-run?

i. If your response to the Q8 is in the affirmative, which of the following approach should be used as a counter-measure?
   (i) Prescription of revenue share between Indian ILDO and access provider in the International Termination Charge; or
   (ii) Prescription of a floor for international settlement rate (levied by ILDO upon the foreign carrier) for international incoming calls; or
   (iii) Any other approach (please specify)
   Please provide justification in support of your response.

j. Is there any other relevant issue which should be considered in the present consultation on the review of Interconnection Usage Charges?

30. The Authority on 15.12.2016 further asked TSPs to submit detailed information related to cost network element used in providing services, subscriber base, Minute of Usage, data usage etc. The Authority also asked TSPs to furnish information on traffic during different hours of a day on 27.1.2017.

31. The Authority wanted to listen to the viewpoints of all the TSPs prior to the discussion in an open house. Therefore, a one-day workshop was held on 18.07.2017 at Delhi to discuss the issues threadbare with the TSPs. Subsequently, an Open House Discussion was held on 20.07.2017 at Delhi to discuss the issues with other stakeholders.

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32. During the workshop, TSPs have presented their preferred cost methodology before the Authority and other TSPs. They were allowed to comment/question on the method/cost data presented by each other. The issues raised in the CP and the views of stakeholders thereon are examined in the succeeding paragraphs.

I. Analysis of issues:

(1) Approach to be used for Termination Charges

33. A few of the TSPs and a few other stakeholders have favored a regime of cost-oriented termination charges. They have argued that in India, where the CPP regime has been adopted for retail tariffs, market players can be compensated for their work done in terminating off-net incoming calls only, through a cost-oriented termination charge regime.

34. On the other hand, a few TSPs and some stakeholders have favoured a Bill and Keep (BAK) regime. They have argued that termination charge acts as floor for retail tariff. They also contend that a BAK regime would prevent incumbent TSPs from recovering their costs of operations from their competitors and, thereby, would enable greater competition in the sector. Supporters of BAK regime argue that BAK provides a solution to address the issue of market power of call-terminating networks. They also argue that the theory and practice of identifying an optimal termination charge is complex. The result is that any determination of a termination charge, even if done with great care and at a cost, could be disputed by a set of TSPs who perceive it to be loaded against them. Various factors like determination of costs, the method of allocation, determining costs sensitive to traffic volumes and the extent to which different products/ services should contribute to common costs, etc. can, at times, be debated. They further argue that a termination charge becomes an effective floor for retail tariffs. BAK helps to remove this barrier to retail pricing for off-net calls (i.e. inter-TSP calls) and has been proven to result in significantly higher levels of calling activity as TSPs are given the flexibility to offer innovative customized tariff plans to their subscribers.

35. They have also argued that the cost of terminating voice traffic in most modern (and in even hybrid) networks is close to zero and negligible and therefore any cost-based method is not relevant anymore. Moreover, as the modern networks are being majorly built for data capacities, there is no incremental cost attached to voice termination or origination. Further, they have argued, that the

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continuance of IUC has the counter effect of benefits of the technology not being passed onto the subscribers.

36. At the same time, it is argued by the detractors of BAK method that BAK may result in 'a race to the bottom' in which case the TSPs may be incentivized to set prices well below costs to enter new market segments and capture larger market share. This may result in inadequate investment in network infrastructure and consequent inefficiencies in capturing positive externalities.

37. The establishment of an IUC regime is an activity that has far reaching consequences for the telecommunications sector. It is an important tool for giving the desired direction and impetus to growth of telecom services. It can enable competition, increase consumer welfare, ensure sustained growth of telecommunications and thereby promote the economic development of the country. Although termination charges are wholesale inter-operator tariffs and not directly the retail tariff of customers, it would be naïve to assume that they have no bearing on the retail tariff.

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38. The Authority noted that during the last exercise, it did not find merit in implementation of BAK regime for wireless to wireless calls. However, it would be worthwhile to re-examine the suitability of BAK with the latest technological trends in the mobile telephony.

Technological Evolution

39. Traditionally, voice calls have been carried over public switched telephone networks/ 2G network using circuit switched (CS) networks. In Circuit Switch networks, the communication takes place over a dedicated circuit. However, in recent times, TSPs have built packet-switched (PS) networks (not limited to but include 4G network) to carry voice. The Packet Switch networks differ from Circuit Switch networks in that they group all transmitted data into suitably sized blocks, called packets, which are routed independently of their respective destinations. This means that in a Packet Switched based voice call, there is no single dedicated network path reserved for the call; instead, various paths can be used in parallel while other services such as video and data may be carried over the same paths. A Packet Switched voice call is typically carried over Internet Protocol (IP) and is typically referred to as a Voice over IP (VoIP) call. Naturally, Since Packet switched based call uses latest IP technologies and voice travel in the form of data, it become cost effective for TSPs. TSPs world over are rapidly migrating to such technologies in their access/ radio network. It is worthwhile to

mention that most of the TSPs have already migrated to IP technologies in their backhaul and backbone network.

40. In India, the telecom sector is currently going through a phase of rapid modernization and advancement. The old technologies are being replaced by more efficient new technologies. All major service providers have either committed to IP based LTE networks or have declared plans of doing so in the future. Voice calls, in future, will be provided using IP-based technology, which is the most efficient mode of delivery by any available parameter, be it cost, quality or efficiency of delivery. One mobile operator has started voice service using the technology of Voice-over-LTE (VoLTE) at a very large scale. The largest operator in the country has also launched VoLTE services while the other operators have announced plans to launch VoLTE services shortly. Incidentally, these are the large service providers whose networks witness maximum off-net terminating calls. Similarly, a few wire-line TSPs have started voice over their managed IP networks/ NGN access networks.

41. Further, under the current licensing framework in the country, the access service providers can also provide 'Internet Telephony'. When voice is transmitted over public internet, it is termed as Internet Telephony. When a TSP uses Internet Telephony for terminating a call to its subscriber, the receiving party separately pays for the data transfer done in receiving the call. Thus, a TSP can, potentially, deliver a voice call reaching at its point of interconnection to its subscriber either as (i) Circuit Switch call (ii) Packet switched call/VoLTE call (or call over managed IP) (iii) Internet telephony call.

42. During the workshop, on the one hand, one leading operator presented that cost of terminating the call in all IP network is close to zero (0.11 paisa per minute). On the other hand, some other operator who has mix of 2G/3G technologies submitted that cost of termination of call in their network is very high compare to this. The Authority noted the difference of cost of call in packet switched network and circuit switched network calls. The difference in cost of delivery would be accentuated in case of an Internet Telephony call. It is essential for the Authority to promote technologies with lesser costs so that consumers can benefit from lower tariffs. With a view to promoting new and more efficient technologies, the Authority is expected to be forward looking and base its regulations on the most efficient technology.

43. The Authority further noted the general direction of telecommunication services sector is towards Packet switched networks and Internet Telephony where voice

calls would be transported as data. In Internet Telephony, the call receiving party may have to pay data charges while receiving a call. At this juncture, one may be tempted to ask – Does CPP regime (which requires that the call receiving party pays nothing for the call) still hold good?

44. The Authority has taken note of the submissions of some stakeholders that there is no need to depart from the time-tested principle of cost-based domestic termination charge in the short-run when the underlying network is predominantly CS network at present and only a small part of it is likely to be replaced with PS network and Internet Telephony in near future.

Incentive for Technology Upgrade

45. The Authority examined that when clear demonstrable large difference exist in the cost of providing same services, why TSPs are not migrating to newer technologies such as VoLTE.

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46. With the evolution of technology and convergence, more and more networks are migrating towards IP network worldwide. Regulators the world over are working towards facilitating mi**g**ration towards Next Generation Networks (NGN) which will be IP based networks so that innovative services could be provided to the customers. In Internet networks which are IP based networks there are no interconnection charges and networks can connect globally without any need for interconnection charges. The Authority is of the view that termination charges work as disincentive to deployment of new technologies such as VoLTE and migration to IP networks by operators. Moving towards BAK will encourage adoption of latest technologies and the deployment of IP-based telecom networks. Since IP based networks are poised to be the networks of the future for providing telecom services, a BAK regime should be seen as a natural facilitator for the development of technology.

47. Accordingly, The Authority is of the view that in case the present regime of cost-based domestic termination charge is continued for long, it would hamper the movement of the sector towards (i) deployment of more efficient technologies; and (ii) more innovative and customer friendly tariff offerings; and, in turn, it would be detrimental to the growth of telecommunication services sector. In case, a TSP continues to get a cost-oriented termination charge estimated on the basis of yester-years' network technology (such as 2G or 3G), where is the

incentive for him to migrate towards a more efficient network technology (such as 4G) requiring capital investments in short-run.

48. The Authority further noted that more than 80% of the spectrum held by various service providers is liberalized spectrum wherein they can use any technology of their choice. Since 2010, Operators are acquiring spectrum which can be used for 3G/4G technologies. The Authority further noted that there are no new networks launched using the standalone 2G technology in the past five years. Practically all telecom service providers have embarked upon the path of modernizing their networks. This is to carry traffic on IP in major Parts of their network and to cater to the requirements of the market. Operators are increasingly running their networks for data services and voice is becoming a by-product. IP based technologies are primarily for data services with voice running as an application. As data for demand has been increasing, the share of voice will keep on reducing and there would be hardly any cost to carry voice traffic, including terminating traffic.

49. As mentioned above, the cost of terminating the call in packet switched network is so small that if majority of operators move to packet switched technologies there would be no need to fix the termination charge and it will virtually amount to BAK. BAK or sender-keeps-all is a method of interconnection pricing in which the originating service provider keeps the revenue billed i.e. there is no settlement of termination charges for off-net calls.

Consumer Tariffs

50. It has been observed that reducing termination rates has benefitted consumers and enhanced competition. Going the full distance i.e. reducing terminating rates to zero by introduction of the BAK regime would help in immediately realizing these benefits. The Bill and Keep regime will encourage flat rate billing and time differentiated charges, both of which will improve capacity utilization and will be in the interest of consumers. It will also reduce the inter-operator off-net traffic imbalance, and thus could help in convergence to an equilibrium situation.

51. The Authority further analyzed the case of suitability of BAK regime in the country. The Authority observed that when a TSP establishes a network, it is not only for sending but also for receiving calls. The operator, therefore, does not do anything special or extra to provide for receiving another service provider's calls.

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Thus, additionality of costs for receiving calls, in the strictest sense, is close to zero. The revenue from termination charges does not go to pay for any specific additional expenditure caused by the call termination, but it is just a partial compensation of the total costs incurred for creating and operating the network. Measuring costs caused by another service provider's incoming calls is more challenging and there is no general agreement across regulators as to any single methodology that can be adopted to arrive at the termination price. Depending on the methodology used, the result is different. There is, therefore, a case for introduction of a Bill and Keep regime.

Pro-Competition

52. BAK provides a solution to address the issue of market power of call terminating networks. When a call is placed to a particular consumer of the terminating network, the originating network typically has no choice but to purchase the termination service of the terminating operator to which the called party belongs. Thus networks that terminate calls to their subscribers have market power in respect of the terminating call.

53. BAK represents an approach to interconnection charging in which the networks recover their costs only from their own consumers rather than from their interconnecting operators. In respect of cost recovery under BAK, the European Commission made the following observations:

> *"Given the two-sided nature of call termination, not all related termination costs must necessarily be recovered from the wholesale charge levied on the originating operator. Even if wholesale termination rates were set at zero, terminating operators would still have the ability to recover their costs from non-regulated retail services. Rather it is a question of how these financial transfers are distributed across operators in a way that best promotes economic efficiency to the benefit of consumers."* [2]

54. The Authority has observed a clear trend in the market of very low tariffs for on-net calls and higher tariffs for off-net calls, especially from the incumbent operators. The justification offered by these operators is that they incur cost of IUC for off-net calls. It is intriguing because there should also be a cost for on-net calls as work done for terminating call is the same. This price differential,

[2] EC recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in EU (Draft commission Staff Working Document Explanatory Note(Brussels, 2008) http://ec.europa.eu/information_society/policy/ecomm/doc/library/public_consult/termination_rates/explanatory.pdf)

which is higher than the IUC rate, is clearly a way for incumbent operators to subsidise on-net calls, and is anti-competitive. Moving to BAK method will result in elimination of price differential between on-net and off-net calls and will reduce overall tariffs for customers. The elimination of IUC will result in direct benefit to customers through lower tariffs.

55. The theory and practice of identifying an optimal termination charge is complex. The result is that any conclusions on termination charge, even if arrived at with great care and at a cost, could be disputed by a set of operators who perceive it to be against them. Various factors like determination of costs, method of allocation, determining costs sensitive to traffic volumes and the extent to which different products/services should contribute to common costs, etc. can at times be debated.

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56. A termination charge becomes an effective floor for retail tariffs. BAK helps to remove this barrier to the retail pricing for off-net calls (i.e. inter operator calls) and has been proven to result in significantly higher levels of calling activity as operators are given the flexibility to offer innovative customized tariff plans to their consumers.

57. The European Commission also summarized the advantages often associated with BAK, in particular that:

> *"Bill and Keep obviates the need for regulatory intervention and resolves the termination bottleneck. Moreover, it is further argued that Bill and Keep leads to lower retail prices for call origination and appears to increase usage due to the price elasticity of demand. Furthermore, proponents of Bill and Keep consider that it facilitates development of innovative offers, e.g. flat-rate offers promoting increased usage. It also brings immediate benefits by decreasing transaction and measurement costs. Finally, Bill and Keep takes account of the call externality."* [3]

[3] EC recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in EU (Draft commission Staff Working Document Explanatory Note(Brussels, 2008) http://ec.europa.eu/information_society/policy/ecomm/doc/library/public_consult/termination_rates/explanatory.pdf)

Traffic Asymmetry

58. One argument is BAK does not lead to optimal outcomes where traffic flows between operators is asymmetric. Traffic balance can be expected if termination rates and retail prices, notably the relative on-net and off-net prices, are approximately set to theoretically optimal levels. This is because individuals' propensity to call each other, if undistorted by artificial price differentials, would be unlikely to vary between networks in a way that would lead to traffic imbalance. In fact, the pricing method itself can influence whether or not traffic is in balance. The asymmetry in traffic in a healthy competitive environment will always exist to some extent.

59. In fact, BAK will be a catalyst for traffic symmetry. It gives TSPs appropriate incentives to serve their customers efficiently and brings market discipline to competition. The cost methodology based IUC system implies that TSPs recover network costs from competing TSPs through IUC charges. This system confers monopoly power on the called party's TSP with respect to call termination without providing any incentive for reducing its costs through efficient operations and adoption of low cost technologies. This monopoly status also leads to disparity in on-net and off-net tariffs thus creating an unnecessary tariff asymmetry. While this monopoly power enabled TSPs to charge above-cost rates, BAK's dependence on customer payments discourages a TSP from charging high rates to its subscribers because they could, in turn, seek lower prices from competing TSPs. This leads to a situation where no TSP can charge above cost thus bringing in tariff symmetry. This tariff symmetry stops the arbitrage in on-net and off-net tariffs, leading to a symmetry of traffic. Evidently, the demand for cost-based IUC till there is traffic symmetry is a vicious circle. Only by removing the cost based IUC, this vicious circle can be broken.

60. The other opposition to BAK is that it has never been attempted or is not compatible in a CPP regime. It is relevant to point out here that BAK is a wholesale charging regime and is applicable in both RPP and CPP regimes, leaving discretion to operators on how to charge own customers and how to recover the termination costs, if any. Even in RPP countries, many operators are offering free incoming calls as part of their service offerings thus effectively implementing BAK with CPP.

OTT Applications

61. Another aspect that the Authority has considered is the rapid rise of OTT applications being used for voice services. The telecom service providers have

approached the Authority in recent times regarding the impact of OTT applications on their voice and SMS revenues. The OTT applications are able to deliver voice communication at a much cheaper cost than traditional voice networks (2G). It is not disputed that the cost of voice turns out to be fraction of a paisa per minute on the OTT applications and will continue to decline as data rates reduce with implementation of new technologies.

62. In this backdrop, it would be virtually impossible for a telecom service provider to compete against the cost effectiveness of an OTT application, if an additional cost in the form of MTC is imposed. The best way for the telecom service providers to compete would be to reduce their cost to the levels of the OTT applications while maintaining superior quality. This is feasible if all the service providers roll out advanced IP-based networks and bring down their costs, which would also result in MTC becoming redundant.

63. Another issue with proposing any MTC at a time when the OTT applications are becoming more popular is that any customer with an ability to use these OTT applications (smart phone users) will switch from the networks of the service providers thus causing reduction in traffic on their networks. Thus, the cost of the service providers would now need to be borne by the feature phone users who do not have the ability to use OTT applications. This would give rise to a peculiar situation where cost of services for low-cost feature phone users would actually end up being higher than cost of services for smartphone users. The BAK regime would encourage operators to invest in new technology and bring down the cost of voice services close to nil.

64. In view of the foregoing discussion, the Authority believes that BAK will not only strengthen the competitive framework but also ensure better tariff offerings for end consumers maximizing economic value for their telecom spend.

65. Now important question arises as to what is most suitable time frame when BAK regime should be implemented in the sector. The recent trend shows that TSPs are going to adopt packet based technologies very soon. As most of the spectrum they possess allows them to use any technology, they have no reason to delay the process of adoption of new technologies as it ultimately reduces their total cost of operation. As mentioned earlier, there is hardly any cost in termination of the call in packet based technology. However, this migration or adoption of new technologies can not happen overnight. The Authority feels that it would be appropriate if 2 years are given them for migrating to new technologies. After 2 years, majority of the calls will be terminating on the packet based technology in

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which voice will be like an application. Therefore, the Authority is of the view that India should adopt BAK regime from 01.01.2020.

66. Now next question arises that what should be the methodology to estimate the mobile termination charge for the period before BAK is implemented in the country. Following paragraphs examine the methodology for estimation of termination charge for the intervening period.

(2) Methodology for termination charge:

67. On this issue of methodology used for estimation termination charge, stakeholders have expressed widely divergent views. While some stakeholders have favored the Fully Allocated Cost (FAC) method, many others are in favor of the variant of Long Run Incremental Cost (LRIC) method viz LRIC+ and pure LRIC.

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68. The supporters of the FAC method opined that this method assures the recovery of the entire cost, including historical costs, and is a more credible method because it relies on the actual data furnished by the TSPs. They have contended that most variants of the LRIC method consider only incremental cost and, therefore, do not entirely (or, adequately) compensate the full cost; besides, the LRIC method is based on a large set of assumptions on network parameters and, therefore, lacks robustness and is not as sturdy as the FAC method. This method has been long discarded in India as well as internationally and merits no consideration. While abandoning this cost methodology, the Authority had earlier noted that:

"In most countries of the world, the MTC was traditionally determined with the help of FAC methods using historical costs. Most regulators seek Accounting Separation Reports (ASRs) from the TSPs in their respective countries. These reports contain, inter-alia, segregated costs for various services. Based on the ASRs, many regulators computed MTC per minute as 'the relevant annual cost for providing voice telephony' divided by 'annual voice minutes'. However, as telecom markets started growing, the traffic increased manifold while the relevant costs, particularly the network-related costs, started declining owing to the march of technology and economies of scale. Though market costs of telecom networks declined significantly, incumbent TSPs continued to carry historical costs, albeit depreciated, on their balance sheets. Since the incumbent TSPs had an incentive for gold-plating their costs, the information on costs furnished by them in the ASRs started becoming more and more removed from the actual level of current costs. Further, ironically,

the incumbent TSPs were being rewarded for their inefficiencies, if any, in running their networks; this is because full historical costs were being recovered through the MTC."

69. There are numerous shortcomings of the FAC method which have been identified by regulators and economists the world over. Some of the important ones are summarized below:

a. FAC method passes on the inefficiencies of operators and deprives consumers of the benefits of newer technologies. Though market costs of telecom networks declined significantly, operators continue to carry historical costs as per their balance sheets. Hence, FAC provides incentive to operators for gold-plating their costs.

b. FAC method are based on operators' accounts. This makes regulation arbitrary, results in exaggerated costs and harms consumers.

c. The core of FAC method is the allocation/ attribution of total cost to different services, which is done by allocation/ attribution keys. The difficulties to define and quantify the allocation keys are significant and can only be done by the operators. Operators can allocate too much costs to incoming interconnection traffic leading to exaggerated IUCs.

d. A further obstacle for FAC method is the difficulty to exclude inefficiencies. These inefficiencies result from inadequate technologies, inappropriate business models, historic costs (sub-optimal decisions in the past) etc. In a FAC method, it is impossible to eliminate these inefficiencies and hence, IUCs are always exaggerated.

70. A few stakeholders have stated that amongst the variants of the LRIC method, the LRIC+ is the most suitable. On the other hand, many stakeholders have favored the Pure LRIC method stating that this method would yield the most appropriate cost of terminating voice call which would, in turn, help the TSPs to provide competitive tariffs in the market. It is worth mentioning that many TSPs and the Cellular Operators Association of India (COAI), who have supported the FAC method in the present consultation process, had favoured the use of LRIC method in TRAI's consultation process of 2008-09. Some TSPs also presented their preferred methods in the workshop held on 18.07.2017.

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71. One operator also submitted that The Competition Commission of India vide Determination of Cost of Production Regulation, 2009 has adopted pure long run average incremental cost based method for the purpose of calculating the cost of goods and services to maintain the competition efficiency in the market .

72. The operator further submitted that the list of national regulatory authorities worldwide, who have applied cost-based pricing for mobile termination, is too long to include here, but included leading regulators such as OFCOM (UK), ARCEP (France), ACCC (Australia), ICASA (South Africa), MCMC (Malaysia) and ANATEL (Brazil).

73. The operator submitted that currently, 26 National Regulatory Authorities in the European Area (EEA) have implemented the Recommendation for mobile termination rates and have pure-LRIC-based mobile termination rate applicable. Following table depicts the list of countries adopted pure LRIC costing method for estimation of mobile termination charges.

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Table - Adoption of Pure LRIC Model globally

Pure LRIC implemented	**MTR rates via benchmarking of other countries that applied pure BU-LRIC**
Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, France, Greece, Hungary, Italy, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.	Cyprus, Estonia, Iceland, Latvia and Lithuania

74. The afore-mentioned operator further submitted that Pure LRIC has also been adopted by regulators outside the European Union, such as those in Norway, Jamaica, Kenya and Tanzania. Only two countries do not follow the Recommendation for MTR within the EU (Finland and Netherlands). The example of European Union is being considered here as our regulatory frameworks have evolved in a rather similar fashion.

75. During the consultation process, one of the TSPs has stated that as per the Reports of consulting firm Ovum Ltd. titled 'Ovum Interconnect Benchmark Q3 2014' and 'Ovum World Cellular Information Service Q3 2014', the ratio of IUC for mobile termination relative to retail price in India is approximately 45% as

compared to 13% in Germany and Japan, 11% in France, less than 10% in UK and 1% in China.

76. The Authority analyzed all the submissions of stakeholders and methods presented before it and also discussed internationally prevalent methods for estimation of termination charges. The Authority observed that in view of the international practices and advantage associated with LRIC, it has already estimated Mobile Termination charge using LRIC methods in 2011 and 2015. The International trend is that countries are moving from FAC to LRIC and not vice versa. Many European countries have already migrated to pure LRIC and therefore going to FAC will be retrograde step. Only issue remains which variant LRIC plus or Pure LRIC to be used for estimation of termination charge now.

77. In the LRIC method, the network demand for an equivalent TSP is identified. In order to meet this demand, an efficient network is dimensioned. The costs of the various network elements are then computed on the basis of present costs. These costs are then allocated to wholesale service (i.e. off-net incoming minutes) in order to determine termination cost per minute.

78. In the LRIC+ variants, common costs are also allocated for the purpose of computation of termination cost. The costs that are common to both the wholesale business and the retail business of the TSPs are termed common costs e.g. costs pertaining to the corporate office, head offices etc. This add-on is called the mark-up for common costs.

79. In the pure LRIC variant, the relevant increment is the wholesale call termination service and it includes only avoidable costs. Pure LRIC measures avoidable cost for carrying off-net incoming minute i.e. service specific costs that arise from the increment of all off-net incoming minutes.

80. As mentioned above, in LRIC+ method, common cost is also allocated in computation of termination charge. Allocation of common costs in termination of voice calls was appropriate when market was voice driven. Now when data which is increasing exponentially , has also become important source of revenue for the operators, using any methodology which allocates common costs to voice service may not be appropriate.

81. Avoidable cost basically refers to the cost that operator would not have incurred, if it was not providing wholesale call termination service to other operators. Thus

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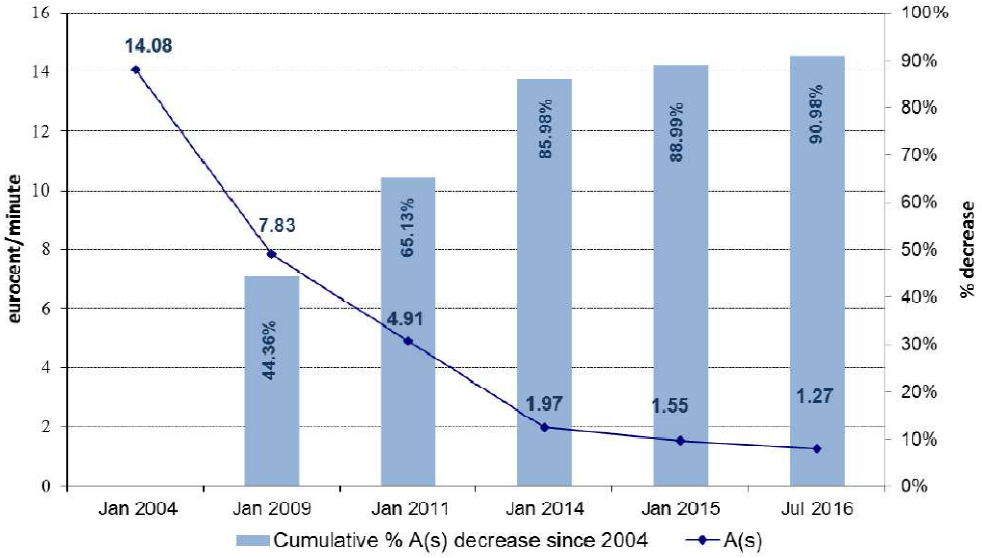
the avoidable cost is the difference between the network costs (CAPEX and OPEX) of an operator providing its full range of services and the network costs (CAPEX and OPEX) of that operator providing its full range of services except for the wholesale call termination service to the other operators.

82. Thus the pure LRIC method allows the recovery of only those costs which would be avoided if a wholesale call termination service is not provided to the other operators.

83. It is obvious that the money receiving TSPs will use this "free money" to subsidize their on-net calls i.e. calls made within their network, thus trying to further increase the disparity in size and consequently increasing monopoly power. Until now, reducing IUC has been pro-competition and happened to also favour smaller network companies. The Authority is of the view that objective of competition and efficiency will be served by aligning termination charge with marginal costs.

84. As per the Report of Body of Electronic Regulators for Electronic Communications (BEREC) titled 'Termination Rates at European Level (July 2016)', there has been a steady decline in mobile termination rates in Europe. The following chart depicts the declining trend in the level of mobile termination rates in Europe.

Figure 12 European MTRs simple average cumulative decline



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85. In India also, the termination charges have followed a downward trend since their first introduction in 2003. The steady decline in consumer retail tariff rates has coincided with a fall in termination rates during the same period. India has among the cheapest mobile call charges in the world. This has fuelled an explosive growth in the subscriber base through adoption of mobile telephony by the masses.

86. Lower termination charges are therefore likely to benefit consumers overall (both fixed and mobile) because operators will have greater retail pricing flexibility. Operators would be able to offer consumers a wider variety of retail packages and tariff structures.

87. While on the one hand a lower termination charge benefits the consumer, it does not have a negative effect on the telecom operator because it is open to the operator to recover whatever cost it incurs through the retail tariffs, subject to competitive market conditions.

88. Therefore, it is not mandatory for the regulator to cover the full cost of the termination network in the termination charge. A well-designed IUC regime would cover the relevant cost reasonably and provide reasonable incentive to service providers to enable them to offer innovative tariff plans.

89. In case termination charges are higher than cost, the service providers would be able to offer subsidies to customers on retail tariff. Lower termination charges would ameliorate possible concerns regarding exercise of market power by incumbents through on/off-net price differentials. On-net calls are that originates and terminates on the same operator's network. Off-net calls are calls that originate in one operator's network and terminate in another operator's network. Specifically, the concern that large incumbent operators are able to subsidise on-net traffic due to the prevailing rates of termination charge will to a large extent be addressed by a lower termination charge.

90. In a market with asymmetric traffic flows, termination charges set at higher levels than cost become a source of revenue for operators who terminate more traffic on their networks (usually incumbents and larger operators). On the other hand, it is an item of cost for small operators and new entrants. In view of the foregoing discussion and following reasons, The Authority is of the view that pure LRIC is the best method to estimate the mobile Termination cost now on for reasons enumerated below:

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(i) Pure LRIC is now the preferred approach of regulators in Europe and other parts of the world for setting mobile termination charges prior to implementation of BAK.

(ii) This cost based approach is based on the 'Avoidable Costs' concept as recommended by the European Commission and being implemented by European regulators

(iii) The setting of IUC to a level of avoidable cost is the least intrusive solution to reduce the anti-competitive behaviour in the market

(iv) This methodology provides the best conceptual framework for estimating the marginal cost of interconnection which ensures operators are compensated for their avoidable costs related to terminating off-net calls in their network.

(v) Pure LRIC cost based approach to setting MTCs is economically efficient and transparent and benefits consumers.

(vi) The pure LRIC approach will reduce the ability of larger operators to discount on-net calling while recovering a proportion of their costs from other operators through the inflow of mobile terminated minutes.

(vii) The pure LRIC approach to MTCs improves the ability of smaller operators to offer flat-rate any-network calling. The resulting increase in competition will benefit consumers and improve dynamic efficiency.

(viii) Pure LRIC based MTCs do not contribute to network common costs that are also supporting data and other origination services, meaning that their operators will need to consider the provision and pricing of coverage and capacity for retail services un-subsidised by incoming MTCs.

91. The Authority has also noted that those who are opposing the LRIC method, their main grievance is with respect to assumptions used in the LRIC method. In fact some of the TSPs have also written to Authority that this is a hypothetical model. The Authority observed that this argument of the TSPs is not correct. The Authority has not made any model for an efficient Hypothetical operator as is done in some of jurisdiction across the globe. In fact, to overcome this shortcoming of the LRIC method, the Authority had estimated the mobile termination charge for an average operator using the industry actual data in 2015 and same approach of using actual industry data for 2016-17 has been used herein for estimating the mobile termination charge. Therefore, the argument of the opponents of LRIC method that it uses a lot of assumptions and a network is created for an efficient hypothetical operator is not correct.

92. Some of the operators also submitted that spectrum cost should be taken into account while estimating termination charge. The Authority examined

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international practise in this regard and observed that Pure LRIC method explicitly excludes the common cost and spectrum cost. 'Mobile Call termination market review 2018-2021' of OFCOM (UK telecom Regulator) clearly stated that: *"Long Run Incremental Cost (LRIC) measures the incremental cost to an operator of providing a service in the long-run. It includes the variable and fixed costs associated with the service increment in question, in this case MCT. LRIC+ includes a mark-up for joint and common costs, such as the cost of the spectrum used by the network. By definition, the LRIC standard, as currently used to set the charge control, does not include such a mark-up."*

93. On the basis of the methodology as already explained in the consultation paper on IUC and actual data collected from TSPs, the Authority estimated Mobile termination charge. The details of each network element considered, their cost and method is annexed as Annexure to the Explanatory Memorandum of the Regulations.

94. All calculations have been done on the basis of cost data, subscriber base, MoU etc for the quarter ending 2016 as data from TSPs were collected for this period only, for calculation of the termination charge. If these numbers are projected for the period for which prescribed termination charge is applicable, the termination charge will be further reduced. However, the Authority refrains itself from using the projections as these create subjectivity in the estimation.

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(3) Outcome of Authority's Analysis

95. Establishment of a clear outlook for IUC would provide regulatory predictability and enable service providers to plan their networks and businesses accordingly. The Authority has come to the conclusion that the termination charge for the domestic mobile to mobile call should be fixed at six paise per minute (as obtained on the basis of Pure LRIC Method) effective from 01 October 2017.

96. Further, the cost of termination of calls will drastically come down over a period of two years and very small residual value, if any, can be absorbed by the TSPs in their tariff offerings. As a result, the Authority prescribes a Bill and Keep regime for the wireless to wireless calls effective from the 1st January 2020.

97. Accordingly Authority is of the view that -

(a) Wirless to wireless termination charge should be reduced from existing 14 paisa per minute to 6 paisa per minute

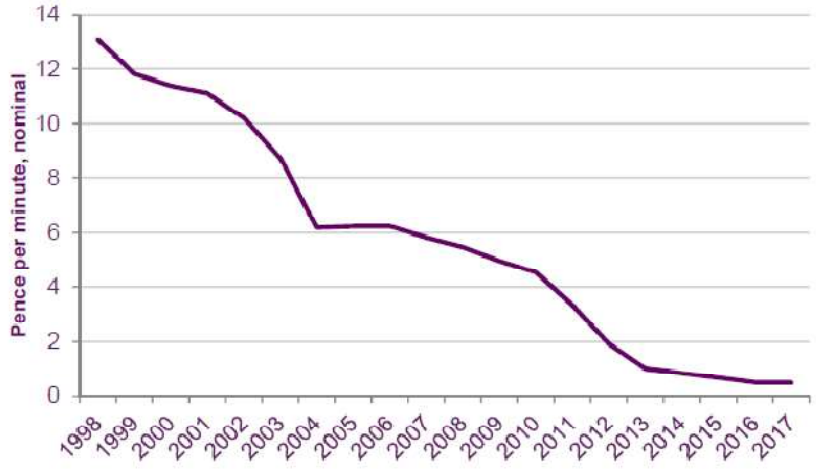
(b) Bill and Keep (BAK) regime should be implemented for all types of domestic calls from 01.01.2020.

98. The Authority shall keep a close watch on the developments in the sector particularly with respect to the adoption of new technologies and their impact on termination costs. The Authority, if it deems it necessary, may revisit the afore-mentioned scheme for termination charge applicable on wireless to wireless calls after one year from the date of implementation of the Regulations.

99. The reduction of mobile termination charges from Re. 0.14 per minute to Re. 0.06 per minute w.e.f 01.10.2017 will amount to a reduction of about 57%. Such a revision in the mobile termination charge is in line with the international trends. As per the Consultation Paper of OFCOM titled 'Mobile call termination market review 2018-21', there is a declining trend in mobile termination rates in the UK, starting from 24 pence per minute (ppm) in 1995 to less than 1 ppm in 2014; the sharpest reduction in mobile termination rates in percentage terms occurred in 2015. It reduced the wholesale cap by around 80% over a three year glide-path. The following Chart depicts the decline in mobile termination rates in the UK from 1995 to 2017.

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Figure 1: Average MTR in the UK (nominal pence per minute, weighted by subscriber numbers)



Source: Ofcom.

100. The Authority is of the view that after the reduction in the termination charge from Re. 0.14 per minute to Re. 0.06 per minute, the termination charge as a

percent of retail tariff would become about 20%, which would be in line with the international trends as described in the paragraph 75 above.

101. The reduction in the mobile termination charge is likely to yield consumer benefits. As described in the Consultation Paper on 'Review of Interconnection Usage Charges' dated 05.08.2016, the average outgo per outgoing voice minute declined from Re. 0.50 per minute (in quarter ending March 2015) to Re. 0.31 per minute (in quarter ending March, 2017) after the implementation of the Interconnection Usage Charges (11th Amendment) Regulations, 2015 w.e.f. 01.03.2015 through which mobile termination charge were reduced from Re. 0.20 per minute to Re. 0.14 per minute.

(4) Fixed Termination Charge and a special case of MTC viz. calls originated from wireline network and terminating on wireless networks

102. In 2015 IUC Regulations, the Authority followed the BAK method for prescribing fixed termination charges (i.e. wireless to wireline and wireline to wireline) as well as mobile termination charges from wireline (i.e. wireline to wireless) with an aim to promote investment in, and adoption of, wireline networks so that wireline networks may become effective vehicles for the delivery of high-speed Internet in the country. At this juncture, it would be worthwhile to examine as to whether the afore-mentioned step taken by the Authority for uplifting the wireline networks has achieved the desired success in the past one year.

103. The following table depicts the growth in subscriber base of wireline telephony and wire-line broadband services.

Table

Item	Period from March, 2013 to March, 2015	Period from March, 2015 to March, 2017
Growth in wire-line telephone connections	-3.6	-2.2
Growth in wire-line broadband connections	0.4	2.7

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104. The above table demonstrates that the performances of both wire-line telephony and wire-line broadband services in terms of subscriber bases have improved significantly subsequent to the implementation of zero termination charge for calls from wireline network. The decline of wire-line connections was arrested significantly while wire-line broadband connections witnessed a substantial upsurge. Clearly, the Authority's initiative to boost the wire-line telephony and wire-line broadband segments by way of prescribing BAK regime for fixed termination charges (i.e. wireless to wire-line and wire-line to wire-line) as well as mobile termination charges from wire-line (i.e. wire-line to wireless) has been a success.

105. Therefore, The Authority is of the view that above method for wire-line should continue.

J. International Settlement Rates and International Termination Charges

106. Another issue raised in the CP was about prescribing International Termination Charge and Prescription of revenue share between Indian ILDO and access provider in the International Termination Charge. The Authority is of the view that there is a need of more deliberation on the issue, and therefore the Authority will issue separate regulation on this issue.

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Annexure to the Explanatory Memorandum of the Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017

A. Introduction

1. In a generic LRIC method, the Mobile Termination Cost (MTC) is determined on the following basic assumptions:

   (i) The method is run for an equivalent operator[4] i.e. a TSP who has a fair share in the relevant market.

   (ii) The equivalent operator incurs costs that would occur in a competitive market. Thus the method uses present costs i.e. forward looking costs.

   (iii) The method of costing is long-run costing i.e. the size of the network deployed is reasonably matched to the level of network demand.

   (iv) The method determines avoidable costs on account of wholesale termination minutes (i.e. off-net incoming minutes) and thereby avoidable cost per unit off-net incoming minute.

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2. In the present review exercise, The Mobile Termination Cost (MTC) has been computed, using the Pure LRIC method, on the basis of the network of an equivalent operator offering wireless services using second generation (2G), third generation (3G) and fourth generation (4G) wireless technologies in each LSA in the country. An equivalent operator in an LSA is an operator which has a fair share of the wireless subscribers in each of three wireless network technologies (viz. 2G, 3G and 4G) in that LSA. The characteristics of an equivalent operator in any LSA are as below:

   (i) It has an average size in terms of subscriber base. The average size has been computed on the basis of the Herfindahl–Hirschman Index (HHI).

Total number of wireless subscribers of the equivalent operator in an LSA = (Total no. of wireless subscribers in the LSA) *multiplied by* (HHI of the wireless market segment in the LSA)/ 10,000 Where HHI of the wireless market segment in an LSA = $\sum^{n}_{i=1} (s_i^2)$ where s_i is the percent market share (computed on the basis of wireless subscriber base) of the i^{th} operator in the LSA, and 'n' is the number of operators in the LSA.

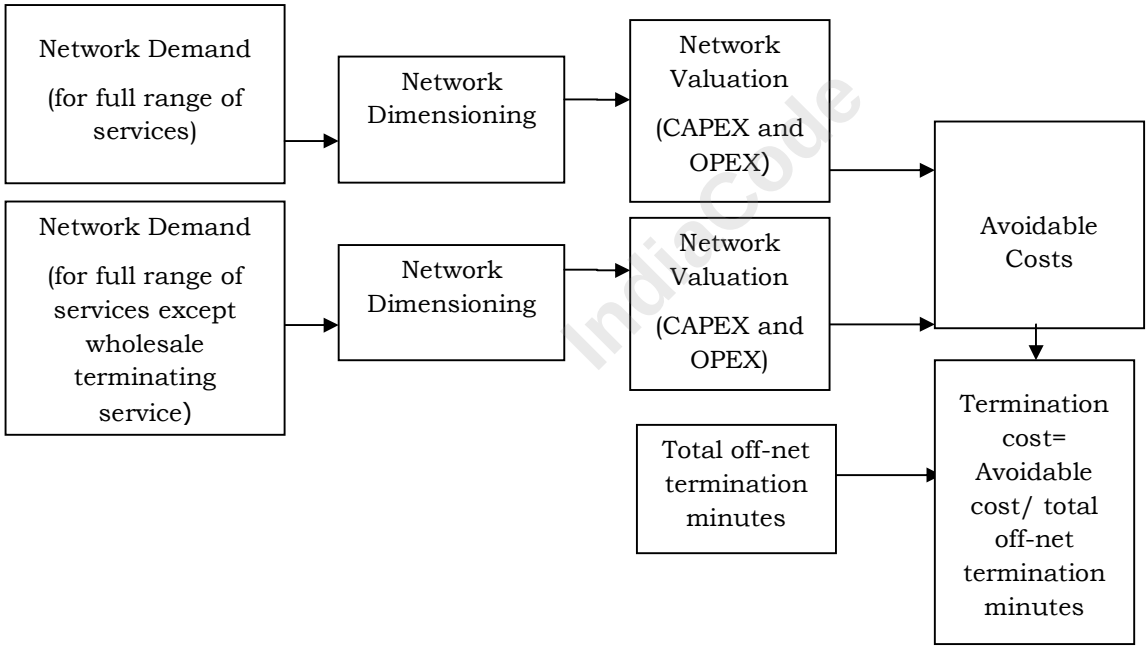
[4] An equivalent operator is a representative TSP in each LSA. It has an average size, which can be determined through the Herfindahl-Hirschman Index (HHI).

(ii) The usage profile of its wireless subscribers matches that of the average wireless subscriber in the LSA. Thus, the average voice Minutes of Usage (MOU), SMS and data usage per subscriber per month in the LSA reflects the usage profile of the subscribers of the equivalent operator.

(iii) It operates efficiently. It has deployed modern technology in its network, its network design is optimal, and its costs reflect the present costs.

3. A block schematic diagram of the pure LRIC method is given below.

Figure: Block schematic diagram of Pure LRIC Method



Mobile termination cost as per Pure LRIC Method

= (Avoidable cost if wholesale termination service is not provided) *divided by* (No. of total off-net incoming minutes)

= (Total annualized cost for providing entire range of services *minus* Total annualized cost for providing entire range of service excluding wholesale termination service) *divided by* (No. of total off-net incoming minutes)

B. Methodology of Pure LRIC

4. The following steps were taken for determination of mobile termination cost (MTC) for the equivalent operator using Pure LRIC method:

(i) Data collection from the operators

(ii) Determination of demand to be catered by the equivalent operator in terms of coverage and busy hour traffic

(iii) Dimensioning of the radio access network and core network

(iv) Determination of unit costs (capital costs and operating costs) of the elements of the network

(v) Determination of the cost of network - (a) for providing full range of services; and (b) for providing full range of services excluding wholesale termination service separately

(vi) Determination of mobile termination cost

(1) Data Collection from Operators

5. In order to capture the traffic demand and network design of the operators and the current costs of network, the operators were requested to submit the following information regarding subscriber base, traffic, network elements and costs for each Licensed Service Area (LSA) separately in a prescribed format:

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(i) No. of subscribers as on 31.12.2016

(ii) Traffic handled by 2G, 3G and 4G networks (separately) in the quarter ending December, 2016

(iii) Land coverage based on geo-types for 2G, 3G and 4G Network separately

(iv) Amount of spectrum (in MHz) used for 2G, 3G and 4G services separately

(v) Average radius of cells of base stations for 2G, 3G and 4G networks (separately) based on categorization of geo-types

(vi) No. of radio access network elements

(vii) No. of core network elements and dedicated elements

(viii) No. of base station sites

(ix) No. of sites with 2G base station only

(x) No. of sites with 3G base station only

(xi) No. of sites with 4G base station only

(xii) No. of sites with 2G and 3G base stations

(xiii) No. of sites with 3G and 4G base stations

(xiv) No. of sites with 2G and 4G base stations

(xv) No. of sites with 2G, 3G and 4G base stations

(xvi) Transmission links between BTS to BSC

(xvii) Transmission links between Node B to RNC

(xviii) Transmission links between eNode B to 4G core network

(xix) Backbone Transmission links

(xx) Capital cost of network equipment

(xxi) Operating cost of passive infrastructure per site with 2G base station only in Q.E. December, 2016

(xxii) Operating cost of passive infrastructure per site with 3G base station only in Q.E. December, 2016

(xxiii) Operating cost of passive infrastructure per site with 4G base station only in Q.E. December, 2016

(xxiv) Operating cost of passive infrastructure per site with 2G and 3G base stations only in Q.E. December, 2016 Operating cost of passive infrastructure per site with 3G and 4G base stations only in Q.E. December, 2016

(xxv) Operating cost of passive infrastructure per site with 2G and 4G base stations only in Q.E. December, 2016

(xxvi) Operating cost of passive infrastructure per site with 2G, 3G and 4G base stations in Q.E. December, 2016

(xxvii) Operating cost of active equipment of BTS, BSC and 2G core equipment in Q.E. December, 2016

(xxviii) Operating cost of active equipment of Node B, RNC and 3G core equipment in Q.E. December, 2016

(xxix) Operating cost of active equipment of eNode B and core equipment in Q.E. December, 2016

(xxx) Cost of leasing transmission bandwidth in Q.E. December, 2016

(xxxi) Operating cost of network management system (NMS) in Q.E. December, 2016

(xxxii) Any other relevant capital cost/ operating cost (in Q.E. December, 2016) which may be allocated to wireless access services Network Demand

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6. After receipt of the information from the respective operators, the data gaps and inconsistencies in the furnished information were communicated to the operators and revised information was sought from them.

(2) Determination of demand to be catered by the equivalent operator in terms of busy hour traffic and coverage

7. In order to serve the subscriber demand, an operator has to meet both capacity and coverage requirements. Accordingly, determination of the demand requires determination of the busy hour traffic to be handled by the equivalent operator as well as the required radio network coverage.

(2.1) Determination of the busy hour traffic to be handled by the equivalent operator

8. In order to estimate busy hour traffic to be handled by the equivalent operator for the three networks (viz. 2G, 3G and 4G) in each LSA, the following steps were used:

(i) Determination of subscriber base of equivalent operator in each LSA

(ii) Determination of total traffic (voice MOUs – on-net outgoing, off-net outgoing and off-net incoming separately, SMS – outgoing and incoming separately, data transfer – upload and download separately) per subscriber per month in each LSA

(iii) Determination of traffic to be handled by the equivalent operator per month in each LSA

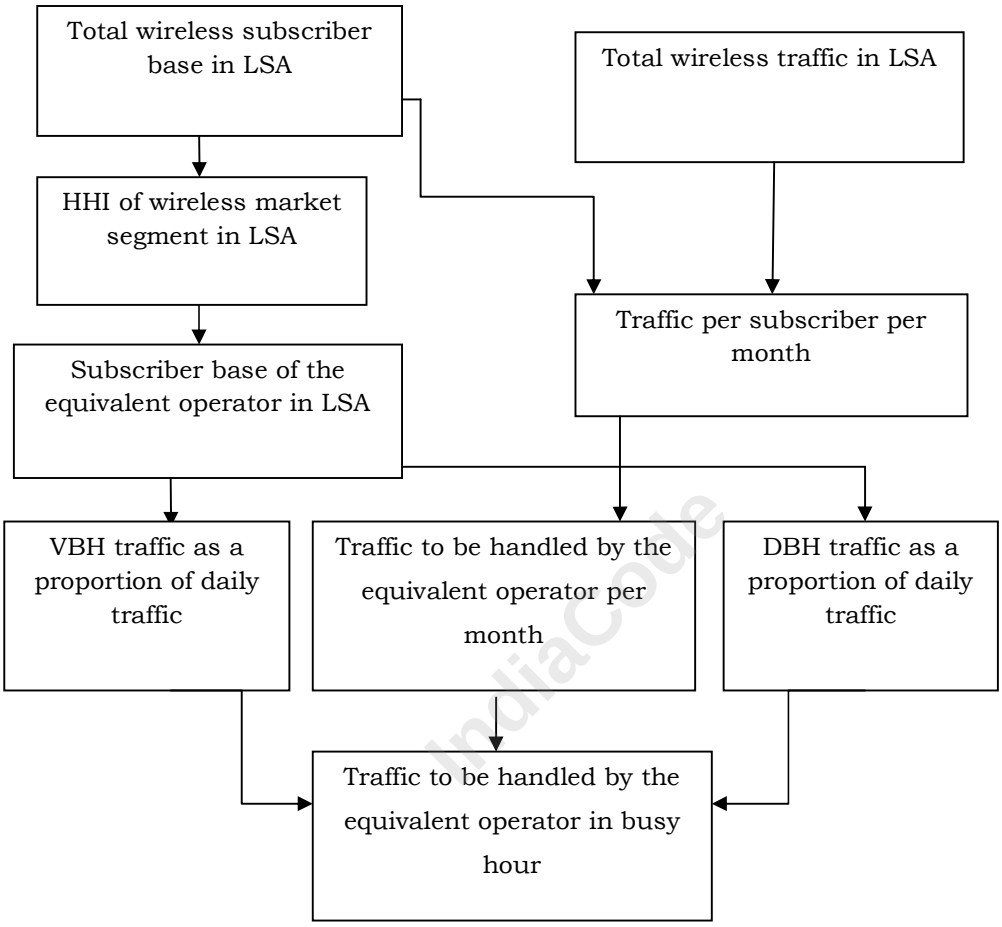
(iv) Determination of voice busy hour (VBH) traffic and data busy hour (DBH) traffic as a proportion of daily traffic in each LSA

(v) Determination of VBH traffic and DBH traffic to be handled by equivalent operator in each LSA; the maximum of the VBH traffic and DBH traffic is the busy hour traffic to be handled by the equivalent operator in each LSA.

9. The following figure depicts a block schematic diagram to determine the busy hour traffic to be handled by the equivalent operator.

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Figure: Block Schematic Diagram to determine busy hour traffic to be handled by the equivalent operator



10. LSA-wise total wireless subscriber base, HHI and subscriber base of equivalent operator are given in **Appendix-A**. Voice Busy Hour (VBH) and Data Busy Hour (DBH) traffic as a proportion of daily traffic computed on the basis of information received from the operators for the period from 01.02.2017 to 07.02.2017 is given in **Appendix-B**. The traffic to be handled by the equivalent operator in 2G, 3G and 4G network technology are given in **Appendix-C, D and E** respectively.

(2.2) Determination of the radio network coverage

11. Based on the information furnished by the operators, the land area covered by the equivalent operator for the three networks (viz. 2G, 3G and 4G) in each LSA was determined. In order to determine the land area to be covered, each LSA was divided into four geo-types, based on the population density as given below:

Table: Geo-type wise Population Density

S. No.	Geo-type	Population Density (Population per sq. km)
1	Dense Urban (DU)	More than or equal to 20000
2	Urban (U)	More than or equal to 8000 but less than 20000
3	Semi Urban (SU)	More than or equal to 400 but less than 8000
4	Rural (R)	Less than 400

12. LSA-wise coverage requirements of the equivalent operator for the 2G, 3G and 4G network types are given in **Appendix-F, G and H** respectively.

(3) Dimensioning of the radio access network and core network

13. Having determined the demand of the equivalent operator (viz. land area to be covered and busy hour traffic to be catered to), two network design parameters (viz. cell radii of base stations and radio spectrum holdings) towards dimensioning of the radio access network, cell radii and radio spectrum holdings were determined as below:

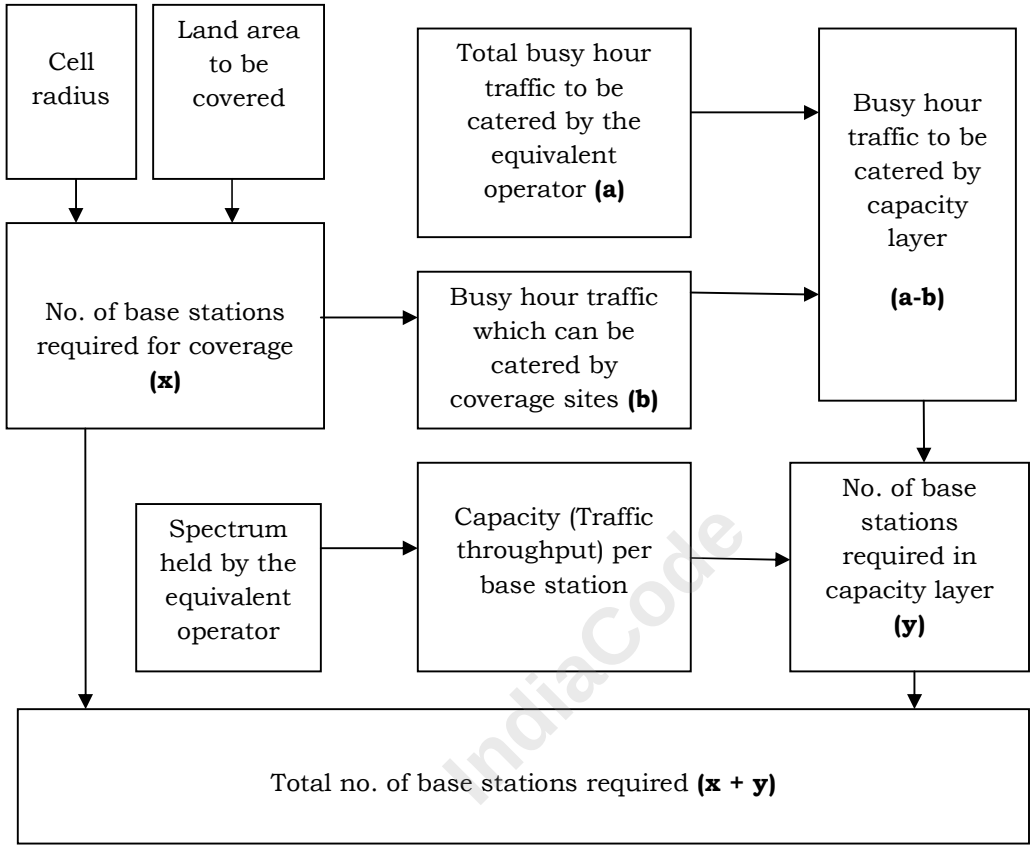
(i) Cell Radius: Average cell radii of the equivalent operator in 2G, 3G and 4G networks in the various geo-types, was determined on the basis of information on cell radii furnished by the various operators, which are given in **Appendix-I, J** and **K** respectively.

(ii) **Radio Spectrum Holding:** The radio spectrum held by the equivalent operator for offering access services in each LSA was determined on the basis of the average radio spectrum held by the operators in various LSAs.

14. On the basis of above, base stations required by the equivalent operator were determined as per the following block schematic diagram.

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Block Schematic Diagram for Determination of BTS Sites



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15. After determination of base stations to be catered to by the equivalent operator, estimations of the following network elements were made:

(i) No. of sites on which base stations of single, dual and triple network technologies are deployed in each LSA

(ii) No. of backhaul circuits in each LSA

(iii) No. of BSC (in 2G network) and RNC (in 3G network) in each LSA

(iv) No. of links between BSC and RNC to Media Gateway (MGW) separately

(v) No. of core elements (e.g. MGW, MSS, GMGW, GSS, HLR etc.) for 2G and 3G networks

(vi) No. of links to carry traffic from 4G base stations to 4G core equipment

(vii) No. of core elements (e.g. MME, SGW, PGW, IMS-elements, HSS etc.) for 4G network

(viii) No. of links between core elements

(4) Determination of unit costs of the elements of the network

16. The following unit costs of the elements of the network were determined on the basis of the information received from the operators:
    (i) Unit capital cost and useful life of the elements of radio access network and core network
    (ii) Unit operating cost per annum of passive infrastructure per base station site (for single technology site, dual technology site and triple technology site separately), active equipment of radio access network and core network and network management system (NMS) and unit cost of leasing transmission bandwidth per annum.

17. The Capital costs and useful lives of the network elements are given in **Appendix-L**. Unit operating costs per annum of passive infrastructure per base station site for single technology site, dual technology site and triple technology site are given in **Appendix-M, N and O** respectively.

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(5) Determination of cost of network

18. Using the number of network elements arrived at in the step (3) above and the unit costs of network elements described in the step (4) above, the total annualized cost of the network (including annualized CAPEX and annual OPEX) for each LSA was determined in the following two scenarios:
    (i) for providing entire range of services
    (ii) for providing all services excluding wholesale termination minutes

19. Towards computing annualized CAPEX for a network element, depreciation was computed using straight line method (SLM) and return on capital employed (ROCE) was kept as 15% per annum.

20. The LSA-wise annualized CAPEX and OPEX of the network for full traffic including off-net incoming minutes are given in **Appendix-P** while LSA-wise annualized CAPEX and OPEX of the network for full traffic excluding off-net incoming minutes are given in **Appendix-Q.**

(6) Determination of mobile termination cost

21. Having computed the cost of network in the two scenarios described in the step (5) above, the mobile termination cost was computed using the following formula:

Mobile termination cost

= (Total annualized cost for providing entire range of services *minus* Total annualized cost for providing entire range of service excluding wholesale termination service) *divided by* (No. of total off-net incoming minutes)

22. As the equivalent operator would be liable to pay License Fee (LF) and Spectrum Usage Charges (SUC) on the net interconnection usage charges receivable on account of MTC. Accordingly, MTC (after inclusion of LF and SUC) has been computed as below:

MTC (after inclusion of LF and SUC)

= (MTC prior to inclusion of LF and SUC) *divided by* {1 – (percent difference in off-net incoming minutes and off-net outgoing minutes)* (percent rate of LF + percent rate of SUC)}

23. In the present exercise, LF and weighted average SUC have been taken as 8% and 4% respectively.

24. The steps for computation of MTC (after inclusion of LF and SUC) are given in **Appendix-R.**

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Appendix-A

Total subscriber base, HHI and subscriber base of Equivalent operator				
S.NO.	**LSA**	**No. of total wireless Subscribers in LSA**	**HHI of wireless segment**	**No. of subscribers of the equivalent operator**
1	Andhra Pradesh	816,52,967	1,784	145,65,923
2	Assam	209,14,164	2,135	44,64,925
3	Bihar	822,56,864	1,994	164,00,268
4	Delhi	508,81,835	1,534	78,03,531
5	Gujarat	683,80,330	1,699	116,20,654
6	Haryana	239,40,820	1,682	40,26,536
7	Himachal Pradesh	99,02,770	1,833	18,15,583
8	Jammu & Kashmir	112,72,751	2,022	22,78,975
9	Karnataka	671,27,721	1,758	117,97,920
10	Kerala	379,06,029	1,998	75,74,771
11	Kolkata	281,44,563	1,432	40,30,143
12	Madhya Pradesh	664,76,479	2,105	139,94,424
13	Maharashtra	907,67,668	1,692	153,57,311
14	Mumbai	346,26,323	1,581	54,75,026
15	North East	122,93,159	2,278	28,00,248
16	Orissa	327,94,221	1,863	61,10,849
17	Punjab	363,78,636	1,453	52,84,600
18	Rajasthan	648,75,164	1,786	115,89,644
19	Tamilnadu	865,37,150	1,687	145,99,741
20	U. P. (East)	1016,00,856	1,439	146,22,899
21	U.P. (West)	632,05,934	1,541	97,38,464
22	West Bengal	554,36,964	2,282	126,52,347

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Appendix-B

Voice busy hour (VBH) and data busy hour (DBH) traffic as a proportion of daily traffic

S.No.	Name of licensed service area	2G traffic				3G traffic				4G traffic			
		VBH		DBH		VBH		DBH		VBH		DBH	
		% voice traffic during VBH	% Data traffic during VBH	% Data traffic during DBH	% voice traffic during DBH	% voice traffic during VBH	% Data traffic during VBH	% Data traffic during DBH	% voice traffic during DBH	% voice traffic during VBH	% Data traffic during VBH	% Data traffic during DBH	% voice traffic during DBH
1	Andhra Pradesh	9.1%	5.9%	7.4%	7.0%	8.2%	5.9%	7.5%	4.1%	8.5%	5.4%	5.8%	5.0%
2	Assam	9.9%	6.7%	7.7%	7.4%	8.7%	6.8%	7.5%	6.1%	8.5%	5.5%	5.8%	6.4%
3	Bihar	8.9%	6.2%	6.9%	6.9%	7.8%	6.5%	7.1%	6.7%	8.1%	5.2%	5.5%	7.4%
4	Delhi	8.4%	6.2%	7.5%	5.2%	7.7%	5.6%	7.3%	5.2%	7.7%	4.8%	5.2%	5.7%
5	Gujarat	8.7%	6.3%	7.4%	5.2%	7.7%	5.7%	7.7%	5.0%	8.7%	5.6%	5.8%	6.7%
6	Haryana	10.2%	7.3%	8.3%	6.9%	8.2%	6.1%	7.7%	6.2%	9.0%	5.9%	6.3%	7.1%
7	Himachal Pradesh	9.4%	7.6%	8.1%	8.3%	8.2%	7.2%	7.6%	8.1%	8.7%	6.8%	6.8%	8.7%
8	J&K	9.4%	7.1%	7.1%	9.4%	9.0%	6.7%	6.8%	8.0%	8.9%	6.5%	6.5%	8.9%
9	Karnataka	9.3%	6.5%	7.5%	4.1%	8.4%	5.6%	7.6%	5.0%	8.9%	5.3%	5.8%	5.6%
10	Kerala	9.5%	6.9%	8.4%	5.4%	8.6%	5.7%	8.0%	5.2%	9.0%	5.8%	6.4%	7.2%
11	Kolkata	8.5%	5.9%	7.1%	6.0%	7.7%	6.0%	7.4%	6.1%	7.9%	5.2%	6.0%	5.6%
12	Madhya Pradesh	8.7%	6.7%	7.6%	7.2%	8.0%	6.5%	7.5%	5.5%	8.3%	5.4%	6.0%	6.5%
13	Maharashtra	8.9%	6.3%	7.4%	4.4%	8.3%	5.8%	7.5%	5.0%	8.7%	5.2%	5.8%	6.2%
14	Mumbai	8.2%	5.3%	6.5%	5.5%	7.8%	5.7%	6.7%	5.4%	7.9%	4.9%	5.5%	6.3%
15	North East	10.1%	6.7%	7.2%	8.3%	9.4%	6.6%	6.9%	8.5%	9.3%	5.4%	5.6%	9.0%
16	ORISSA	9.7%	5.9%	7.1%	4.8%	8.9%	6.0%	7.6%	4.7%	8.7%	5.0%	5.7%	6.3%
17	PUNJAB	9.0%	5.9%	7.0%	6.4%	8.0%	6.5%	7.2%	7.8%	8.3%	5.3%	6.0%	6.8%
18	Rajasthan	10.1%	6.8%	7.6%	7.6%	8.2%	6.7%	7.8%	4.8%	8.9%	5.5%	6.0%	5.8%
19	Tamil Nadu	9.0%	6.0%	7.6%	4.1%	8.4%	5.8%	7.9%	5.0%	8.9%	5.2%	5.9%	5.8%
20	UP (East)	9.3%	6.5%	7.1%	7.4%	7.9%	6.0%	7.2%	4.7%	8.0%	5.2%	5.6%	6.1%
21	UP (West)	9.1%	6.6%	7.6%	4.5%	7.8%	5.8%	7.5%	5.1%	8.4%	5.4%	5.8%	7.7%
22	West Bengal	9.8%	5.8%	7.3%	5.2%	8.6%	6.4%	7.5%	5.4%	8.6%	5.5%	5.6%	6.4%

Appendix -C

2G Traffic to be handled by the equivalent operator per month

S.No.	LSA	On-net outgoing MOUs	Off-net outgoing MOUs	Off-net incoming MOUs	outgoing SMS	incoming SMS	Data upload (MB)	Data download (MB)
1	Andhra Pradesh	8739,29,621	11379,71,467	13671,03,771	286044718	7982,86,293	463,84,512	2881,54,522
2	Assam	3421,26,884	2471,35,812	4257,12,421	112487192	3272,94,762	153,39,195	1443,29,652
3	Bihar	12724,99,904	9120,35,114	20169,26,288	74260782	7607,57,174	481,23,567	3806,28,465
4	Delhi	3229,91,174	7737,83,348	6584,98,104	565627029	5121,60,281	364,84,444	1940,09,619
5	Gujarat	6794,34,874	7575,74,500	7168,60,900	73478951	4882,44,772	568,77,456	3543,60,273
6	Haryana	2202,03,636	3110,91,136	3575,40,454	51877343	1723,83,443	113,21,079	920,57,898
7	Himachal Pradesh	1312,64,473	1069,57,953	1274,07,876	10805184	763,15,517	93,30,440	590,92,984
8	Jammu & Kashmir	2779,97,354	2027,61,694	2368,91,467	15275393	1445,87,209	110,32,763	563,68,881
9	Karnataka	5648,25,518	8438,14,376	9245,34,514	262829670	7464,28,537	462,56,783	2781,86,905
10	Kerala	4919,90,448	6122,53,836	8555,31,732	70006525	2410,60,422	400,10,668	2836,49,463
11	Kolkata	1515,50,922	3197,18,939	3421,42,118	528980910	2022,11,683	105,82,423	612,23,115
12	Madhya Pradesh	7339,65,163	7384,83,444	9744,78,460	133424997	5389,85,495	420,03,514	3061,94,356
13	Maharashtra	7370,53,345	11337,94,377	11755,04,055	514952975	6765,61,614	706,87,330	4747,82,019
14	Mumbai	1928,85,688	6214,48,729	4175,35,514	899270735	3584,05,062	380,00,835	1770,80,979

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15	North East	1716,57,557	1251,06,240	1466,90,268	99052892	1874,51,969	139,93,693	1183,19,578
16	Orissa	5269,73,488	3609,45,718	6369,19,383	37927510	3348,25,060	139,46,993	1210,38,282
17	Punjab	3317,00,278	4155,75,202	4995,45,170	356322278	2612,39,707	329,38,842	2005,79,190
18	Rajasthan	6778,45,678	7546,84,945	10258,27,518	72689618	5483,07,686	546,68,671	3965,05,109
19	Tamilnadu	8565,84,436	10806,40,033	12752,52,355	466477779	9593,61,177	578,80,186	3883,21,244
20	U. P. (East)	11431,48,903	8112,16,881	16920,20,949	142030320	6067,84,472	960,52,122	3567,43,613
21	U.P. (West)	6622,95,319	5810,11,493	8939,29,103	121537139	3501,72,968	320,30,070	2727,94,803
22	West Bengal	9473,77,140	6831,14,973	11529,85,802	187829101	6237,96,298	250,40,829	2689,70,990

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Appendix -D

3G Traffic to be handled by the equivalent operator per month

S.No.	LSA	On-net outgoing MOUs	Off-net outgoing MOUs	Off-net incoming MOUs	outgoing SMS	incoming SMS	Data upload (MB)	Data download (MB)
1	Andhra Pradesh	1592,38,275	2103,63,920	1737,72,968	88211841	1287,54,343	1167,82,798	10387,82,744
2	Assam	426,04,006	474,58,380	547,29,866	11394642	351,16,735	428,43,922	3645,91,699
3	Bihar	385,38,264	612,64,057	997,19,280	4933663	415,23,576	899,31,305	6226,36,457
4	Delhi	1413,65,576	2631,62,991	2509,12,618	11826727	828,72,299	2369,79,319	9191,58,285
5	Gujarat	1227,46,336	2056,32,035	1725,04,017	12276140	916,69,247	2393,56,194	9654,07,122
6	Haryana	501,04,926	919,61,142	751,27,710	9170875	249,48,263	400,14,987	2831,90,132
7	Himachal Pradesh	163,19,342	135,38,118	150,62,855	798716	89,08,099	154,52,934	1402,78,419
8	Jammu & Kashmir	185,14,876	209,04,822	177,60,568	1876644	95,99,601	102,44,483	890,25,174
9	Karnataka	1917,69,259	3476,68,114	3092,49,834	75367701	1975,94,868	1880,38,626	11907,38,198
10	Kerala	576,67,598	1673,73,992	1065,12,589	6453040	293,77,746	1592,06,816	13583,92,436
11	Kolkata	410,13,507	606,48,653	708,76,773	47964278	308,81,833	833,36,752	3263,03,370
12	Madhya Pradesh	1234,61,814	1784,67,579	1548,24,011	15957536	419,35,915	920,66,212	8832,34,011
13	Maharashtra	1497,43,739	2615,67,233	2373,99,109	56545144	1006,84,561	2976,53,494	14423,29,706
14	Mumbai	1129,28,244	2092,86,528	1700,78,782	7999465	602,11,769	2416,15,454	5545,70,110

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15	North East	477,61,172	377,40,798	448,37,911	11436885	449,97,079	345,76,270	3292,92,396
16	Orissa	271,20,629	393,75,934	484,58,521	3186723	255,07,439	389,24,270	3203,69,415
17	Punjab	614,70,200	1126,84,054	909,40,422	41602309	286,44,572	742,73,676	5446,66,957
18	Rajasthan	566,03,541	813,93,015	841,11,037	7029446	631,18,581	1082,95,799	6072,87,879
19	Tamilnadu	1421,34,304	1581,37,288	1858,23,351	55947042	1654,54,695	2714,87,446	15939,92,943
20	U. P. (East)	505,46,184	565,42,023	754,33,186	6178746	404,04,590	947,31,179	5949,86,336
21	U.P. (West)	599,23,961	763,57,728	664,71,647	7712284	275,86,882	720,95,858	5756,32,652
22	West Bengal	647,63,483	702,65,849	985,04,477	19316941	647,22,280	777,12,469	6558,87,592

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Appendix -E

4G Traffic to be handled by the equivalent operator per month

S.No.	LSA	On-net outgoing MOUs	Off-net outgoing MOUs	Off-net incoming MOUs	Outgoing SMS	Incoming SMS	Data upload (MB)	Data download (MB)
1	Andhra Pradesh	173,48,549	2367,01,318	233,60,565	202,11,370	388,15,501	11530,75,538	108215,03,098
2	Assam	55,37,187	746,38,712	56,81,517	54,76,124	102,78,467	2899,71,845	28857,30,615
3	Bihar	270,64,796	2563,48,841	256,77,905	101,48,398	217,16,789	10656,30,635	98196,79,978
4	Delhi	168,89,800	2086,04,782	251,74,222	94,26,704	236,53,405	9358,17,837	72265,95,469
5	Gujarat	133,42,983	1846,00,621	166,86,299	103,11,128	273,92,949	10650,26,861	95756,84,074
6	Haryana	25,32,635	336,34,746	31,67,872	11,91,572	34,83,791	1312,04,366	12808,78,134
7	Himachal Pradesh	76,32,008	985,01,960	106,09,149	48,55,963	117,03,559	3916,20,460	38595,64,853
8	Jammu & Kashmir	50,73,932	590,92,719	36,05,256	37,39,562	70,11,093	1565,29,643	14068,53,966
9	Karnataka	123,41,482	1678,05,626	192,45,636	133,52,979	336,09,125	10015,40,647	87892,67,543
10	Kerala	38,05,359	865,72,335	86,88,850	47,93,644	135,80,733	6274,11,183	58926,85,326
11	Kolkata	103,28,011	966,89,219	90,13,063	59,90,825	138,15,199	4092,37,517	35292,21,086
12	Madhya Pradesh	145,79,946	2140,77,876	234,31,959	172,79,692	396,86,621	12428,36,044	119598,09,363
13	Maharashtra	177,26,396	1983,41,775	180,21,239	130,70,384	264,19,022	8330,96,512	79546,70,868
14	Mumbai	94,27,777	1243,46,398	140,15,575	47,31,881	349,98,944	6312,35,245	43972,00,401
15	North East	29,18,964	379,92,410	35,93,553	31,79,043	65,94,006	1558,90,159	14651,87,112

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16	Orissa	106,16,997	1226,35,128	93,49,094	53,23,330	102,72,975	4226,82,321	40027,88,107
17	Punjab	89,92,021	1204,95,905	115,75,088	50,78,438	113,21,012	5496,85,744	49752,08,809
18	Rajasthan	134,54,559	1785,75,752	167,75,748	70,05,101	185,34,366	8159,17,447	77515,88,870
19	Tamilnadu	100,06,870	1717,88,548	163,43,224	99,73,679	216,81,909	10047,67,393	88812,29,385
20	U. P. (East)	135,83,431	1644,91,972	149,82,150	82,75,986	190,35,736	7274,10,001	65900,83,016
21	U.P. (West)	113,55,924	1474,79,624	141,34,750	76,49,076	179,79,060	6038,82,599	60691,23,353
22	West Bengal	104,13,718	1456,68,693	97,32,464	88,48,226	171,43,947	5419,76,060	53887,52,987

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Appendix - F

Total Area under geo-types for 2G Network

S.No.	LSA	DU	U	SU	R
1	Andhra Pradesh	193	803	678	1,18,966
2	Assam	14	204	9,149	32,151
3	Bihar	125	341	1,243	1,22,918
4	Delhi	273	439	515	136
5	Gujarat	179	588	6,488	98,744
6	Haryana	137	197	290	28,108
7	Himachal Pradesh	11	58	504	21,211
8	Jammu & Kashmir	25	131	3,623	31,241
9	Karnataka	116	573	6,712	87,148
10	Kerala	73	438	14,248	16,696
11	Kolkata	208	205	263	878
12	Madhya Pradesh	202	355	1,263	1,12,562
13	Maharashtra	271	928	1,123	1,10,651
14	Mumbai	267	168	169	726
15	North East	66	158	294	35,102
16	Orissa	89	455	1,132	62,342
17	Punjab	103	611	2,835	29,203
18	Rajasthan	176	459	4,395	1,53,361
19	Tamilnadu	233	677	11,891	71,120
20	U. P. (East)	197	510	3,237	99,815
21	U.P. (West)	149	614	481	58,326
22	West Bengal	65	261	9,668	79,218

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Appendix - G

Total Area under geo-types for 3G Network

S.No.	LSA	DU	U	SU	R
1	Andhra Pradesh	193	803	678	36,314
2	Assam	14	170	333	12,075
3	Bihar	125	341	1,243	8,844
4	Delhi	273	439	464	136
5	Gujarat	137	465	2,874	18,310
6	Haryana	112	167	290	9,916
7	Himachal Pradesh	11	2	57	6,435
8	Jammu & Kashmir	23	106	201	4,597
9	Karnataka	79	505	2,190	8,845
10	Kerala	58	399	2,107	6,012
11	Kolkata	208	205	263	878
12	Madhya Pradesh	202	355	896	34,807
13	Maharashtra	271	928	422	46,652
14	Mumbai	51	154	90	665
15	North East	63	81	294	6,872
16	Orissa	89	247	298	10,241
17	Punjab	17	361	1,146	2,450
18	Rajasthan	121	459	419	10,291
19	Tamilnadu	129	448	1,785	29,556
20	U. P. (East)	195	510	3,237	23,304
21	U.P. (West)	149	614	481	9,737
22	West Bengal	43	202	468	18,888

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Appendix - H

Total Area under geo-types for 4G Network

S.No.	LSA	DU	U	SU	R
1	Andhra Pradesh	105	416	678	36,314
2	Assam	6	67	63	12,075
3	Bihar	93	160	86	8,844
4	Delhi	180	439	464	801
5	Gujarat	93	288	364	18,310
6	Haryana	41	111	252	9,916
7	Himachal Pradesh	9	2	57	1,613
8	Jammu & Kashmir	2	106	150	4,597
9	Karnataka	79	505	806	8,845
10	Kerala	58	331	1,036	5,410
11	Kolkata	88	205	263	878
12	Madhya Pradesh	75	346	896	34,807
13	Maharashtra	104	928	422	46,652
14	Mumbai	30	154	90	665
15	North East	5	81	269	6,872
16	Orissa	17	178	298	10,241
17	Punjab	17	361	396	2,450
18	Rajasthan	57	459	419	10,291
19	Tamilnadu	122	448	1,729	29,556
20	U. P. (East)	67	234	283	23,304
21	U.P. (West)	101	305	91	9,737
22	West Bengal	43	202	265	18,888

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Appendix - I

Cell Radii for 2G Network based on categorization of geo-types (in km)

S.No.	LSA	DU	U	SU	R
1	Circle category- A, B and C	0.36	0.57	1.22	2.56
2	Circle category- Metro	0.27	0.37	0.74	1.75

Appendix - J

Cell Radii for 3G Network based on categorization of geo-types (in km)

S.No.	LSA	DU	U	SU	R
1	Circle category- A, B and C	0.30	0.47	0.83	1.75
2	Circle category- Metro	0.26	0.39	0.71	1.59

Appendix - K

Cell Radii for 4G Network based on categorization of geo-types (in km)

S.No.	LSA	DU	U	SU	R
1	Circle category- A, B and C	0.30	0.42	0.70	1.76
2	Circle category- Metro	0.19	0.31	0.52	0.94

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Appendix - L

Unit Capital costs

Network Element	Dimension	Units	Unit Price (in Rs.)	Useful life (in years)
TRX		per TRX	23,294	10
BTS		4/4/4 TRX configuration	7,03,191	10
Node B		Per carrier	7,29,937	10
eNode B		Single Band	9,26,869	10
eNode B		Double Band	9,26,869	10
BSC	2,048	TRX	219,23,100	10
RNC	1,000	Mbps	117,28,064	10
MGW	20,000	Erlangs	180,20,506	10
GMGW	50,000	Erlangs	450,51,265	10
MSS	50,00,000	BHCA	508,00,175	10
GSS	50,00,000	BHCA	396,52,296	10
MME	50,00,000	SAU	934,01,868	10
SGW&PGW	60,000	Mbps	2520,00,000	10
IMS (TAS)	24,00,000	BHCA	407,57,500	10
IMS (S/I- CSCF & BGCF)	8,60,000	BHCA	104,80,500	10
IMS (PCSCF)	9,80,000	BHCA	15,07,000	10
IMS (BGW/SBC)	2,000	Mbps	187,99,551	10
IMS MRF	44,000	ports	106,86,000	10
HLR	200,00,000	Subscriber	2340,70,178	10
HSS	100,00,000	Subscriber	1761,42,512	10
4G GMGW	5,000	Erlang	36,08,919	10
SMSC	2,000	TPS	103,85,874	10
IN	200,00,000	Subscribers	7609,55,074	10
Microwave		Per hop	2,35,597	10

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Appendix – M

Annual Leasing cost of passive infrastructure (in Rs.)

S.No.	Service Area	Passive-GBT for Single technology site	Passive-RTT for Single technology site	Passive-RTP for Single technology site
1	Andhra Pradesh	5,90,288	4,72,877	4,36,075
2	Assam	7,13,072	5,33,806	4,49,713
3	Bihar	7,33,219	5,41,725	5,64,174
4	Delhi	6,59,348	4,99,481	5,22,613
5	Gujarat	5,44,818	4,32,981	4,39,877
6	Haryana	6,44,396	4,99,365	5,30,996
7	Himachal Pradesh	5,26,443	3,79,426	4,25,864
8	Jammu & Kashmir	5,86,346	5,01,626	5,44,688
9	Karnataka	6,04,114	5,16,162	5,02,917
10	Kerala	5,60,550	4,62,211	5,21,527
11	Kolkata	5,79,183	5,00,509	4,65,287
12	Madhya Pradesh	5,53,104	4,10,096	4,21,723
13	Maharashtra	5,33,230	4,41,223	4,66,596
14	Mumbai	7,79,909	6,40,080	6,28,549
15	North East	6,81,165	5,58,813	6,67,643
16	Orissa	6,04,735	4,69,899	3,74,702
17	Punjab	5,17,859	4,21,961	4,38,602
18	Rajasthan	6,46,744	5,14,252	4,88,976
19	Tamilnadu	5,88,438	5,07,482	4,59,489
20	U. P. (East)	6,17,012	5,40,976	6,14,103
21	U.P. (West)	6,54,854	5,00,518	4,32,965
22	West Bengal	6,02,159	4,52,238	4,54,129

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Appendix – N

Annual Leasing cost of passive infrastructure (in Rs.)

S.No.	Service Area	Passive-GBT for dual technology site	Passive-RTT for dual technology site	Passive-RTP for dual technology site
1	Andhra Pradesh	5,73,928	5,73,503	5,43,294
2	Assam	8,60,263	6,43,611	6,81,176
3	Bihar	7,46,648	6,97,910	6,28,917
4	Delhi	8,47,639	6,93,368	7,71,345
5	Gujarat	5,86,014	5,17,850	4,85,790
6	Haryana	6,88,727	6,06,278	5,33,804
7	Himachal Pradesh	5,98,357	5,55,138	5,80,463
8	Jammu & Kashmir	6,87,377	5,75,279	6,09,770
9	Karnataka	6,34,496	5,45,075	5,11,566
10	Kerala	7,93,716	5,23,539	5,10,924
11	Kolkata	6,69,146	5,66,468	5,75,315
12	Madhya Pradesh	5,65,703	4,85,923	4,79,570
13	Maharashtra	6,62,040	6,22,432	5,92,298
14	Mumbai	7,28,555	6,90,980	7,89,288
15	North East	6,92,514	5,64,425	6,68,194
16	Orissa	6,19,762	4,87,475	4,38,925
17	Punjab	5,92,558	4,98,838	4,78,205
18	Rajasthan	6,56,559	5,53,052	5,80,613
19	Tamilnadu	5,81,177	4,62,356	5,09,632
20	U. P. (East)	7,60,695	6,35,663	5,61,273
21	U.P. (West)	7,28,065	5,57,435	5,87,320
22	West Bengal	7,36,723	5,11,956	4,76,670

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Appendix - O

Annual Leasing cost of passive infrastructure (in Rs.)

S.No.	Service Area	Passive-GBT for triple technology site	Passive-RTT for triple technology site	Passive-RTP for triple technology site
1	Andhra Pradesh	7,01,177	6,07,431	6,29,062
2	Assam	7,31,037	6,47,788	8,04,070
3	Bihar	9,19,126	8,55,034	9,73,720
4	Delhi	12,21,700	8,70,641	8,48,274
5	Gujarat	7,05,066	4,76,190	5,82,787
6	Haryana	7,17,970	6,87,215	6,80,934
7	Himachal Pradesh	5,85,456	5,69,162	6,08,436
8	Jammu & Kashmir	-	-	-
9	Karnataka	8,35,643	6,92,911	6,23,414
10	Kerala	6,55,681	5,58,384	6,99,671
11	Kolkata	6,92,802	9,76,616	7,72,832
12	Madhya Pradesh	7,14,577	6,15,918	6,01,330
13	Maharashtra	6,83,360	6,07,818	7,17,503
14	Mumbai	7,80,095	7,54,946	8,32,732

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15	North East	5,92,120	5,58,967	6,48,835
16	Orissa	5,60,066	5,16,167	5,25,123
17	Punjab	6,87,199	6,25,142	6,02,420
18	Rajasthan	7,82,204	7,26,791	6,16,489
19	Tamilnadu	6,75,717	5,60,045	7,10,136
20	U. P. (East)	7,48,842	8,86,601	5,92,662
21	U.P. (West)	7,18,196	6,36,570	6,72,250
22	West Bengal	7,78,133	5,74,783	5,52,434

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Appendix - P

Annualized CAPEX and OPEX of the network with full traffic (including off-net incoming minutes)

S.No.	LSA	Capex with full traffic	OPEX with full traffic	Total Cost with full traffic
1	Andhra Pradesh	73146,43,422	130881,98,117	204028,41,539
2	Assam	32980,14,469	57865,69,711	90845,84,180
3	Bihar	57972,68,674	131920,55,517	189893,24,191
4	Delhi	43455,25,387	63177,01,092	106632,26,479
5	Gujarat	59314,24,530	114739,69,189	174053,93,719
6	Haryana	27326,85,945	37212,11,295	64538,97,240
7	Himachal Pradesh	20734,97,709	20164,55,280	40899,52,988
8	Jammu & Kashmir	23647,02,977	33930,96,483	57577,99,460
9	Karnataka	52368,90,830	97848,24,782	150217,15,611
10	Kerala	51968,83,540	83815,04,904	135783,88,445
11	Kolkata	22976,76,157	22859,94,186	45836,70,342
12	Madhya Pradesh	65454,20,015	113128,98,247	178583,18,262
13	Maharashtra	79381,54,646	124635,82,060	204017,36,706
14	Mumbai	25595,97,712	34728,88,371	60324,86,082
15	North East	24227,61,815	36107,24,442	60334,86,257
16	Orissa	34826,83,519	58887,37,830	93714,21,349
17	Punjab	29712,54,281	47386,84,500	77099,38,781
18	Rajasthan	59213,41,889	117563,42,583	176776,84,472
19	Tamilnadu	69203,13,903	122493,76,348	191696,90,250
20	U. P. (East)	63534,52,496	121337,18,239	184871,70,735
21	U.P. (West)	41786,78,325	80373,61,952	122160,40,277
22	West Bengal	50644,93,049	96398,57,970	147043,51,019
	Total	**1009473,65,288**	**1747457,53,096**	**2756931,18,384**

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Appendix - Q

Annualized CAPEX and OPEX of the network excluding off-net incoming minutes

S.No.	LSA	Capex excluding off-net incoming minutes	OPEX excluding off-net incoming minutes	Total Cost excluding off-net incoming minutes
1	Andhra Pradesh	68645,71,857	125370,07,287	194015,79,144
2	Assam	31483,08,101	55582,21,812	87065,29,913
3	Bihar	52678,49,135	122296,65,550	174975,14,685
4	Delhi	39551,42,083	59542,57,386	99093,99,469
5	Gujarat	56161,55,974	110921,08,648	167082,64,622
6	Haryana	26220,00,524	35369,67,324	61589,67,848
7	Himachal Pradesh	20296,24,644	19728,81,500	40025,06,144
8	Jammu & Kashmir	22844,01,384	33002,45,931	55846,47,315
9	Karnataka	48908,84,435	92906,54,445	141815,38,880
10	Kerala	49730,03,526	80962,81,786	130692,85,312
11	Kolkata	21863,68,327	21037,16,616	42900,84,943
12	Madhya Pradesh	62474,19,325	109676,83,663	172151,02,988
13	Maharashtra	75693,53,755	120114,64,377	195808,18,132
14	Mumbai	23406,31,274	30895,34,859	54301,66,132
15	North East	23590,25,705	35434,98,738	59025,24,443
16	Orissa	33066,69,892	56630,94,884	89697,64,776
17	Punjab	28276,53,934	45803,47,083	74080,01,017
18	Rajasthan	55615,45,764	113032,30,886	168647,76,650
19	Tamilnadu	64611,95,977	115984,96,079	180596,92,056
20	U. P. (East)	58536,44,202	112555,36,307	171091,80,509
21	U.P. (West)	38714,51,055	74757,84,024	113472,35,079
22	West Bengal	46614,19,318	89670,59,259	136284,78,577
	Total	**948983,20,192**	**1661277,38,442**	**2610260,58,634**

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Appendix-R

MTC Calculation

S.No.	Item	Legend	Value
1	Avoidable Cost (in Rs.)	a	146670,59,750
2	Total off-net incoming minutes	b	2499097,79,221
1	Termination cost without LF and SUC (in Rs. Per minute)	c=a/b	0.0587
3	Total off-net outgoing minutes	d	2331839,93,068
4	Difference between off-net incoming minutes and off-net outgoing minutes as a proportion of off-net incoming minutes	e=(b-d)/b	7%
5	Percent LF	f	8%
6	Percent SUC (weighted average sum)	g	4%
7	Total percent LF and SUC	h=f+g	12%
8	Termination cost including LF and SUC (in Rs. Per minute)	i	**0.0592**

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TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART III, SECTION 4

THE TELECOMMUNICATION INTERCONNECTION USAGE CHARGES (FOURTEENTH AMENDMENT) REGULATIONS, 2018
(2 of 2018)

TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION

New Delhi, the 12th January, 2018

File No. 10-8/2016-BB&PA --- In exercise of the powers conferred upon it under Section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), namely:-

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1.(1) These regulations may be called the Telecommunication Interconnection Usage Charges (Fourteenth Amendment) Regulations, 2018 (2 of 2018).
(2) They shall come into force from the 1st February, 2018
2. In Schedule I of the Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003), in paragraph 1 in the table under column "Termination Charge", for the words and figures "Rs. 0.53 (paise fifty three only) per minute", the words and figures "Rs. 0.30 (paise thirty only) per minute" shall be substituted.

(S.K. Gupta)
Secretary

Note 1. The principal regulations were published vide F.No. 409-5/2003-FN dated 29.10.2003 (4 of 2003) and subsequently amended vide notifications Nos. --

(i) 409-5/2003-FN dated 25.11.2003 (5 of 2003) (First Amendment);

(ii) 409-5/2003-FN dated 12.12.2003 (6 of 2003) (Second Amendment);

(iii) 409-5/2003-FN dated 31.12.2003 (7 of 2003) (Third Amendment);

(iv) 409-8/2004-FN dated 06.01.2005 (1 of 2005) (Fourth Amendment);

(v) 409-8/2004-FN dated 11.04.2005 (7 of 2005) (Fifth Amendment), which has been set aside by Hon'ble TDSAT vide its Order dated the 21.09.2005 in appeal No. 7 of 2005;

(vi) 409-5/2005-FN dated 23.02.2006 (1 of 2006) (Sixth Amendment);

(vii) 409-5/2005-FN dated 10.03.2006 (2 of 2006) (Seventh Amendment);

(viii) 409-2/2007-FN dated 21.03.2007 (2 of 2007) (Eighth Amendment);

(ix) 409-22/2007-FN dated 27.03.2008 (2 of 2008) (Ninth Amendment);

(x) 409-12/2008-FN dated 09.03.2009 (2 of 2009) (Tenth Amendment);

(xi) 409-8/2014-NSL-1 dated 23.02.2015 (1 of 2015) (Eleventh Amendment);

(xii) 409-8/2014**-**NSL-1 dated 24.02.2015 (2 of 2015) (Twelfth Amendment);

(xiii) 10-8/2016-BB&PA dated 19.09.2017 (5 of 2017) (Thirteenth Amendment)

Note 2. The Explanatory Memorandum explains the objects and reasons of The Telecommunication Interconnection Usage Charges (Fourteenth Amendment) Regulations, 2018 (2 of 2018).

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Explanatory Memorandum to the "The Telecommunication Interconnection Usage Charges (Fourteenth Amendment) Regulations, 2018"

A. Interconnection

1. Interconnection means the commercial and technical arrangements under which service providers connect their equipment, networks and services to enable their customers to have access to the customers, services and networks of other service providers.

2. Interconnection is extremely important from a consumer perspective. Telecom users cannot communicate with each other or connect with services they demand unless necessary interconnection arrangements are in place. Commercial and technical arrangements must be made to facilitate interconnection between network operators. The most important commercial issue for a successful interconnection arrangement is the Interconnection Usage Charge (IUC). A brief description of the various components of IUC is given below.

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(1) Domestic Termination Charge

3. Domestic termination charges are the charges payable by an access provider, whose subscriber originates the call, to the access service provider in whose network the call terminates. In a calling-party-pays (CPP) regime, the calling party subscriber pays for the call to his access provider and the calling party's access provider usually pays termination charge to the called party's access provider to cover the interconnection/ network usage cost.

(2) International Termination Charge

4. International termination charges (ITC) are the charges payable by an International Long Distance Operator (ILDO), which is carrying calls from outside the country, to the access provider in the country in whose network the call terminates.

(3) Transit Charge

5. When two telecom networks are not directly connected, an intermediate network is used through which calls are transmitted to the terminating network. Such an intermediate network is known as a transit network and the charges to be paid to the transit network to cover the interconnection/ network usage cost are called transit charges.

(4) Carriage Charges

6. Access providers in India can offer access services within the Licensed Service Areas (LSAs), also known as circles; the inter-circle traffic is required to be routed through a National Long Distance Operator (NLDO). The charges to be paid by an access provider to the NLDO to cover the cost for carrying the inter-circle calls are called carriage charges.

(5) Origination Charges

7. The calling party's access provider collects call charges from the calling party (i.e. his subscriber) as per the applicable tariff. From the amount so collected from the subscriber, the access provider has to pay termination charges to the called party's access provider and carriage charges (in case of an inter-circle call) to the NLDO. The access provider retains the balance amount to cover the cost of originating the call. The amount so retained by the calling party's access provider is called an origination charge. In India, origination charges have not been specified and are under forbearance.

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(6) International Settlement Charge

8. International settlement charges are the charges exchanged between foreign service providers and Indian ILDOs for exchanging international traffic. The international settlement charge includes international carriage charge, national carriage charge (if any) and the termination charge applicable in the respective country.

B. Regulatory regime for ITC in India so far

9. Telecom Regulatory Authority of India (hereinafter, referred to as, TRAI or the Authority) established a regulatory framework for Interconnection Usage Charges, including ITC through 'The Telecommunication Interconnection Usage Charges (IUC) Regulation, 2003 (1 of 2003)' dated 24.01.2003. For improving and streamlining the IUC regime further, the Authority issued 'The Telecommunication Interconnection Usage Charges Regulation, 2003 (4 of 2003)' dated 29.10.2003. This Regulation, which superseded the earlier IUC Regulation dated 24.01.2003 and came into effect from 01.02.2004, is the principal IUC regulation in the country as on date. There have been 13 amendments in this regulation since its inception.

10. Through 'The Telecommunication Interconnection Usage Charges Regulation, 2003', the Authority, *inter-alia*, prescribed ITC as Rs. 0.30 per minute. Since then, the Authority has made two revisions in ITC as below:

(a) revision of ITC to 0.40 per minute with effect from 01.04.2009 through the Telecommunication Interconnection Usage Charges (Tenth Amendment) Regulations, 2009; and

(b) revision of ITC to 0.53 per minute with effect from 01.03.2015 through the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015.

C. The present exercise for review of ITC

11. In 2015-16, the Authority received representations from several International Long Distance operators (ILDOs) requesting intervention of the Authority to set a floor for International carriage charge/ International Settlement Charge so that the stand-alone ILDOs could survive in the telecommunication services market, dominated by the integrated service providers (having both international long distance and access service licenses). With a view to seek views of stakeholders on various aspects of IUC including ITC, the Authority issued a Consultation Paper (CP) on 'Review of Interconnection Usage Charges' dated 05.08.2016 through which, it raised, *inter-alia*, the following questions for stakeholders' comments:

Q7: Which approach should be used for prescribing International Termination Charge in the country? Should it be kept uniform for all terminating networks?

Q8: Whether, in your opinion, in the present regulatory regime in the country, the stand-alone ILDOs are not able to provide effective competition owing to the presence of integrated service providers (having both ILDO and access service licenses) and, therefore, there are apprehensions regarding sustainability of the stand-alone ILDOs in the long-run?

Q9: If your response to the Q8 is in the affirmative, which of the following approach should be used as a counter-measure?

(i) Prescription of revenue share between Indian ILDO and access provider in the International Termination Charge; or

(ii) Prescription of a floor for International Settlement Charge (levied by ILDO upon the foreign carrier) for international incoming calls; or

(iii) Any other approach (please specify)

Please provide justification in support of your response.

12. Stakeholders were asked to submit their written comments on the issues raised in the CP by 05.09.2016 and counter-comments by 19.09.2016. On the request of some stakeholders, the dates for submission of comments and counter-comments were extended upto 17.10.2016 and 31.10.2016 respectively. Written comments were received from five industry associations, 12

telecom service providers (TSPs) and six other stakeholders, including companies, organizations, firms and individuals. Counter-comments were received from four TSPs and one industry association. The comments and counter-comments received from the stakeholders were placed on the TRAI's website– www.trai.gov.in.

13. The Authority wanted to listen to the viewpoints of all TSPs prior to the discussion in an open house. Therefore, a one-day Workshop was held on 18.07.2017 at Delhi to discuss the issues threadbare with the TSPs. Subsequently, an Open House Discussion (OHD) was held on 20.07.2017 at Delhi to discuss the issues with all stakeholders. After examining comments of stakeholders and due deliberations, TRAI issued 'The Telecommunication Interconnection Usage Charges (Thirteen Amendment) Regulation, 2017 (5 of 2017)' on 19.09.2017. Through these Regulations, the Authority made a downward revision in the termination charge for wireless to wireless local and national long distance calls. While issuing the above mentioned regulations, the following was provided in the para 106 of the Explanatory Memorandum to the Regulations dated 19.09.2017:

> *"Another issue raised in the CP was about prescribing International Termination Charge and Prescription of revenue share between Indian ILDO and access provider in the International Termination Charge. The Authority is of the view that there is a need of more deliberation on the issue, and therefore the Authority will issue separate regulation on this issue".*

14. With a view to have a detailed deliberation on the matter of ITC, the Authority held a Workshop with ILDOs, who carry international voice calls to/ from India and access service providers (ASPs), on 16.10.2017. In the Workshop, the Authority provided further opportunity to the stakeholders to submit their views in writing.

15. Thereafter, the Authority, on 27.10.2017, asked all ILDOs who carry voice calls to/ from India to submit information on number of incoming and outgoing ILD voice minutes for the quarter ending September, 2017; and, to all ASPs to submit the information in respect of outgoing ILD voice minutes for the quarter ending September, 2017. Subsequently, the Authority, on 31.10.2017, asked all ASPs to furnish information in respect of incoming ILD voice minutes for the period from 08.11.2017 to 14.11.2017.

16. An analysis of the issues related to ITC, on the basis of the comments of stakeholders received in the consultation process and further deliberations, is being presented below.

D. Analysis of issues related to ITC

(1) Appropriate level of ITC

17. During the consultation process, while many stakeholders contended that ITC should be increased from its present level of Rs. 0.53 per minute, some others argued that ITC should be brought down to the level of domestic termination charge. It is worth mentioning that, at present, the domestic termination charges are as below:

(a) Rs. 0.06 per minute for wireless to wireless calls; and

(b) Zero for wireline to wireless, wireless to wireline and wireline to wireline calls.

18. The stakeholders seeking increase in ITC have supported their view-point with the following arguments:

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(a) Argument#1: Low ITC is not good for Indian consumers.

The ITC of Rs. 0.53 per minute prescribed by TRAI is substantially lower than the world average of International Settlement Charge (ISC) which is about Rs. 3.00 to 3.50 per minute. Low level of ITC in India has resulted in a highly skewed pattern of ILD traffic in the country with ratio of ILD incoming traffic to ILD outgoing traffic of about 20:1. Such a skewed ratio of traffic has reduced the ability of Indian operators to negotiate ISC in international markets vis-à-vis their foreign counterparts as the latter have much larger (India incoming) traffic to trade as compared to the (international outgoing) traffic traded by the Indian operators. As a result, the Indian operators have to face a substantially high level of ISC in most countries. In effect, the Indian access providers are not able to provide affordable ISD (international outgoing) services to their customers.

(b) Argument#2: Increase in ITC will benefit the country.

An increase in ITC would result in increased inflow of Forex to Indian operators, which would, in turn, enhance their ability to provide more affordable services to Indian consumers and would also yield increased revenue to the exchequer in the form of License Fee and taxes. The Indian telecom industry earns about Rs. 4,500 crore per annum of Forex for terminating international calls into India; paying License Fee etc. of about Rs. 450 crore. Increase in ITC will provide higher Forex earning for the country, and also, a higher License Fee for the Government. Besides, an increase in ITC will generate additional funds for Indian operators which will aid them in creation of telecom infrastructure in rural areas and act as an enabler to provide affordable tariffs to Indian consumers.

19. The supporters of upward revision in ITC have advocated that ITC should be increased to about Rs. 1 per minute on immediate basis, and, to about Rs.3 to Rs. 3.50 in a phased manner, over a period of the next couple of years to bring it on par with the ISC paid by Indian ILDOs to foreign carriers. Besides, a state-owned TSP has advocated for prescription of 10% higher ITC for calls terminating on wireline networks than that for calls terminating on wireless networks.

20. On the other hand, the stakeholders, who have advocated that ITC should be reduced to the level of domestic termination charge, have furnished the following argument in support of their view-point:

> Argument: High ITC will diminish ILD carrier traffic, accelerate the migration to OTT traffic and encourage grey market.
>
> In India, ILD carrier traffic which was exponentially rising in the past has now started showing a declining trend. The main reason for this decline is competition from OTT VoIP services. In 2016-17 in India, total ILD traffic through ILDO carrier route was about 92 billion minutes; however, as per the projections of Ovum Ltd.[1] for 2017, International OTT traffic was more than 100 billion minutes. OTT traffic in India is following the global trends. Globally, OTT services are cannibalizing carrier traffic. As per the estimates of TeleGeography [2], in the year 2015, carrier *plus* OTT combined international global traffic was 970 billion with OTT contributing 520 billion minutes. Impact of OTT traffic could be seen from the fact that international carrier traffic which was growing at 7% CAGR [3] from 2007 to 2014 declined by about 1% in each of the past two years. Propensity of substitution of carrier traffic with OTT traffic is directly related to penetration of high-speed Internet as well as availability of devices, both of which have been increased rapidly in India in the last couple of years. Therefore, continuation of high ITC will accelerate migration of traffic to OTT, which will not only impact overall revenues of Indian access service providers and ILDOs, nullifying any possible short-term gains, but will also be a security hazard. In view of the significant arbitrage opportunity between ITC and domestic rates, high level of ITC will also give rise to growth of the grey market at the cost of national security and revenues of Indian operators. At present, about 20% international incoming calls terminate in India via grey routes. Therefore, lowering of ITC to the cost

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[1] Ovum Ltd. is an analyst and consultancy firm.

[2] TeleGeography is a telecommunications market research and consulting firm.

[3] CAGR is acronym of Compound annual growth rate

level will facilitate shift of international incoming traffic from OTT services to ILD carrier and curb the menace of grey market, which will be in the interest of all stakeholders including security agencies.

21. Rebutting the argument that ITC should be lowered to facilitate shift of international incoming traffic from OTT to ILD carrier, the supporters of upward revision of ITC have contended that OTT traffic and carrier traffic are two distinct species; OTT calls are App to App chats and these do not terminate on PSTN/PLMN like carrier traffic; both OTT traffic and carrier traffic in respect of international incoming calls to India have seen an increase in volumes over a period of time; therefore, any reduction in ITC to compete with free OTT services will not be an economically sound proposition. They have also refuted the argument that there is a need for lowering of ITC to curb incidence of grey market. They have stated that various measures and checks could be used to control the incidence of grey market; in any case, UIDAI based e-KYC verification will further reduce occurrence of such incidences. Countering the contention that ITC should be fixed at cost level, the supporters of upward revision of ITC have asserted that such a proposition is fallacious; TRAI has been setting differential rates for domestic termination charges and ITC - while domestic termination charges have been prescribed on the basis of cost, ITC has been non-cost-based since the year 2009 and for valid reasons as enumerated in the Explanatory Memorandum of the IUC Amendment Regulations of 2009 and 2015 respectively.

22. On the other hand, the supporters of reduction in ITC have contradicted the claim that any increase in ITC will save and earn Forex for the country. They have contended that if ITC is revised upwards, the ratio of incoming ILD calls to outgoing ILD calls will get disturbed and in turn, the Forex earnings will also reduce. They have also countered the argument that with Aadhaar based e-KYC, grey markets will no longer be a worry, stating that, for grey market operations, normally fixed-line phones are used for which there is no Aadhaar based e-KYC.

23. From the above description, it is clear that, during the consultation process, the two sets of stakeholders were sharply divided on the matter of the level at which ITC should be prescribed. Simply put, one set of stakeholders has sought an upward revision of ITC claiming that – (a) it would help Indian access providers to offer more affordable domestic tariffs as well as ISD tariffs to their customers, and; (b) it would help generate more Forex to the country as well more revenue to the exchequer. The other set of stakeholders has sought a downward revision of ITC to the level of domestic termination charge claiming that – (a) it would facilitate shift of international incoming traffic from OTT services to ILD carrier, and, (b) it would curb the menace of grey market.

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24. Before we begin to examine the issue, it would be worthwhile to mention that for the period beginning from 01.02.2004 upto 31.03.2009, the Authority prescribed ITC on par with domestic termination charge; however, for the period beginning from 01.04.2009, it fixed ITC at a higher level than the domestic termination charge as depicted in the following table.

Table-1: Termination Charges in India Since 2003

S. No.	Period		Domestic Termination Charge (per minute)	International Termination Charge (per minute)	Access Deficit Charge (ADC) to be paid to BSO/BSNL by ILDO (per minute)
	From	To			
1	01.05.2003	31.01.2004	Rs 0.15-0.50	Rs. 0.50	Rs. 5.00
2	01.02.2004	31.01.2005	Rs. 0.30	Rs. 0.30	Rs. 4.25
3	01.02.2005	28.02.2006	Rs. 0.30	Rs. 0.30	Rs. 3.25
4	01.03.2006	31.03.2007	Rs. 0.30	Rs. 0.30	Rs. 1.60
5	01.04.2007	31.03.2008	Rs. 0.30	Rs. 0.30	Rs. 1.00
6	01.04.2008	30.09.2008	Rs. 0.30	Rs. 0.30	Rs. 0.50
7	01.10.2008	31.03.2009	Rs. 0.30	Rs. 0.30	-
8	01.04.2009	28.02.2015	Rs 0.20	Rs. 0.40	-
9	01.03.2015	30.09.2017	Rs 0.14 [4]	Rs. 0.53	-
10	01.10.2017	Till date	Rs 0.06 [5]	Rs. 0.53	-

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25. It is worth mentioning that while prescribing differential rates for ITC and domestic termination charge through the Telecommunication Interconnection Usage Charges (Tenth Amendment) Regulations, 2009, the Authority had noted that cost-orientation of charges should not be the sole criteria for fixing ITC, the international termination charges prevalent internationally should also be taken into account; it should also be seen as to what is more advantageous to Indian operators

[4] Through the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015, the Authority prescribed domestic termination charge of Rs. 0.14 per minute for wireless to wireless calls and zero for wireless to wireline calls, wireline to wireless calls and wireline to wireline calls.

[5] Through the Telecommunication Interconnection Usage Charges (Thirteenth Amendment) Regulations, 2017, the Authority prescribed domestic termination charge of Rs. 0.06 per minute for wireless to wireless calls from 01.10.2017 to 31.12.2019 and zero thereafter. The termination charges for wireless to wireline calls, wireline to wireless calls and wireline to wireline calls shall continue to remain zero.

and Indian consumers. Thereafter, when the Authority again prescribed differential rates for ITC and domestic termination charge through the Telecommunication Interconnection Usage Charges (Eleventh Amendment) Regulations, 2015, it had noted that the ITC should be fixed at a level which meets three objectives viz. (a) encourage TSPs to reduce tariffs on outgoing international calls and prevent any pass-through to domestic tariffs of revenue losses arising from the calling card Regulation; (b) prevent the diversion of traffic towards OTT players such as Skype, Viber; and do not create arbitrage opportunity for grey market, (c) neutralize the effect of the foreign exchange rate variations.

26. In this background, the Authority attempted to find answer to the question as to which approach should be used for prescribing International Termination Charge in the country. The Authority observed that it has broadly two options at its hand, viz. (a) to leave ITC under forbearance; or (b) to prescribe ITC keeping in view the reasonable interests of consumers and service providers.

27. The Authority took note of the fact that any incoming call (including international incoming call) is a monopoly of the called party's access service provider (i.e. the access service provider whose customer receives the incoming call). In case ITC is left under forbearance, the called party's access service provider would always try to obtain as high termination charge as possible from the ILDOs, which may lead to a situation of non-settlement, and therefore, non-completion of the call. Accordingly, the Authority has decided not to leave ITC under forbearance and to continue with the practice of prescribing ITC. Having concluded this, the Authority embarked on to the question of arriving at an appropriate level of ITC. Towards this, the Authority attempted to make an analysis of the present day market for International incoming voice traffic in the country while keeping in view the global trends.

28. On the basis of information on outgoing ILD minutes for the quarter ending September, 2017 received from ILDOs, the Authority computed the average ISC paid by Indian ILDOs to foreign carriers in various continents/ country sub-groups as per the following table.

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Table-2: International Settlement Charges (ISCs) Payable by Indian ILDOs for ILD Outgoing Calls for Q.E. September, 2017

S. No.	Continent/ Country sub-group	Percent of total ILD outgoing traffic from India	Average ISC = Amount payable by Indian ILDOs to foreign carriers (in Rs. Per minute)
1	North America	32%	0.56
2	Asia (Other than Middle East)	27%	3.12
3	Europe	24%	1.25
4	Asia (Middle East)	13%	8.01
5	Africa	2%	9.57
6	Oceania	2%	1.85
7	South America	0.10%	3.91
8	**Global average**		**2.57**

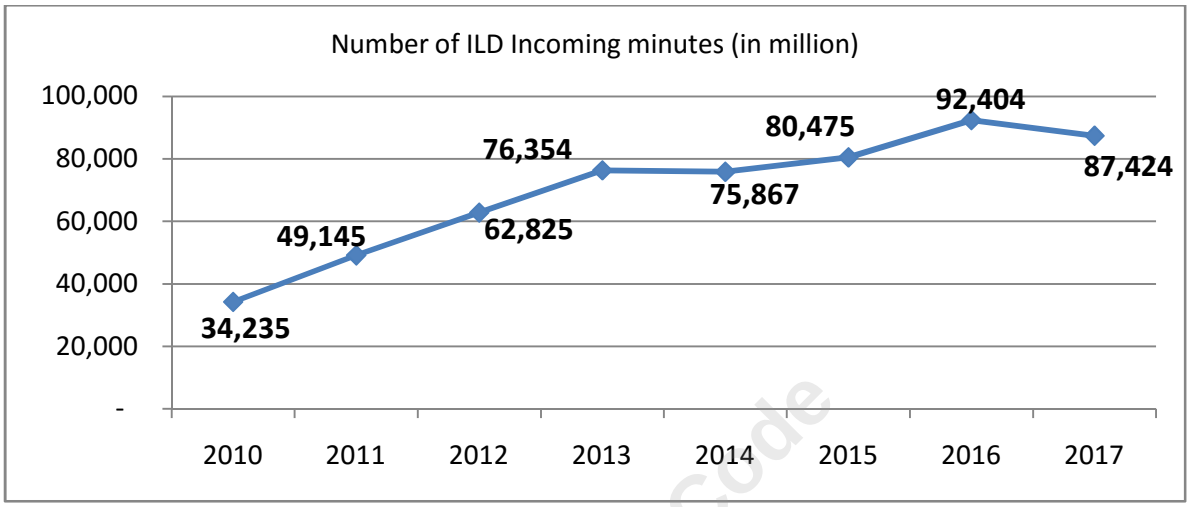
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29. The following could be inferred from the information given in above table:
    (a) The global average of ISC (Rs.2.57 per minute) is about five times higher than the present level of ITC in India (Rs. 0.53 per minute).
    (b) The average ISC for North America, in which about 32% ILD minutes originated in India are terminated, is only Rs. 0.56 per minute.
    (c) The average ISC for the Asia, Africa, Oceania and South America, in which about 44% ILD minutes originated in India are terminated, is Rs. 4.76 per minute.

30. Purely on the basis of the afore-cited global average of ISC, one may be tempted to conclude that there is a case for increase in ITC from its current level of Rs. 0.53 per minute to the global average ISC of Rs. 2.57 per minute, as it would help Indian access service providers to earn more revenue to which they can plough in expansion of their networks to improve overall quality-of-service apart from offering affordable tariffs for domestic calls as well as ISD calls. While, *prima facie*, an increase in ITC appears to be beneficial for the Indian access service providers in the short-run, it requires to be seen as to whether such an increase would indeed be advantageous for the Indian telecom sector in the medium-to-long-run in view of the fact that the ILD incoming traffic in India has shown

a declining trend in F.Y. 2017 (period from April, 2016 to March, 2017) as depicted in the following Graph:

Figure-1: ILD Incoming Voice Traffic in India

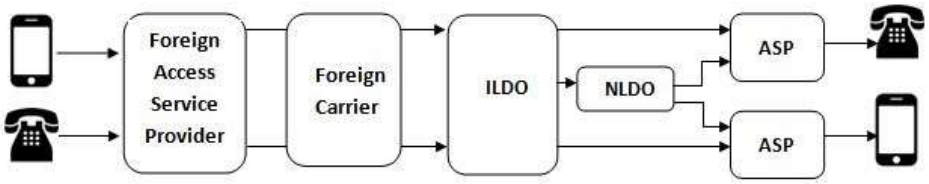


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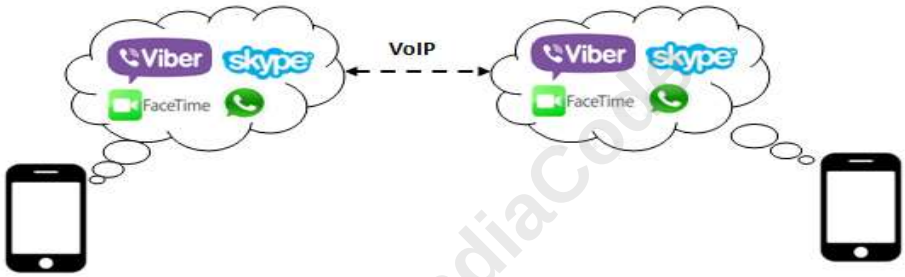
31. As can be seen from the above Figure, the ILD incoming traffic in the F.Y. 2017 was 87,424 million minutes implying that the average quarterly traffic in the F.Y. 2017 was about 21,856 million minutes. It is worth mentioning that as per the information furnished by the ILDOs, the ILD incoming traffic in India for the quarter ending September 2017 (Period from 01.07.2017 to 30.09.2017) was only 19,129 million minutes. Clearly, the ILD incoming traffic has witnessed a further decline in Q.E. September, 2017 of about 12% from the level of average quarterly traffic in F.Y. 2017. It would be useful to examine as to what could be the potential reasons for such a declining trend in ILD incoming traffic brought by Indian ILDOs in India.

32. As a matter of fact, an international incoming voice calls to India may follow any of the following three routes:

(a) **Carrier route:** A customer (calling party) of an access service provider (or a calling card service provider) in a foreign country originates an ILD voice call to India. The foreign access service provider hands over the call to a foreign carrier. The foreign carrier hands over the call to an Indian ILDO. The Indian ILDO, either directly, or through an NLDO, hands over the call to the Indian access service provider of the called party in India. The Indian access service provider makes the call reach to the called party.



(b) **OTT route:** A customer, by using an OTT App (such as Whatsapp, Viber Skype, Facetime etc.) installed on its smartphone, originates a voice chat using data services of its ISP to call a user of the same OTT App in India. The voice chat travels from foreign ISP, through Internet, to the Indian ISP, of which the Indian user is a customer.



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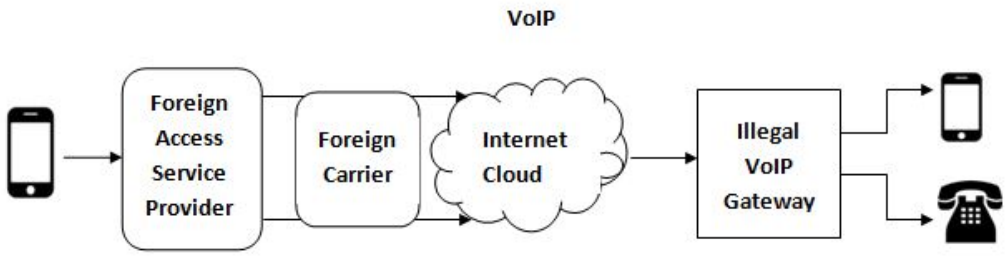
(c) **Grey route:** A customer (calling party) of an access service provider (or a calling card service provider) in a foreign country originates an ILD voice call to India. The foreign access service provider hands over the call to a foreign carrier. In order to bypass the ISC payable to Indian ILDO, the foreign carrier routes the call over Internet. A small party, which, in alliance with the foreign carrier, has set up an illegal VoIP Gateway (i.e. a SIM Box [6] or a PBX, which is connected to Internet at one end and to PLMN/ PSTN at the other end) in India, picks the incoming ILD call through VoIP route on an Internet connection subscribed from an ISP. It then, through a mobile or a landline connection subscribed from an Indian access service provider, routes the call to the called party's telephone. The greyness in this operation arises from the twin factors viz. –

(i) the VoIP Gateway installed by the party interconnects Internet with PSTN/ PLMN networks, which is not permitted, at present, by the Department of Telecommunications, Government of India; and

(ii) an international incoming call is made to appear as if it were a domestic incoming call (to exploit the arbitrage opportunity between the level of ITC and tariff for domestic

[6] A SIM box consists of an array of Subscriber Identity Module (SIM) cards subscribed from various access service providers.

calls in India) which is illegal and poses security threat as it masks the original CLI of foreign customer and replaces it with a CLI of a domestic telephone.



33. From the above description, it is clear that both OTT route and grey route act as substitutes of the carrier route for carrying international voice traffic. The extent of substitution could be estimated from the following inputs:

    (a) As per the estimates of TeleGeography, worldwide, the cross-border OTT traffic constituted about 50% of the combined volume of carrier and OTT international traffic in the year 2016.

    (b) As per industry estimates, about 20% of ILD calls terminate in India through grey route.

34. The twin facts viz. (a) carrier route for carrying international incoming voice traffic is facing a fierce competition from OTT route and grey route; and (b) international incoming voice traffic through carrier route has begun to decline from F.Y. 2016-17, together suggest that any increase in ITC is likely to result in a sharper decline of international incoming voice traffic on carrier route. Clearly, given the global traffic trends demonstrating stagnation or decline in international carrier traffic, the case for increasing ITC, from the present level of Rs. 0.53 per minute, is weak, at present.

35. The Authority further attempted to examine as to what should be level of ITC to safeguard the international carrier traffic from the onslaught from its substitutes viz. OTT route and grey route. The Authority observed that there are certain nuanced differences between these two substitutes. In case of both carrier route and grey route, the international voice call is originated in the network of PSTN/ PLMN provider of a foreign country. On the other hand, in OTT route, the international chat is originated, through an OTT App, in the network of an ISP of a foreign country. While the choice to use grey route in place of carrier route lies with the foreign carrier, the choice to use OTT route lies with the calling subscriber in foreign country. While a foreign carrier puts the grey route to use purely for saving cost of delivery of ILD voice call viz. to bypass ISC and to exploit the arbitrage opportunity between ITC and domestic call tariffs in India, adoption of OTT route has various other drivers such as availability of high-speed Internet, penetration of smartphones, penetration of a single OTT app in both the foreign country as well as in India apart from cost incentives to the

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foreign customer (i.e. to avoid high tariff for international voice call through inexpensive tariff for data).

36. Owing to the twin facts viz. – (a) menace of grey route poses serious security threat to the country apart from causing significant leakage in the revenue accruable to the country and its TSPs, and, (b) proliferation of OTT route for the carrying international voice traffic has many non-cost factors, the Authority is of the view that, while deciding on the appropriate level of ITC in the country, curbing the menace of grey route should be a more important regulatory priority than facilitating the shift of the international incoming traffic from OTT route to carrier route.

37. Essentially, the players engaged in carrying international incoming voice traffic to India through grey route thrive on the significant arbitrage opportunity presently available between the ITC, on one hand, and, tariff for domestic voice call in India *plus* the cost of running illegal VoIP Gateway, on the other. At present, while ITC is Rs. 0.53 per minute, the average tariff for voice call [7] is about Rs. 0.23 per minute in the country. Besides, there would be certain cost, albeit small, for running an illegal VoIP Gateway. It is expected that if the arbitrage opportunity is plugged or kept to a minimum, the attractiveness of the grey route for carrying international incoming voice traffic would be lost, and thereby, the carrier route for international incoming traffic would witness a legitimate growth. This would not only plug the leakages in the revenue accruable to the country and Indian TSPs, but would also ensure that India continues to earn precious Forex from the International incoming voice traffic business. Accordingly, keeping in view the comments of the stakeholders and the foregoing analysis, the Authority has decided to revise the termination charge for international incoming call to wireline and wireless from Rs. 0.53 per minute to Rs.0.30 per minute. The Authority is of the view that, with this revision, the arbitrage opportunity between ITC and domestic call tariffs would become so insignificant that illegal VOIP Gateway business in India would become unviable; in turn, the grey market for ILD incoming traffic would eventually cease to exist.

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(2) Apprehensions regarding sustainability of the stand-alone ILDOs

38. A majority of stakeholders, who are integrated service providers (having both ILDO and access service licenses in India), have submitted that the stand-alone ILDOs are able to compete quite effectively in the market and there should not be any apprehensions regarding sustainability of the stand-alone ILDOs in the long-run. They have further argued that about 30% market-share is held

[7] As per TRAI's Report titled 'The Indian Telecom Service Performance Indicators (July-September, 2017), the average subscriber outgo per outgoing minute from Home Service Area (HSA) for GSM and LTE Services in Quarter Ending September, 2017 was Rs.0.23 per minute.

by stand-alone ILDOs which indicates that stand-alone ILDOs are already flourishing and therefore, there is no need to provide any regulatory protection to the stand-alone ILDOs. A state-owned TSP has contended that the investment made by the stand-alone ILDOs is much smaller than that made by access service providers in India; at the same time, the earnings of ILDOs are much more from foreign carriers at international rates for ILD incoming calls. Another stakeholder has stated that in case the Authority still decides to prescribe a floor for the International Settlement Charge (ISC) then it may consider deciding a revenue share regime between Indian ILDOs and access providers in respect of the ITC, in proportion to the costs incurred by the respective operators in terms of the investments made in networks deployment.

39. On the other hand, several stakeholders including stand-alone ILDOs have submitted that the integrated service providers tend to cross-subsidize international incoming calls, offer predatory prices to foreign carriers, sometimes below cost levels; the stand-alone ILDOs lose out because they are not able to match such predatory prices. Many of such stakeholders have contended that, in order to protect the interests of stand-alone ILDOs, a floor for ISC, levied by Indian ILDO upon the foreign carrier, should be prescribed for ILD incoming calls and the revenue collected should be shared, in the ratio of 80:20, between Indian ILDO and access service provider.

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40. On the basis of the information on ILD incoming minutes for the quarter ending September, 2017 provided by the ILDOs, the Authority computed the percent share of integrated ILDOs and Stand-alone ILDOs in the market and also the average ISC in India as follows:

Table-3: Market Share of Integrated and Stand-Alone ILDOs and Average ISC for ILD Incoming Traffic in India in Q.E. September, 2017

S. No.	Type of ILDO	Number of ILD minutes carried in Q.E. September 2017 (in Billion)	Percent market share (in terms of ILD incoming traffic)	Average ISC = Amount receivable by ILDOs from foreign carriers (in Rs. per minute)
1	Integrated ILDOs [8]	13.47	70%	0.60 [9]
2	Stand-alone ILDOs [10]	5.66	30%	0.57 [11]

41. From the above information, it could be inferred that the stand-alone ILDOs command a robust market share of 30% in the international incoming voice traffic market. If a stands-alone ILDO hands-over international incoming call directly to access service providers, without going through NLDOs, it can retain about Rs. 0.04 per minute.

42. It is understood that the ability to command market share and to negotiate ISC from foreign carriers is influenced by the number of Points of Presence (POPs) of an ILDO in India as well as in foreign countries. The twin facts viz.- (a) stand-alone ILDOs command a robust market share in ILD incoming traffic, and, (b) the ILDO segment is relatively much less capital intensive than the access service segment, - together, seem to suggest that the charges retainable by stand-alone ILDOs in ILD incoming calls are not low.

43. It is worth mentioning that when the matter of prescription of ISC came up for consideration before the Authority during the IUC review exercise of 2014-15, the Authority had examined the matter and

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8 Integrated ILDOs comprise of Aircel, Bharti Airtel, BSNL, IDEA Cellular, Reliance Communications, RJIL, and Vodafone.

9 One Integrated ILDO did not furnish information on amount receivable from foreign carriers. Accordingly, the average ISC for integrated ILDOs has been computed on the basis of information furnished by the remaining integrated ILDOs.

10 Stand-alone ILDOs comprise of Citycom, P3, Sify, Tata Communications and Videocon.

11 As per the information furnished by one stand-alone ILDO, it receives average ISC of Rs. 1.05 per minute from foreign carriers. As this number is much higher than the ISC of the remaining stand-alone ILDOs, average ISC for stand-alone ILDOs has been computed on the basis of information furnished by the remaining stand-alone ILDOs (excluding the outlier mentioned above).

had concluded that prescription of any settlement rate between Indian ILDO and foreign carriers is not appropriate.

44. On the basis of the comments of stakeholders and the foregoing analysis, the Authority is of the view that there is no need for prescribing any floor for ISC or a revenue share between Indian ILDO and access service provider in the ITC.

E. Review

45. The Authority would closely monitor the trends and patterns of ILD voice traffic in the country. The Authority, if it deems necessary, may review ITC from time to time.

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