RELIANCE

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Dr. J. S. Sarma
Chairman
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
Jawahar Lal Nehru Marg,
New Delhi – 110 002

Subject : **Comments on TRAI Pre-Consultation Note On Review of Interconnection Usage Charges.**

Dear Sir,

Please find enclosed herewith our Comments on TRAI Pre-Consultation Note on Review of Interconnection Usage Charges.

We hope the Authority would find our views useful and consider these while formulating final consultation paper on this subject.

Thanks & regards,

For **Reliance Communications Ltd.**

(Authorised Signatory)

Please Reply to: Sh. D. Singh
President
Fax: 30331781

CC: Shri. R. Ashok, Member, TRAI
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Preface

1. The Indian telecom industry has experienced remarkable growth over the past decade. With approximately 700 million telephone connections as of November 2010, the Indian telecommunications sector has grown to become the world's second largest market after China and fastest growing market in the world. The main factors driving and sustaining telecommunications growth have been favorable macroeconomic fundamentals and demographics, favorable investment climate, strong economic growth, rising incomes and progressive and consistent policy and regulation.

2. TRAI has been the leading proponent for driving growth and enhancing consumer benefit. Over the past few months, the Authority has recommended a number of pro-growth, pro-customer and above all pro-competition policies. These pro-competition policies aimed to promote level playing field include re-farming of 900 MHz, equitable distribution of spectrum, M&A etc. We believe that the TRAI determination on IUC have to be consistent with these recent policies. This will also ensure the full impact of the other recommendations of TRAI to promote competition. The existing IUC regime in India has received admiration world wide including European Commission and ITU. Some recent comments on termination charges in India are given in Table 1 below and is an endorsement of current IUC policy.

Table 1

The European Commission noted in paragraph 4.3.6 of its Staff Working Document (footnote 78 on page 40) that[1]

"In 2003, India introduced a CPNP regime but implemented unusually low fixed and mobile termination rates of just 0.007 USD per minute. The number of subscribers went from some 13 million at the beginning of 2003 to more than 100 million subscribers by the middle of 2006. Furthermore, this dramatic surge was not at the expense of usage which nearly doubled over the same period."

ITU GSR 2007, Discussion Paper on NGN Interconnection and Access quotes as under:[2]

"Results in India are particularly interesting. Termination fees for both fixed and mobile are limited to roughly 0.007 USD. This has led to some of the lowest retail rates in the world, roughly 0.02 USD of service-based revenue per minute. These low retail prices have in turn driven high usage of 350 minutes per month. India has achieved this strong usage while simultaneously increasing mobile penetration enormously. India has apparently found a "sweet spot" where both usage and the rate of penetration are experiencing healthy growth." (Page 19 of the document)

"India's experience is particularly intriguing. In 2003, India introduced a CPNP regime but implemented unusually low fixed and mobile termination rates of just 0.007 USD per minute. The number of subscribers went from some 13 million at the beginning of 2003, to more than 100 million subscribers by the middle of 2006. This dramatic surge in penetration was not at the expense of usage, which nearly doubled over the same period."(Page 21 of the document)

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[1] European Commission Staff Working Document accompanying the COMMISSION RECOMMENDATION on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/sec_2009_0599_en.pdf)

[2] International Telecommunication Union: GSR 2007 Discussion Paper, page 54 http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR07/discussion_papers/JScott_Marcus_Interconnection_IP-based.pdf

3. Although the past decade has been remarkable, a closer look at the numbers for growth shows relatively low tele-density in rural areas. The sustained growth requires that the Regulatory Authorities and the Government must continue to act decisively and swiftly in the days ahead to ensure the next phase of growth of the wireless industry in India is maintained and remains equally remarkable with favourable IUC policies like Bill and Keep. .

MTC as % of ARPM is one of the Highest in the World

4. MTC as % of Average Revenue Per Minute (ARPM) is one of the highest in the world. ARPM levels of the industry have reduced over the past five years, from about Rs 1.3 per minute in 2006 to Rs. 0.6 per minute in March 2010 but there has been negligible corresponding reduction in termination charges. Termination charge as % of ARPM had peeked to 38% in 2008. After small period decline in 2009, termination charges have again increased and touched 40% of the retail tariffs. The current ARPM for RCOM is around Re 0.42 and termination charge is almost 50% of the retail price.

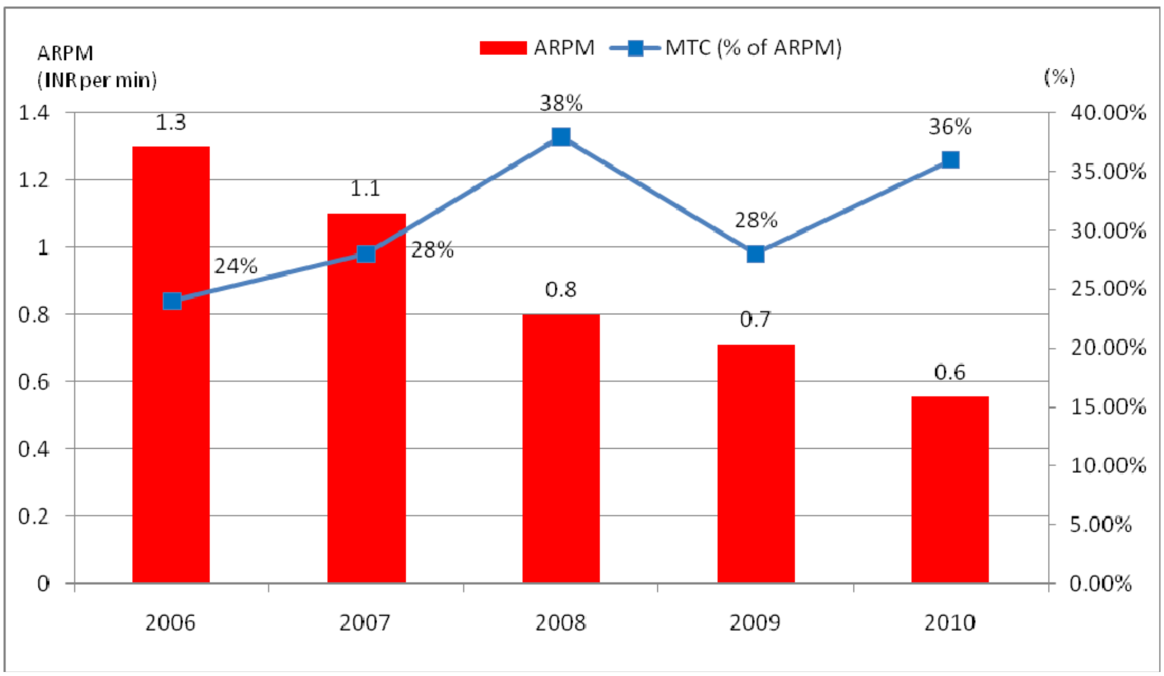


Fig 1: MTC as percentage of ARPM (Source: TRAI quarterly PMRs)

5. For further growth of this sector in terms of penetration as well as usage, it is imminent that more affordable tariffs are available in the market. **Further reduction in tariff from current levels can be possible only by reduction in MTC regime in India. A serious consideration may please be given for adopting progressive IUC regime like Bill and Keep.**

Minutes of use have increased significantly since 2009 ; cost per unit have reduced significantly

6. In the past 4-5 years there has seen a significant change in the dynamics of the Indian telecom market. There has been an exponential growth in the wireless subscriber base which is 700 million and volume of traffic has also shown a similar trend. Although there has been significant improvement in utilization of network but per unit termination charges continue to be high. The economies of scale resulting in declining termination cost as is evident from the figure 2 below regarding growing usage of network has not been factored in the prevailing termination charges.

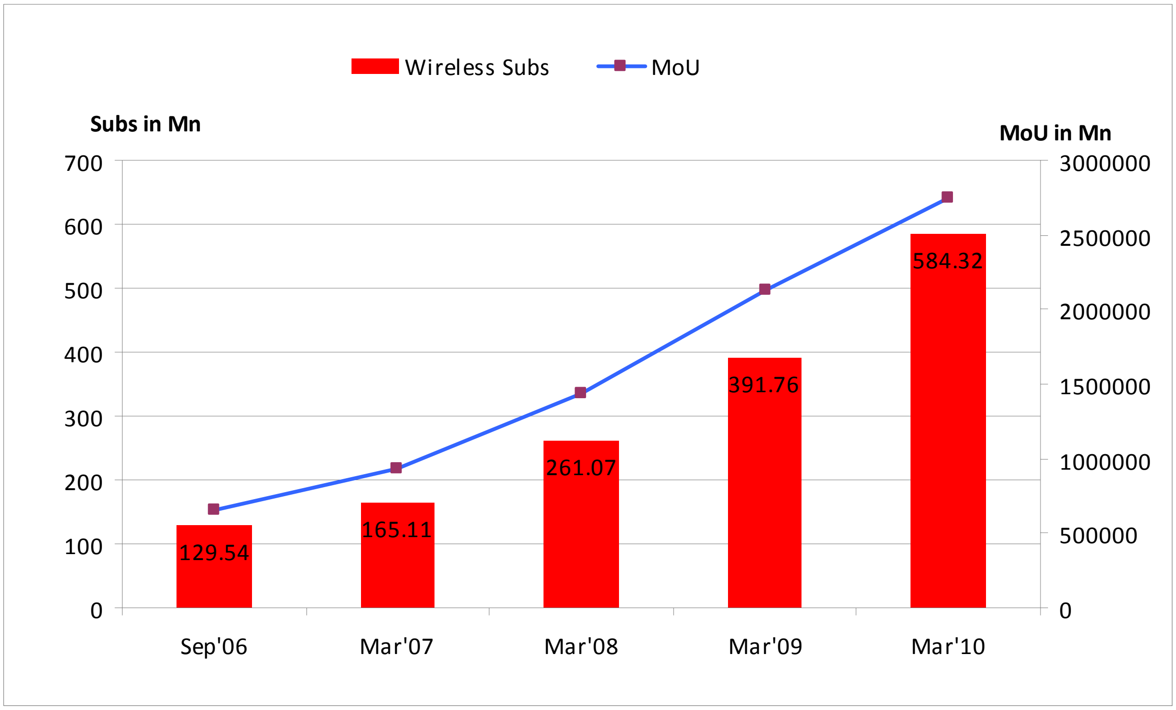


Figure 2: Growing Usage (Source: TRAI quarterly PMRs)

Costs have reduced significantly

7. The cost structure of operators has also changed significantly over the past five years:

- **Electronics costs are reducing 15%-25% year-on-year for past five years**
- **Capacity available per MHz has increased significantly as operators have deployed latest techniques like half-duplex, AMR, multi-sector configuration etc.**
- **very large increases in data volumes including value added services , reducing the proportion of costs attributable to voice**
- **There is greater degree of infrastructure sharing between operators significantly reducing costs.**

8. The above two factors combined – higher MoU and lower costs - together indicate that the cost per minute of terminating voice call should be much lower than prevailing 20 paise per minute.

High MTC rates minimize customer benefits and cause market confusion

9. A direct result of the high MTC in India is the massive difference between on-net and off-net tariffs.

10.

Details	GSM Operator 1			GSM Operator 2		
Circle	Bihar	Kolkata	Kolkata	AP	TN	Kolkata
Local outgoing (Rs / min)	Best +444	Talk More 250	Talk More 149	599 Mega Saver	New 249 PPS	Utsav 149
On-net	0.25	0.15	0.3	0.3	0.5	0.3
Off-net	0.4	0.75	0.75	0.49	1	0.5
Off-net call expensive by	160%	500%	250%	163%	200%	167%

Table 2: On-net Off-net tariff rates of leading operators [source: Operator Website]

11. From the above table 2 it is clear that the current CPP regime distorts competition in favour of large operators by enabling them to sustain on-net/ off-net price differentials that harm smaller operators and lead to traffic imbalances. **The concern in the mind of consumers is likely to increase with implementation of MNP as consumer would not be aware whether call to a ported subscriber is on-net or off-net. Consumers are extremely concerned at the tariff plans for on-on-net and off-net calls and often questioning the operators on this significant difference. It is regulator's responsibility to also consider the serious consumer concerns that have already been experienced in the industry. To help**

12. Reduction in termination charges from 30 paise per minute to 20 paise per minute has narrowed the gap but which has resulted in balance between on-net and off-net calls and is shown in the the following graph.

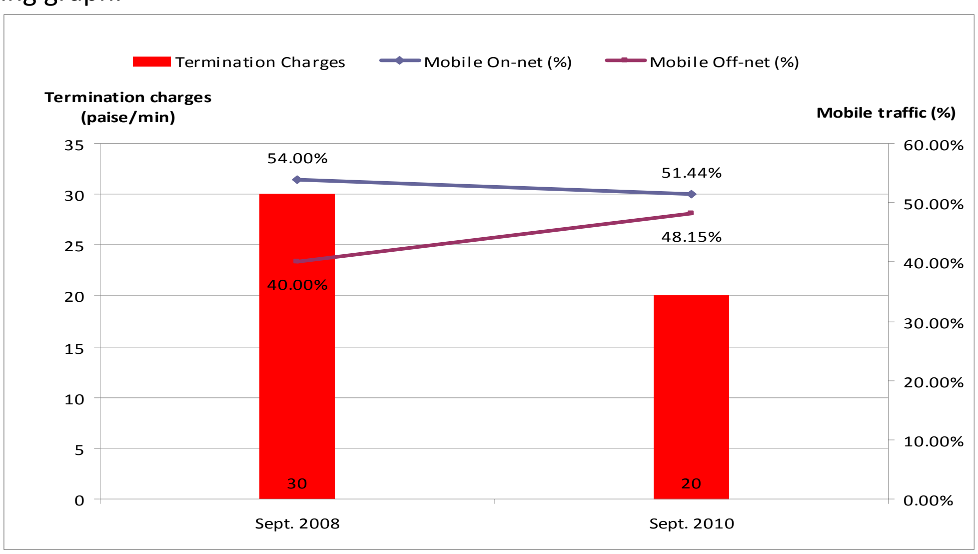


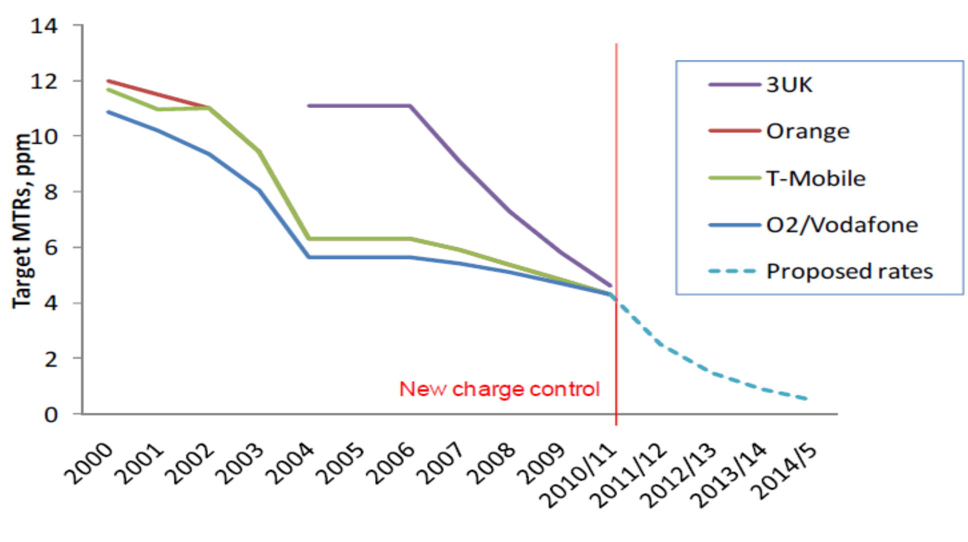
Figure 3: Changes in traffic patter with change in termination charge (Source: TRAI quarterly PMRs)

13. Lower on-net calls imply a huge margin between termination costs and termination MTC rate. In on-net call there is double usage of network for origination as well as termination but retain tariffs are retained at even 1/5th of the off-net calls. This makes a very strong case for significant reduction of termination charge.

International trends for significant reduction in Termination charges

14. Internationally, regulators are accepting that lower mobile termination rates are likely to benefit consumers service providers greater flexibility id deciding retail prices. Service providers are able to offer consumers a wider variety of retail packages and tariff structures. Lower termination charges address competition concerns over on/off-net price differentials and lessen possible concerns over competition between new operators and large incumbent mobile operators.

15. The question of significantly reducing termination rates has been the subject of most active debate among European regulators, including the European Commission (EC) and the European Regulators Group (BEREC). In May last year the EC published a Recommendation on call termination. The Recommendation set out how guidance by the EC should be taken into account by regulatory authorities in setting rules regulating fixed and mobile call termination services. The main difference from the current approach is that the EC recommend adopting pure LRIC, rather than LRIC+. The impact of such an approach would be to reduce MTC currently in place across the EU, potentially by a significant amount. UK is proposing a glide path of four years for reduction of termination rates by 2014 to only 0.5 pence per minute[3].



Source: Ofcom

Figure 3: Proposed Mobile Termination Charges 2011-2015 (Source: OFCOM)

16. OFCOM is proposing to reduce rates at significantly higher rates than India. Every major country is looking at benefits of lower termination charges so that consumers gate benefit of affordable tariffs.

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[3] http://stakeholders.ofcom.org.uk/binaries/consultations/wmctr/summary/wmvct_consultation.pdf (page 129)

Pence per minute

	2010/11	2011/12	2012/13	2013/14	2014/15
Vodafone/02/orange/T-Mobile	4.3	2.5	1.5	0.9	0.5
H3G	4.6	2.5	1.5	0.9	0.5

Table 3: Proposed MTC (Source OFCOM)

17. From the table 3 above it may be noted that termination charges in UK will be about 10% of current rates in four years. It is quite clear that all developed and matured markets are realizing benefit of lower termination charges. The regime is heading towards Bill and Keep. TRAI should take the lead and reduce termination charges to NIL.

18. The TRAI should take decision in line with the international trends for significant reduction in termination rates. In case the Regulatory Authority decides to reduce the MTC again by paltry 20-30% then the purpose of MTC reduction is defeated. Marginal decline does not benefit consumers, does not induce growth and does not provide an opportunity to new players in the market. A marginal reduction in MTC will have no or very low impact on retail tariff. MTC will continue to remain a significant portion of ARPM and operators will not be able to reduce tariff to the level envisaged by the Regulatory Authority.

19. With higher MTC there is unlikely to be significant impact on demand due to marginal reduction in retail tariffs. There will be almost no impact on the mobile penetration or usage among the subscribers, in case the MTC is only marginally reduced. Since demand/mobile traffic remains largely unchanged, mobile networks will still remain under utilized and operators will not be able to improve their operational efficiency. Therefore a sub-optimal reduction in MTC will only result in the sector losing revenue with no change in retail tariff, demand, sector dynamics, network utilization increase, service innovation, operator efficiency or industry growth.

Bill and Keep Regime

20. The National objective for increasing tele-density, increase afforadability and usage can best be met through Bill and Keep Regime (BAK). The BAK charging arrangements offer the best long term interconnection regime. This approach entails levying no charges on interconnecting carriers at all. Major advantage is that this method avoids the administrative burden of billing one another for exchanged traffic. In case of co-existence of various technologies, BAK solves the problem of determining cost of termination for each technology and hence reduces the complexities involved. There are innumerable cases which are pending on cost determination with regard to TRAI determination. All these legal tangles can be sorted out using BAK regime.

21. **Bill and Keep is today considered the most popular IUC regime being implemented, especially as it incentivizes efficiency, migration to NGN network models and reduces network costs. European Regulators Group (BEREC) has already initiated a consultation titled " Next Generation Networks Future Charging Mechanisms / Long Term Termination Issues" to specifically assesses Bill & Keep as an alternative to the currently used regime for voice in Europe: calling Party Network Pays (CPNP). The paper concludes that**

"BaK is more promising than CPNP as a regulatory regime for termination for the long term and based on national circumstances (including legal issues) NRAs could set a glide path to BaK within the regulatory period related to the next market analysis they carry out for voice termination. [4]*"*

22. The CPP regime has stimulated take-up of mobile services, but at the cost of substantially depressing the usage of mobile phones. A better trade-off between adoption and use of communication services is needed through Bill and Keep regime. In the longer term, BAK is the most appropriate and most sustainable economic model. This systems is economically efficient, encourages usage ; they ease the task of the regulator, to the extent that regulatory rate-setting is not required; and they pose no conceptual or implementation difficulties in the world of the NGN or co-existence of number of technologies. **In ITU GSR 2007 discussion paper on "Interconnection on an IP-Based NGN Environment" there is specific reference to India for adoption of BAK regime. The relevant para is reproduced below[5]:**

"In the nearer term, CPNP systems with much lower termination fees than those typical today might represent a promising interim step. Experience in India suggests that CPNP arrangements with mobile termination fees less than 0.01 USD per minute can be compatible with both high usage and rapid adoption. By reducing the spread between CPNP and Bill and Keep, the regulator also greatly reduces the pain associated with a subsequent transition to Bill and Keep arrangements should such a transition prove necessary."(Page 53)

BAK Regime would increase usage

23. Prices tend to be significantly higher in countries where MTC is higher compared to those countries where MTCs are close to zero. India has significantly higher usage when compared to developed countries in Europe where MTC is higher. The usage on the other hand is higher in countries with BAK arrangements. USA, Singapore, Hong Kong where BAK is in practice have much higher usage compared to India. It may be noted from figure 4 that with increasing penetration there is sharp fall in per subscriber usage. The trend can be reversed by reducing Termination charges or by adopting BAK. The BAK provides maximum benefit to operators to launch innovative tariffs dor increasing usage and reduce prices.

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[4] ERG consultation paper on Next Generation Networks Future Charging Mechanisms/Long Term Termination Issues" - Page 54, last para.

[5] International Telecommunication Union: GSR 2007 Discussion Paper, page 54 http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR07/discussion_papers/JScott_Marcus_Interconnection_IP-based.pdf

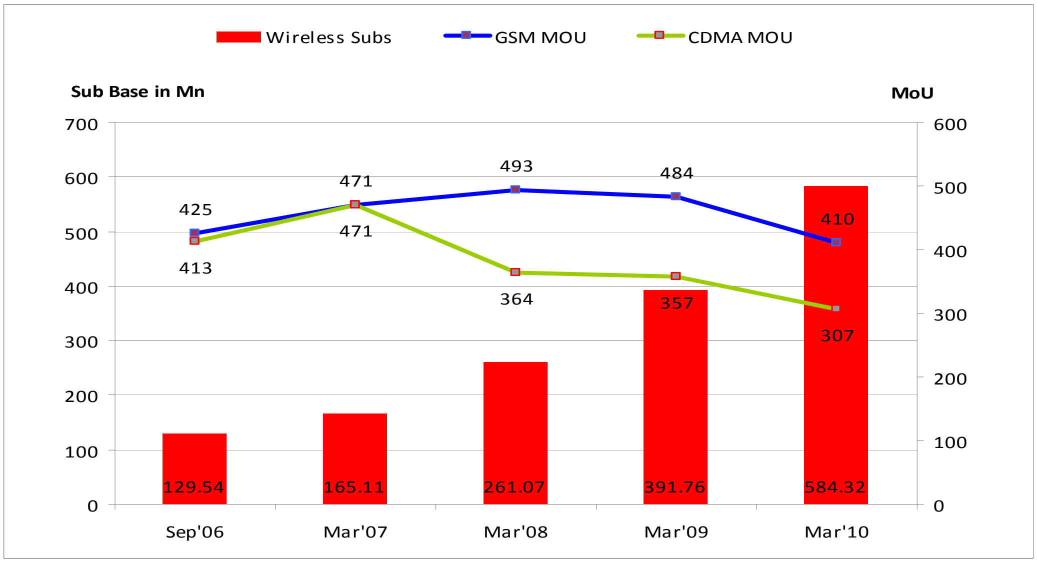

Figure 4: Falling MOUs per subscriber(Source : TRAI Quarterly PMRS)

Bill and Keep is considered to be future ready – it can be used as technology evolves to include calls terminated on 3G, BWA, femtocells, WiFi, VoIP, NGN, fixed-mobile converged calls etc. A cost based regime will need to compute MTC for each of these cases and determine a weighted average. A Non-BaK regime will need constant updating as ratios will change with new Data driven networks getting implemented.

A Zero MTC regime will remove all controversies caused by data ambiguity and reduce the risk of subjectivity. Bill and Keep will promote competition and maximise consumer interest and therefore TRAI should adopt Bill and Keep regime.

Replies to specific Issues raised in the consultation note are given below.

1. What should be the framework of Interconnection Usage Charge that meets the requirement of today as well as takes care of future developments like deployment of Wi-Max, High Speed packet Access (HSPA), Fixed Mobile Convergence(FMC) and Next Generation Network (NGN)

a) The convergence of telecoms and the internet requires to take the additional step from low termination rates to zero termination rates (BAK). Convergence means that telecoms and internet services are becoming direct substitutes for each other. With Wi-Max, High Speed packet Access (HSPA), Fixed Mobile Convergence (FMC) and Next Generation Network (NGN) available on access devices, it would be possible for subscribers to connect each other through internet cloud. In this situation, it will be unsustainable to have different interconnection arrangements for competing services.

b) As switched telephony converges with the internet, the current termination rate system will become unsustainable. It is inevitable that the telecom world should adopt the internet charging principles of peering and transit. The two different charging regimes cannot exist together as services offered on these platforms are direct substitutes. The per minute call charges that are a consequence of current Interconnection usage charging will be undermined by VoIP, which has no incremental cost for the consumer.

c) One may argue that VoIP has not provided an effective way to provide sustainable alternative to switched calls as those are not interconnected with the PSTN. However, Skype, the largest consumer VoIP provider has recently launched an iPhone "app" that works on 3G which can be downloaded and used independently of the Interconnection. Skype intends to extend this app to other smartphones in the near future. This is therefore the first time that a customer would be able to make a VoIP call through mobile phones to another mobile phone even without direct interconnectivity. At this stage it is a new development once new technologies like Wi Max, HSPA, NGN etc gain popularity.

d) Another interesting competitive alternative to mobile telephony that is emerging is the use of WiFi in conjunction with VoIP. New handsets have recently emerged that operate as VoIP phones when WiFi is available, but as conventional mobile phones at all other times. Therefore, with convergence happening, there is need to maintain a level playing field by subjecting these technologies to same regulatory treatment.

e) Mobile internet does not require mobile-to-mobile interconnection. It is increasingly the differences in regulatory treatment of the services and not the underlying technology that is driving commercial behaviour and holding back innovation. TRAI should remove the barriers to convergence like regulated termination rates and adopt BAK regime.

f) Aligning the telecoms and internet interconnection regimes is essential to maintain neutrality telecoms operators and internet services. Currently telecom operators pay termination charges but internet calls from one ISP to another ISP are largely unregulated and without any termination charges. With IP technologies available on handheld devices, practically there would not be any difference for a subscriber to make call through conventional switched telephony or internet. Therefore with convergence various technologies will be directly competing and unless regulation is neutral between them, there will be a distortion of competition.

Given the benefits to consumers from zero termination rates, competition promotion and the need to have a single interconnection regime for telecoms and the internet, Bill and Keep is the most attractive framework of Interconnection Usage Charge for future deployment of technologies like Wi-Max, High Speed packet Access (HSPA), Fixed Mobile Convergence(FMC) and Next Generation Network (NGN).

2. What component of IUC for voice, SMS and any other value added services should be reviewed? What should be the level of charge for each component that requires review? Please give detailed justification/reason to support your viewpoint.

a) RCOM supports the review of the following components immediately.

(i) Termination Charges for voice and video international and domestic calls.
(ii) Origination Charges for calling cards
(iii) Carriage Charge
(iv) Transit charges
(v) Port Charges

There is a need to review these charges:

(i) Termination Charges for Voice and Video Calls

a. The Authority has reviewed the MTC in March 2009. The termination charges were revised from 30 Paise per minute to 20 Paise per minute with effect from 1.4.09. The retail tariff levels have already reached 29-50 paise per minute and thus the termination charge of 20 paise per minute amounts to almost 40-69% of the retail **tariff. Due to high termination charges there is big difference in offnet and on-net call rates**.

b. We urge the TRAI to not let this golden opportunity of using IUC to fuel the next phase of telecom growth in India slip. TRAI must act decisively and implement a dynamic IUC regime. If TRAI wants to implement a future proof IUC regime, promote efficiency and move away from data ambiguity of cost based mechanisms, then Bill and Keep, is the preferred option.

c. If TRAI believes that BAK cannot be implemented at this stage and the sector's interests are best served by continuing in the CPP regime then a significant reduction in line with the international trend is required.

d. A significant reduction in MTC and FTC will benefit both consumers and operators. It will also be consistent with the TRAI's fundamental operating tenets – "pro-consumer", "pro-growth" and "pro-competition". Slight reduction in FTC and MTC to say 15p will not be sufficient to take sector growth to the next level nor will it be significant to induce usage. FTC and MTC for voice as well as video calls should be lower than 10 paise per minute.

e. 3G networks have already been launched. These networks will have to interconnect each other as well as to the existing 2G networks. Therefore, it is vital that the current IUC review exercise being conducted by the Authority should also determine the termination rates for the 3G network especially for video calls. In case European Commission guidelines on cost based termination charges are adopted there will not be any major cost difference in 2G and 3G networks. There a blended termination rate between 2G and 3G should be provided.

f. TRAI has specified asymmetric termination charges for domestic and international calls. The termination charges for international calls are 100% more than domestic calls even though same cost and same network elements are involved. This is first deviation by TRAI from its established principle of deciding charges on the basis of cost. TRAI should review this and bring parity in the termination charges for international calls and domestic calls.

(ii) Carriage Charges

Currently the ceiling for carriage charges is Rs. 0.65/min. The ceiling was dropped in the

2006 review from the previous ceiling value of Rs. 1.10/min. The cost on high traffic density route is lower than this and for rural and far flung areas it may be comparatively higher. Considering better utilisation of network there is a case for reduction in long distance charges. However, to maintain enough incentives for investment in fiber layout, it is proposed that the ceiling may be reduced to Rs 0.50 per minute.

(iii) Carriage charge from LDCA to SDCA

a. The current charge of 0.15/min is much above cost. TRAI should decide carriage charge of calls from LDCA to SDCA on actual cost incurred. Private operators continue to be constrained by BSNL to handover their traffic to BSNL at Level-II TAX and pay the transit charge of Rs 0.15/min for carriage of calls to SDCA even those operators are have NLD POI in the same SDCA. This makes this segment non competitive and is clearly not in the best interest of the consumer.

b. This carriage portion should be considered as part of the termination as it is mandated for mobile operators to hand over calls at Level II TAX and no extra charges should be payable for carriage of charge to SDCA level. We therefore, believe that the Authority must either ensure increased competition in this segment by allowing access providers to use private NLDOs for their intra circle long distance calls or revise the cost for transit charge to a value that is based on the actual cost incurred as opposed to the current value of Rs. 0.15/min.

c. It is not the cellular subscribers alone who bear the cost, even when the BSNL NLD POIs are congested, then NLD and ILD carriers are required to handover the traffic at a different POI for which BSNL charges Rs.0.14 per minute as a transit carriage charge. The prevailing transit carriage charges do not protect the consumer interest and end up enriching the BSNL.

d. In case of intra SDCA transiting, since there is no or little distance element involved in transit of a call, the charges for transit should be much lower than the LDCA to SDCA carriage charges. Yet, while LDCA- SDCA charge is 20 paisa per minute, the transit charge was fixed only marginally lower at 19 paisa per minute by BSNL.

e. Therefore we suggest that transit charges (both from LDCA to SDCA, and intra SDCA) should be reduced from the current level of Rs. 0.15/min to zero or the actual amount actually incurred by the operator which should not be more than 2 to 3 paise per minute.

(iv) Port Charges

a. Port charges are part of the interconnection related charges and the Authority's port charges regulation is notified under the same powers used for IUC regulation. To maintain the homogeneity and consistency, it is essential to review the Port charges along with the present IUC review. The port related OPEX is recovered from the IUC but the capital cost is recovered from the separate port charges. The two costs for the same items are being recovered through two different principles - OPEX being recovered on the basis of usage and CAPEX directly from the interconnection seeker.

b. Currently Port Charge is the only IUC component which is not based on principle of causation and the complete cost is recovered from the interconnection seeker, although both the interconnection seeker and provider use the facility. The port charges like other components of interconnection should also be based on the usage by the respective interconnecting parties. The existing regime is highly in favour of the incumbent operator. The complete port related charges are borne by the new service provider, although the existing operator also uses the same facility.

c. Port charges between private operators are already zero. BSNL is the only entity that currently imposes port charges. The cost incurred by BSNL is substantially lower than the current level of port charges. We suggest that the TRAI should review the charges being imposed by BSNL and eliminate or revise downward these charges based on actual additional cost incurred (as opposed to historical costs).

d. Even if inconsistencies between the port and other IUC charges are not considered and kept apart, the port charges review is still needed as the Authority's adopted costing methodology requires regular review. If the charges are not reviewed then there is an over recovery of costs which unnecessarily enrich port providers i.e. BSNL.

SMS termination charges:

In addition to the review of other IUC components, it is requested that TRAI should withdraw the policy for forbearance on Termination charges. It may kindly be recalled that inter operator payout on account of SMS charges was reviwed and put under forbearance on 1st April 2009 vide TRAI IUC Regulation dated 9th March 2009 and . The competitive landscape has changed significantly since then. The telecom sector now consists of a mix of a number of new operators and incumbent operators in comparison to earlier operating environment when there were only 5-6 settled operators. In the earlier scenario, the Authority had taken a stand of forbearance on some issues. However, taking benefit of such a situation, some of the incumbent operators have started showing monopolistic behaviour by insisting SMS termination charge and other interconnection charges like high roaming inter operator charges, port charges, collocation charges etc from the new operators. TRAI should intervene & stop SMS termination charges as there is no significant cost involved.

3. Which of the Following approach/methodology should be used for estimating Interconnection Usage Charges;

(a) Existing Fully Allocated Cost Methodology used by TRAI or any variation in it;
(b) FLRIC or any variant;
(c) Bill and Keep;
(d) Left to Forbearance all components of Interconnection Usage Charges;
(e) Any other methodology.

a. There are a number of approaches that have been used to determine MTC, the most popular methods used today are cost based approach and more recently an approach called Bill & Keep, which is often referred to as the "future proof" ambiguity-free approach to determining MTC.

Approaches used for termination charge Estimation

b. **Fully Allocated Costs (FAC):** TRAI used this approach when MTC was reviewed in 2003 and 2009. FAC works well in the early stages of growth in a country. Indian can be argued to be still in an early stage like Brazil, Hong Kong and Pakistan have used FAC and its variations in the regulation of their MTC.

c. **Forward Looking –** Long Run Incremental Cost (FL-LRIC): LRIC is the incremental costs that arise in the long run with a specific increment in volume of production. An increment is the unit of output over which costs are being measured.

d. **Bill and Keep-** This approach entails levying no charges on interconnecting carriers at all. Major advantage is that this method avoids the administrative burden of billing one another for exchanged traffic. In case of co-existence of various technologies, BAK solves the problem of determining cost of termination for each technology and hence reduces the complexities involved. BAK is today considered the most favourable IUC regime in times to come, especially as it **incentivizes** efficiency, migration to NGN network models and reduces network costs.

e. Each of these techniques offers a set of advantages and certain drawbacks as shown in the Table 4 below.

Model	Advantages	Drawbacks
International Benchmarking	1) International benchmarks are often used in lieu of a formal cost calculation Process 2) Method is less complex & quick	1) Relying solely on this method has several limitations as identical International markets are not easily available
Fully Allocated Cost (FAC)-Historical	1) Cost are taken directly from operators accounting records and allocated using service demand 2) Data is readily available	1) No Distinction between incremental & fixed/ common costs 2) Historic investments affect the setting of MTC 3) Accounting depreciation is assumed for the estimation of capital costs
Fully Allocated Cost (FAC)-Current Cost Valuation	1) Further information relating to the current value of assets is collected and analyzed 2) Allow different types of depreciation (Common Cost accounting or annuity) to be considered 3) In line with TRAI methodology of 2003	1) No distinction between incremental and fixed/common costs. 2) Historic investment affect the setting of MTC
Long Run Incremental Cost Model (LRIC)- Top down	1) Cost volume relationships are used to differentiate between incremental costs and fixed, common and joint costs. 2) Model allocates fixed/common costs to services once the incremental costs have been allocated	1) Includes actual costs so likely to incorporate inefficiencies 2) Thus, offers a CEILING to MTC rates- actual may be lower
Forward Looking Long Run	1) Differentiates between incremental &	1) Data difficult to procure

Incremental Cost Model (FL-LRIC)- Bottom Up/Hybrid	common costs and uses an economic depreciation methodology 2) Allow for different level of efficiency to be modeled as all the costs are built bottom up 3) Hybrid model is an extension of a bottom up where in outputs from the model are compared with operators actual data	2) Modeling is time consuming and may involve several iterations 3) Need to change for 3G, BWA,VoIP, femto-cell and other NGN implementation
Bill and Keep	1) Provide Level playing to large and Small (on-net/ off-net price discrimination); 2) Does not permit transfer of cost from large to small operators through termination charges 3) Future proof allows convergence. 4) Reduction and innovation in retail tariffs	(i) Operators may charge for incoming calls in non-competitive markets

Table 4: Comparison of various Costing Models

f. TRAI had used an FAC approach while setting the MTC in 2003 and 2009, in which capex costs are not considered in the calculation. This approach can be used today and based on factors such as increased minutes and lower network costs. The network OPEX per minute has reduced to approximately 7-8p per minute from the 2003 levels of 30p per minute, seeing a drop of 15% year-on-year. This indicates that the MTC should now be 25-30% of the FAC estimate seen in 2003.

g. If TRAI would like to focus on incremental costs as the most economically efficient means of determining the impact of interconnection between competing operators, then TRAI could select the FL-LRIC methodology to determine MTC. It is important to note that a FL-LRIC based model typically determines the ceiling of termination charges to be set.

h. Conventional LRIC models are the prime cause of the asymmetry between the treatment of fixed and mobile termination rates and even different mobile networks. Conventional LRIC seeks to assess the efficiently incurred and forward-looking (or current) incremental costs of providing termination inclusive of an allocation of the common costs. The increment in output which was being used was total network traffic. European Union has in detail deliberated on the conventional LRIC model which has been defined as “LRIC plus” and now suggested a new methodology called “pure LRIC”. 6 Pure LRIC only allows for long run variable costs to be recovered, and excludes common costs.

i. COAI in the last review had submitted LRIC model with mark-ups. MTC above cost was justified to achieve specific policy objectives like bridging the rural-urban divide by rolling out networks to rural and other areas. MTC marked-up above cost results in incoming interconnect revenues for rural/ low income subscribers which helps MNOs recover costs of

[6] European Commission Recommendations dated 7.5.2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf

network expansion. These arguments are used only to keep terminations higher which actually increase retail prices and does not support efficient utilisation of network.

j. As per the EC new guidelines, the relevant incremental costs (i.e. avoidable costs) of the wholesale call termination service are the difference between the total long-run costs of an operator providing its full range of services and the total long-run costs of an operator not providing a wholesale call termination

k. service to third parties. The details of new methodology are given in the EC recommendation and Explanatory Memorandum.7

l. OFCOM has initiated a consultation r on 1.4.2010 to implement "pure LRIC" and noted that the cost using pure LRIC is 1/3rd the cost using LRIC Plus. The relevant portion of the consultation paper is given below:

"1.6 Previous MCT charge controls have been set using LRIC+. In our model, if we set charges using pure LRIC, by 2015, MCT charges will be one third of the charges calculated on a LRIC+ basis......"

m. There are attempts by various interest groups to claim superiority of one costing methodology over the other but such attempts need to be resisted by the Authority to take over the basic judgment to make tariffs more affordable, increase tele-density in the country and promote the competition. Some stakeholders are proposing superiority of LRIC which is based on mark-ups over the TRAI methodology. The TRAI must judge whether the methodology being propounded now meets the policy objectives or not. The TRAI's adopted costing methodology has worked satisfactorily for over a decade but if opened again would invite an endless debate.

n. Bill and Keep is one of the most pro-consumer and pro-competition moves that TRAI can make on IUC. Countries that have implemented Zero MTC under a BAKregime have shown a massive growth in penetration, much higher than we see in India today – for example, Hong kong and Singapore. BAK is considered to be future ready – it can be used as technology evolves to include calls terminated on 3G, BWA, femto-cells, WiFi, VoIP, NGN, fixed-mobile converged calls etc. A cost based regime will need to compute MTC for each of these cases and determine a weighted average. A Zero MTC regime will remove all controversies caused by data ambiguity and reduce the risk of subjectivity. As a result of these advantages, Bill & Keep is today the most popular form of IUC regulation being considered globally.

o. We believe TRAI can use any of the cost methodology. TRAI should also bear in mind the severe limitations of a cost based MTC Regime. The following complexities must be built in the model:

(i) 900 Vs 1800 Mhz allocations
(ii) 2G, 2G/3G, LTE, WiMax, CDMA, EVDO, VoIP operators
(iii) Entry of operators at significantly different point of times.

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[7] Commission Recommendations on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU - Explanatory Note

In our view, a BAK Regime offers the best long term solution and addresses all the objectives that TRAI and the Government is looking to achieve.

4. Explain the approach/costing methodology adopted, provide the model, if any, developed for estimating the level of each component of IUC for voice, SMS & any other value added services with all calculation sheets. Give justification for adopting the proposed approach/methodology. Also provide details of revenue, minutes of usage(MOU) (Off-net/on-net), CAPEX and OPEX corresponding to each network element, cables etc separately for your network.

&

5. Provide cost and revenue corresponding to each service like voice service, SMS, GPRS, EDGE, roaming services and any other value added services. Also provide cost and revenue for interconnecting services like terminating call, originating call, terminating SMS and originating SMS. All cost and revenue data may be cross referenced with the accounting separation report submitted to TRAI.

Bill and Keep Regime is best suited for India

a. There are severe limitations of implementing a cost-based MTC regime with multiple networks setup at different points of time and operating in different spectrum bands and using different spectrum bands. Termination cost for incumbent operators is far below the new operators and requires asymmetric termination charges.

b. A cost-plus MTC regime is totally against philosophy of market led pricing. A cost-based regime protects inefficiency by practically guaranteeing a rate of return on costs and investments. In addition, cost-plus regimes are extremely complex to administer and result in significant ambiguity – whose costs, for which technology, for what network utilization etc.

c. In effect, a cost-based MTC is a cross subsidy of incumbent networks paid for by new entrant operators; a tax that implicitly offers indirect exclusivity to incumbent operators.

d. Zero MTC is a pro-consumer, pro-growth and pro-competition initiative. Of all MTC regimes, a zero MTC regime goes farthest in terms of promoting growth and efficiency in the sector. It also creates enabling regulation to help the industry adopt NGN technologies and processes.

In CPP Regimes LRIC is preferred Costing model

e. Many regulators consider a LRIC based approach as an accurate method in setting MTC. Focusing on incremental costs for interconnection is often seen as an economically efficient means of determining the impact of interconnection between competing operators.

Forward Looking Hybrid Long Run Incremental Cost (FL-LRIC) approach offers the advantage of incorporating the costs of a hypothetical efficient operator with a real world incumbent or new entrant operator. TRAI has previously recognized in its notification (No. 409-5/2003/FN, dated 29th October 2003) that there is a need to eventually move to LRIC based MTC estimation model.

f. Although we hold that BAK regime is best suited for the country, given the above steer from TRAI, RCOM had engaged reputed consultants during the last review. MTC estimate is submitted in the attached LRIC model. The result of this model without mark ups is given below:

	Unit	FY 2011	FY 2012	FY 2013
MTC (w/o common cost markup)	INR/min	0.06	0.06	0.07

g. We are collating updated data and forecasts and would submit revised charges for termination during the consultation process. It is expected that revised charges would be even lower than above the above estimated termination charges.

h. The cost data for various services using the top-doen method based on current costs and historical costs has already been submitted in TRAI as part of annual reporting of Accounting Separation services.

6. Justification as to why the model proposed by you should be used for determination of Interconnection Usage Charges for voice calls, SMSs and any other value added services.

a. We recommend BAK regime for India as it is expected to maximise economic welfare in India through lower prices and higher calling volumes per subscriber than with existing arrangements. It is expected to stimulates mobile take up among the rural and poorer segments of Indian society through lower prices. It will Eliminates the risks of legal challenge since termination charges are set to zero. It will also provide a much simpler and more future proofed form of interconnect than the existing regime and will makes interconnect charging much simpler, and will remove barriers to developments.

b. The justification and advantages of BAK regime is given below:

Bill and Keep regime will remove the floor on the retail prices and will reduce retail prices.

c. Prices tend to be significantly higher in countries where there are high MTCs than in countries where MTCs are close to zero. The usage on the other hand is higher in countries with BAK arrangements, The figure below shows the main results for the variables usage and price and the difference in output between the US and Europe is considerable. In US the usage is about three times higher than the European average indicating a welfare gain for consumers. Singapore and Hong Kong have lower usage than the US but still more than twice the European average.

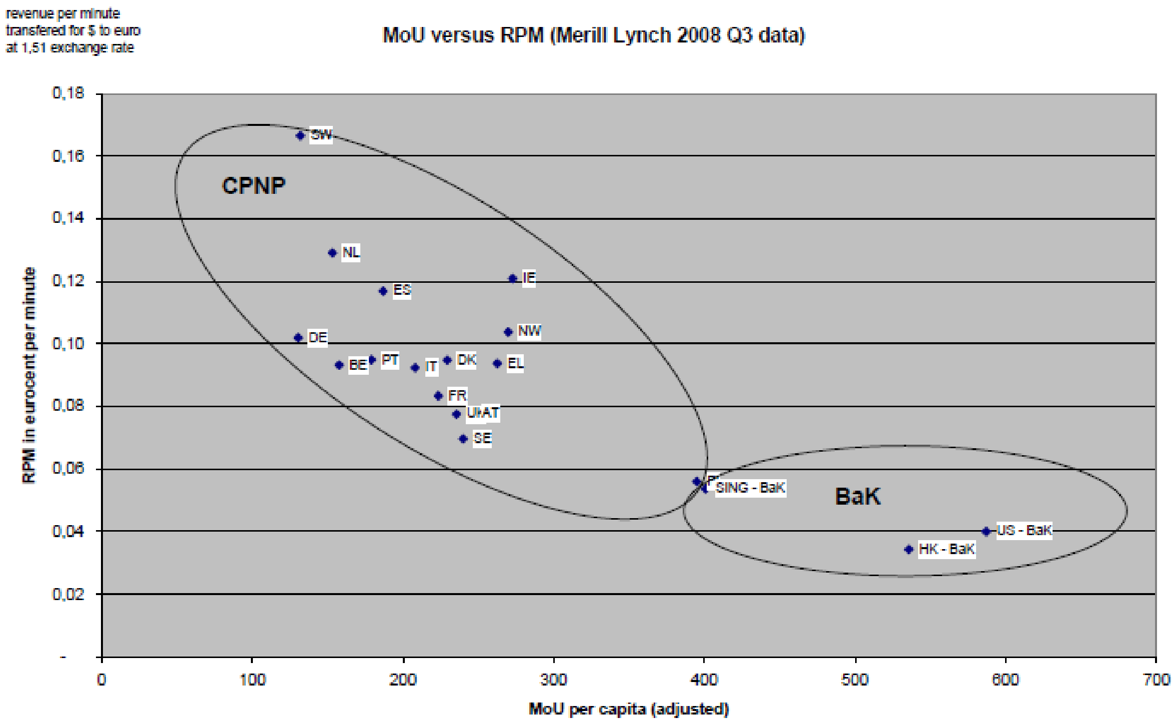

Figure 5: MOUs Vs Revenue per Minute in CPP & BaK regimes per subscriber

(**Source :** ERG DRAFT Common Position on Next Generation Networks Future Charging Mechanisms / Long Term Termination Issues, October, 2009)

Moving cost-recovery to competitive markets

d. BAK means that operators would have to cover the net cost of providing termination from their own retail users and would not be able to transfer to their competitors. If a service provider has to bill termination cost to its own end-users in a competitive market he has no incentive to charge excessive prices to his customers, because he may risk losing them.

e. A regulator, on the other hand, faces information problems regarding the determination of the regulated price. Not all information necessary for setting the efficient price is available for the regulator who is dependent on operators that do not have incentives to provide the correct information. Apart from the latter, without the competitive pressure on prices, operators themselves will also not have all information: the full information will only arise from the competitive process in which prices are set, demand adjusts and prices are set again as an continuous process.

Removal of competition distortions

f. The termination charges of CPP regime distorts competition and harms consumers . In previous submissions to the TRAI we had submitted that the current system of termination rates which are very high wnen compared to the retail prices in Europe distorts competition.

In particular, high termination rates:

- provide incentives to strategic and inefficient pricing at the retail level by large operators to the detriment of small operators (on-net/ off-net price discrimination);
- lead to significant financial transfers from small to large operators or costs from larger operators to smaller operators;
- distort competition between large and small mobile operators;
- distort convergence between telecommunications and the internet;
- delay the introduction of new services and distort tariff innovation; and
- keep retail prices high.
- Does not permit introduction of innovative tariffs based on flat rates.

g. High termination charges prevent the emergence of flat rate access pricing. The existence of high per minute termination charges means that there is a cost involves in offering flat rate access tariffs. This cost is eliminated by BAK, thus making it easier for operators to offer flat rate access tariffs and large bundles of minutes.

h. Termination charges tend to set a “floor” on call prices. The removal of a floor to prices and the ability to offer flat rate tariffs mean that average prices for making calls are likely to fall following a move to BAK. This will lead to higher average usage. Comparisons with countries that have low or no termination charges show that those countries have lower average retail prices and higher average usage of mobile phones. The BAK in Hong Kong is that it has resulted in low retail prices for mobile services and high usage.

Bill and Keep will remove competition advantage for incumbents sue to on-net and off-net rates

i. Mobile network operators are able to offer low prices for on-net calls particularly for larger business contracts which have a high proportion of on-net calls and for which retail prices are even lower can than the termination charges. This occurs even though an on-net call makes twice as much use of network facilities as a terminating call, providing a strong indicator that termination rates are currently greatly in excess of the true cost of completing calls.

j. This has made it difficult for new mobile operators to compete and gain scale. This will remain a problem as long as there is a material difference between the regulated price for termination and the true cost .

Current Termination Charges are Not Sustainable

k. Current level of Termination charges for voice calls will not sustainable as with these calls will soon have to compete with direct substitutes from internet services which do not have corresponding charges. Customers are likely to migrate to the service with the lower prices when services being perfectly substitutable.

l. Telecoms services such as voice and SMS typically have incremental charges. With convergence they will compete directly with substitutes like VoIP and instant messaging. Those services are incrementally free and if in these scenario telecoms operators continue to maintain incremental charges for voice and SMS then they will face a migration of their traffic and revenues to the incrementally free internet substitutes.

m. The only way to prevent this is to provide level playing field to the telecom services by shifting to the BAK regime.

BaK does not impact prices and profit.

n. The current CPP regime distorts competition in favour of large operators by enabling them to sustain on-net/ off-net price differentials that harm smaller operators and lead to traffic imbalances. Large operators offer on-net calls at rates which are much cheaper rates compared to the off-net call rates. Even if new operators offer matching tariffs on on-net calls but such products are unlikely to appeal consumers as thse operators have significantly smaller subscriber base. Moving from high termination rates to BAK would remove a barrier to entry and expansion for small and late entrant operators. Moving to BAK would, therefore, enable the new entrants to compete better against large incumbent operators.

o. Termination charges are wholesale payments between operators. Reducing or eliminating termination payments does not imply an equivalent impact on profit because there is a loss in revenue but also a reduction in costs. Overall, within the whole telecommunications system, net termination payments sum to zero. Smaller, new entrant operators typically suffer a traffic imbalance and, therefore, will be net beneficiaries from BAK. However, the main benefit is the removal of competition distortions, which will mean that small operators can compete with the large incumbents on an equal footing.

Regulatory certainty through BaK

p. BAK will reduce regulatory costs for all parties and reduce regulatory uncertainty, by removing regulatory intervention imposed around future costs and revenues. Although the TRAI had been consistently following the same methodology to determine termination charges but frequent challenge from old large mobile operators in various courts of law and huge exercise followed by TRAI in every consultation to re-determine the appropriate costing methodologies give rise to uncertainty. BAK goes further to reduce uncertainty by removing debates about the cost of termination altogether.

q. For all of these reasons, consumers will benefit from a move to BAK and overall economic welfare will be enhanced. We suggest that the TRAI should prescribe zero termination rates i.e BAK as the interconnection arrangement. BAK satisfies the recent economic studies which, as noted above, have concluded that welfare maximizing termination rates are likely to be below cost. It also removes the competition distortions between mobile operators and between fixed and mobile operators. Equally important,

BAK is consistent with cost causation principle

r. The TRAI Interconnection Regulation of 2001 sets principle for deciding Interconnection usage charges on the basis of cost. This requires that "The party which causes the cost should bear the cost ". Applying this principle it is assumed under CPP regime that since the caller makes the call, the caller causes the cost and should bear the full cost of the call. This then leads to a calling party pays system in which the originating network pays the terminating network a cost based termination charge.

s. However, in reality the vast majority of telephone calls benefit both the calling and called parties. The object of the call is communication, and as long as both parties are willing to engage in that communication, both parties receive a benefit. Friends and family benefit from calls to each other regardless of which person originated the call. Therefore both parties cause the cost. Information exchanged in calls between consumers and businesses benefits both parties. Therefore, cost of every call should be borne by both the parties.

India is best placed to embrace Bill and Keep

t. ITU GSR 2007, Discussion Paper on NGN Interconnection and Access prepared it has been brought out that for India it would be much easier transition from the CPP regime to the BAK regime[8]. The relevant extracts from the paper are reproduced below for reference:

"*In the nearer term, CPNP systems with much lower termination fees than those typical today might represent a promising interim step. Experience in India suggests that CPNP arrangements with mobile termination fees less than 0.01 USD per minute can be compatible with both high usage and rapid adoption. By reducing the spread between CPNP and Bill and Keep, the regulator also greatly reduces the pain associated with a subsequent transition to Bill and Keep arrangements should such a transition prove necessary."(Page 53)*

Internationally Regulators are supporting B&K

u. The European Parliament has established the Body of European Regulators for Electronic Communications (BEREC). This body comprises of all National Regulatory Authorities of EU and exchange expertise and best practice and gave opinions on the functioning of the telecoms market. This body has also initiated a consultation process to decide a common position on " Next Generation Networks Future Changing Mechanism/Long Term Termination Issues". The paper concludes that BAK is an alternative to CPP regime in the converged regimes. The relevant portion of the paper is reproduced below:

"Therefore, BaK is more promising than CPNP as a regulatory regime for termination for the long term and based on national circumstances (including legal issues) NRAs could set a glide path to BaK within the regulatory period related to the next market analysis they carry out for voice termination........."

[8] ITU GSR Discussion Paper 2007 – NGN Interconnection and Access