

## **TRAI Consultation Paper on Review of Interconnection Usage Charges** **Uninor responses to Issues for Consultation**

### **Executive Summary:**

1. An effective IUC regime should promote the growth of telecom services in India in such a way that rollout of networks are encouraged, distortion of competition is minimized, and consumers are provided with good quality services at affordable rates.
2. Mobile termination rates are applicable for calls between individual mobile networks. They are typically regulated, at cost, because otherwise the net terminating operator has the incentive to ask for excessive prices from the net originating operator.
3. Mobile termination rates do not apply for calls within an operator's own network, but the utilization of the network is the same. Hence, in terms of cost there is no difference between terminating an on-net call and terminating an off-net call.
4. The mobile termination rate should provide an effective floor for retail pricing of off-net calls as no operator has the incentive to set retail prices below this level. Operators claim that this does not apply to on-net calls and has led to the widespread commercial practice of offering discounts on on-net calls compared to off-net calls.
5. In India these discounts are substantial with retail prices for on-net calls set far lower than retail rates possible for off-net calls. So far, no competitive safeguards (e.g. margin squeeze tests) have been established to prevent this from happening.
6. Hence, this is an example of predatory pricing whereby larger operators utilize their dominant market position to discriminate smaller operators by making them subsidize on-net calls.
7. This leads to the obvious conclusion, that mobile termination rates currently are priced well beyond actual costs. Otherwise these operators would effectively be operating at a loss.
8. Still we observe larger operators consistently arguing for higher mobile termination rates. Such a development will increase the current distortion of competition and discourage further network investments – all to the detriment of the average Indian consumer.
9. The most effective measure to overcome on-net / off-net discrimination and the subsequent issue of predatory pricing is to ensure mobile termination rates are set to cover only relevant costs.
10. In order to ensure this, Uninor believes that regulated prices for wholesale products and services should be set at levels reflecting the forward looking marginal cost of providing the product or service. This implies the use of a Long Run Incremental Cost (LRIC) methodology which is also the standard in most developed markets and as such regarded as international best practice.

# Uninor

11. With respect to setting regulated prices for mobile termination, Uninor favors a cost based approach based on the 'Avoidable Costs' concept as recommended by the European Commission<sup>1</sup>. This approach applies the Pure LRIC methodology and ensures operators are compensated for their marginal traffic related costs of terminating off-net calls in their network. The methodology is currently being implemented across the European Union<sup>2</sup>, typically resulting in 80% or more reduction in mobile termination rates as per a glide path over the next few years<sup>3</sup>.
12. Similarly, other relevant wholesale services between operators should be regulated based on the principles of the LRIC methodology. These services include inter alia SMS termination, where TRAI recently intervened to prevent predatory pricing by some dominant operators in a case similar to that for mobile termination.
13. In addition, competitive safeguards should be established in order to monitor the future development of the market, to prevent any dominant operators from utilizing their market positions at the expense of the smaller operators, and from compromising the interests of the Indian consumer.
14. Uninor does not however, support the implementation of a Bill & Keep regime either for mobile or SMS termination, since such pricing principle could hamper Quality of Service and place an un-compensated investment burden on new operators. Termination services have a cost, and operators should be compensated for that cost.

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<sup>1</sup> See: *The Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* of 07.05.2009 attached with this submission. Also available at:

[http://ec.europa.eu/governance/impact/ia\\_carried\\_out/docs/ia\\_2009/c\\_2009\\_3359\\_en.pdf](http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf)

<sup>2</sup> The Telecom regulators in the UK, Netherlands and Belgium have decided to implement a glide path to bring down termination rates to the Pure LRIC level. The links to the statements, announcing the policy, by the respective regulators are provided below:

- UK decision: <http://stakeholders.ofcom.org.uk/consultations/mtr/statement>
- Netherland decision: <http://www.opta.nl/en/news/all-publications/publication/?id=3271>
- Belgium decision (in French and Dutch): <http://www.bipt.be/en/1/Home/Home/Home.aspx>.

In addition to the above, the Swedish Regulator has recently issued a draft decision to push down termination rates to the Pure LRIC level by 1<sup>st</sup> Jan. 2013. In Denmark, the calculation process to estimate Pure LRIC rates is about to start shortly.

<sup>3</sup> Examples of glide paths that have been adopted for mobile termination rates by using the Pure LRIC approach:

- UK: Mobile termination rate will fall from **4.18** ppm (pence per minute) in 2010/11 to **0.69** ppm by 1 April 2014 (in 2008/9 prices). (*Reference : Footnote No.2 above*)
- Netherlands: Mobile Termination rate will from **5.6** euro cent in 1<sup>st</sup> Sept. 2010 to **1.2** euro cent by 1<sup>st</sup> Sept.2012 (*Reference : Footnote No.2 above*)

## **Responses to specific questions on Issues for Consultation raised by TRAI:**

1. **Do you agree that the IUC regime determined through this consultative process should be applicable for 3 years? If not please indicate your preferred time period with justification.**

A time frame of 3 years is an appropriate interval to have a periodic review of the IUC regime. This will provide the industry with a stable and predictable environment under which network investments and service roll out can be planned.

Additionally, given the downward trend in mobile termination rates due to falling equipment prices, more efficient network deployments, sharing of infrastructure, potential sharing of spectrum and increased utilization of networks driven by higher penetration, a possible downward glide path in termination rates, till the next review, should be considered.

We believe that the above mentioned cost benefits from optimal utilization of spectrum and infrastructure resources should be one of the major objectives of the forthcoming National Telecom Policy, 2011.

2. **Keeping in view the time period indicated by you in question 1, which of the following approaches would be most appropriate for the Indian telecom sector?**

**(a) Cost oriented or cost based;**

**(b) Bill and Keep;**

**Please provide justification in support of your answer. In case you feel that the approach should vary according to service, please explain why?**

**Uninor favors a cost-based approach based on the 'Avoidable Costs / Pure LRIC concept' such that current distortion between wholesale and retail prices for mobile services is eliminated.**

A fair cost oriented approach promotes efficiency and quality of service by ensuring that service providers are adequately compensated for handling incremental traffic terminating into their network from other operators.

However, only the relevant marginal costs that are required for terminating the traffic between service providers should be taken into account. No service provider should be able to unduly transfer its network costs to other operators.

Uninor favors a cost based approach based on the Avoidable costs / Pure LRIC concept as recommended by the European Commission<sup>4</sup>. This approach ensures operators are compensated for their marginal traffic related costs of terminating off-net calls in their network. It is currently being implemented across the European Union (as detailed in footnote no. 2).

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<sup>4</sup> See: *The Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* of 07.05.2009 attached with this submission. Also available at:

[http://ec.europa.eu/governance/impact/ia\\_carried\\_out/docs/ia\\_2009/c\\_2009\\_3359\\_en.pdf](http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf)

Currently, there are numerous examples of dominant operators offering tariff plans of 10 paisa per minute on on-net calls when the current termination rate is 20 paisa. **This is clear evidence that the termination rate is far above the relevant marginal costs for the dominant operators.**

Given the nature of the Indian telecom market and the vast difference in the size of various mobile operators, it is extremely important that adequate safeguards are put in place, so that dominant operators who are net receivers of wholesale termination charges, are not able to use these funds to cross-subsidize tariffs on calls made internally within their own vast set of subscribers.

In a competitive market, the new operators are forced to match these instances of predatory pricing despite having a higher cost base, thus resulting in a margin squeeze. Such distortions can be eliminated by ensuring that the mobile termination rate only covers marginal costs – which can be approximated by the use of avoidable cost calculations.

Therefore, Uninor favors a cost-based approach, based on the 'Avoidable Cost' concept to estimate mobile termination charges. Such calculations, if carried out correctly, results in mobile termination rates close to marginal cost, and then the opportunity for cross-subsidization, predatory pricing and anti-competitive behavior is removed. On the other hand, if termination rates remain high and above cost, dominant players will continue their anti-competitive behavior i.e. cross-subsidize wholesale revenue to engage in predatory pricing at the retail level and put a margin squeeze on new operators.

**Uninor does not favor a Bill-and-Keep (BaK) mechanism as this could hamper Quality-of-Service and place un-compensated investment burden on new operators, under current market structure.**

In market conditions where there is a substantial traffic imbalance between operators, under a BaK mechanism the large service providers will not have any incentive to ensure quality of service on calls terminating from other operators (especially the newer, smaller ones) as they are not adequately compensated for the use of resources. Therefore, there could be instances where the smaller operators would face congestion on points of inter connect with other operators.

The principle of reciprocity can only work between similar sized operators. This is not the situation in India today.

**3. In case your answer to question 2 above favours the cost oriented approach, would it be appropriate to permit Bill and Keep between service providers who have symmetric traffic?**

In Uninor's opinion, it would not be appropriate to permit Bill and Keep between service providers who have symmetric traffic. Symmetric traffic will typically be between well established dominant players, whereas newcomers typically have imbalances. Thus, if the regulatory regime allows for Bill and Keep between operators with symmetric traffic, then the ability of established players to place newcomers in a price squeeze will be reinforced.

**4. If the cost-oriented or cost based approach is used for Interconnection Usage Charges, do you agree that fully allocated cost can be used with historical cost data submitted by various service providers in their audited Accounting Separation reports, published documents or any other information submitted to TRAI? If not, please give your alternate solution with explanation, required data and proper justification.**

While TRAI has in the past applied the Fully Allocated Cost (FAC) principle based on historical costs to calculate IUC charges, it would not be the appropriate method under the current Indian market conditions where some operators have made investments over many years, and there are others who have rolled out their networks in the last year or two.

Though the FAC approach with historical costs has the advantage of using audited figures from the industry (ASR data) on which to determine costs involved in utilizing various network resources, this approach also incorporates the effect of historical cost structures and past levels of operating expenditure. Additionally, if Capex is taken into account then investment decisions made in the past also have a bearing on the final estimates of IUC.

The Indian mobile industry is seeing constantly evolving cost structures and substantial reductions in expenses have been achieved through moves such as passive infrastructure sharing and outsourcing of Network Managed Services and IT Services.

In our view, a forward looking, bottom-up Pure LRIC method based on the 'Avoidable Costs' approach is best suited to estimate mobile termination charges and is in line with international best practices. This approach has also been recommended by the European Commission and is being adopted in various countries in Europe. *(Please refer to footnote nos. 1 and 2)*

A bottom-up approach toward estimating mobile termination costs involves estimating the cost of a hypothetical, efficient operator in steady state market conditions.

- The "hypothetical" condition implies that the cost being estimated will most closely represent the mean/average market share and traffic profile of a particular market and nullify the effect of difference in scale between various operators.
- The "efficient" condition ensures that network design parameters and network cost structure used to estimate costs are those that taken into account the most optimum design and technology choices and also incorporate the latest cost structures based on infrastructure sharing practices and current equipment costs. Thus, the effect of outdated technologies and cost structures is eliminated.

The pure LRIC costing model is a translation of the concept of "Avoidable Costs" as recommended by the European Commission. We quote from the European Commission's recommendation<sup>5</sup> below:

*"Avoidable costs are the difference between the identified total long-run costs of an operator providing its full range of services and the identified total long-run costs of that operator providing its full range of services except for the wholesale call termination service supplied to third parties (i.e. stand-alone cost of an operator not offering termination to third parties). To ensure an appropriate attribution of the costs, a distinction needs*

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<sup>5</sup> See: Page 5, Point 14 of *The Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* of 07.05.2009 attached with this submission. Also available at:

[http://ec.europa.eu/governance/impact/ia\\_carried\\_out/docs/ia\\_2009/c\\_2009\\_3359\\_en.pdf](http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf)

*to be made between those costs that are traffic-related, i.e. all those fixed and variable costs which rise with increased levels of traffic, and those costs that are non-traffic-related, i.e. all those costs which do not rise with increased levels of traffic. To identify the avoidable costs relevant for wholesale call termination, non-traffic-related costs should be disregarded. Then, it may be appropriate to attribute traffic-related costs firstly to other services (e.g. call origination, SMS, MMS, broadband, leased lines, etc.) with wholesale voice call termination being the final service to be taken into account. The cost allocated to the wholesale call termination service should thus be equal only to the additional cost incurred to provide the service. As a consequence, **cost accounting based on LRIC approach for wholesale call termination services in fixed and mobile markets should allow the recovery only of costs which would be avoided if a wholesale call termination service was no longer provided to third parties** (emphasis provided)."*

Applying the Avoidable Costs / Pure LRIC method ensures that only the cost related to providing additional network capacity to handle the incoming interconnecting traffic is taken into account when estimating the termination cost. In other words, if there was no interconnection, then this is the only cost that the terminating operator would have been able to avoid.

An Avoidable Costs / Pure LRIC calculation can be carried out by running the LRIC model twice. The first time all services are included and the second time the terminated volume is excluded. The difference in costs is the costs avoided if the termination service was to be removed.

To ensure that the assumptions taken for the hypothetical operator reflect actual current industry costs, the model and the unit costs can be reconciled with actual operator unit costs from the audited statements available for various operators. (Hybrid approach)

**5. Should CAPEX be included in calculating/ estimating termination charge? If so, which network elements from the ASR data should be included in the cost base?**

The Avoidable Costs / Pure LRIC methodology ensures that only the relevant pro-rated cost of those network elements, which are utilized to handle additional terminating traffic from other operators, are taken into account

Given that the above approach is used to estimate termination costs, only the relevant Capex and Opex will be taken into account. The bottom-up LRIC model incorporates routing tables to allocate individual network elements to various services via which prorated network capex and operating expenditure can be allocated towards determining termination costs.

**6. Do you agree that with inclusion of CAPEX in the calculation of termination charges, rental/ administrative or any other fixed charge component should be removed from the retail tariff by regulatory intervention? If not, please give reasons.**

No, the rental/administrative and any other fixed charge components form a part of the tariff plan and are intended to be recovered from the service provider's own customers.

Using the avoidable cost approach only the relevant Capex for work done/ network resources utilized for terminating additional traffic from other operators is recovered as part of the mobile termination charge.

**7. Should TRAI continue with the existing rate of return of around 15% in the form of pre tax WACC as adopted in other regulations? If you do not agree with the above, please state what should be the rate of pretax WACC, along with justification for your proposed rate.**

WACC should be determined in accordance with international best practices.

**8. Would it be appropriate to adopt Straight Line Method with an average life of 10 years for all network elements for taking into account depreciation? If you do not agree with this proposal, please give your alternative method with justification.**

The straight line depreciation method is developed for accounting purposes and it does not take all economically relevant factors into account. Thus, Uninor does not consider the straight line depreciation method as appropriate.

Ideally one should go for estimating economic depreciation, i.e. the true alternative cost of holding one unit of capital for one year. However, such a measure is hard to implement and will be based on a number of assumptions related to unobservable factors. Uninor considers **tilted annuities** as a pragmatic and reasonable approximation to economic depreciation.

**9. Do you agree with the proposal for treatment of the cost items as indicated in Table 3.2? If not, please give your proposal with justification.**

Table 3.2 is reproduced below

| Cost Item   | Treatment  | Uninor Comments   |
|---|--|---|
| License fee and spectrum charges                          | Proposed to be included proportionately for termination charge | Only included to the degree that such costs are avoidable*                                  |
| Employee cost   | Proposed to be included  | Only included to the degree that such costs are avoidable*                                  |
| Administration cost                                       | Proposed to be included  | Only included to the degree that such costs are avoidable*                                  |
| Sales & Marketing   | Proposed to be NOT included                                    | Should NOT be included as per Avoidable cost principles                                     |
| Maintenance cost  | Proposed to be included  | Only included to the degree that such costs are avoidable*                                  |
| Network Operating Cost                                    | Proposed to be included  | ONLY the avoidable cost should be included*   |
| Other Cost (excluding loss on sales of fixed asset (net)) | Proposed to be included  | Should not be included unless the costs are directly related to termination, i.e. avoidable |

\*As per the concept of 'Avoidable Costs', only those network operating expenses should be taken into account that rise with increased levels of traffic due to the additional terminating calls from other operators. Any non-traffic sensitive costs, even if they are part of network operating expenses, should not be included.

Therefore any coverage-related Network Opex (i.e. operating expenditure of telecom sites which were rolled out by an operator to expand its network coverage and reach out to additional customers) should not be treated as an avoidable cost and should therefore not be allocated in any form toward estimating termination charges.

In this specific regard, we further quote from the European Commission recommendations on "Avoidable Costs" Concept<sup>6</sup>:

*"Coverage can be best described as the capability or option to make a single call from any point in the network at a point in time, and capacity represents the additional network costs which are necessary to carry increasing levels of traffic. The need to provide such coverage to subscribers will cause non-traffic-related costs to be incurred which should not be attributed to the wholesale call termination increment."*

- 10. Do you agree that revenue can be used as a driver for segregating the cost pertaining to VAS services from the total cost indicated in the ASRs? If not, please provide a template with appropriate method for separating the cost items for value added services from the cost data provided in the ASR.**

VAS should be included as a separate product in the LRIC calculation, should regulated prices for such products be required.

- 11. Should termination charges be asymmetric in respect of existing operators and new entrants or between different types of networks? What should be the criteria to distinguish between an existing operator and a new entrant? Please justify your answer.**

Taking into account the complexity created by asymmetric rates, Uninor considers that, provided the 'Avoidable Costs' / Pure LRIC approach is used to determine termination rates, a single symmetric termination rate that approximates marginal costs is appropriate.

- 12. Should the TRAI treat the work done in origination and termination of a call as identical for the purpose of determining termination charges? If not, please provide justification in support of your answer.**

Work done in call origination and call termination should not be taken as identical. Call origination costs more than call termination since, in addition to network resources that are utilized, work done in call origination also includes costs related to metering/billing of calls, Customer Relationship Management (CRM) activities, and sales/distribution efforts made at the time of customer acquisition, bad debt, etc. These costs involve substantial operating expenses and sizeable investments in Capex which have to be recovered.

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<sup>6</sup> See: Page 11 of *The Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* of 07.05.2009 attached with this submission. Also available at:

[http://ec.europa.eu/governance/impact/ia\\_carried\\_out/docs/ia\\_2009/c\\_2009\\_3359\\_en.pdf](http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf)



Call termination, on the other hand only involves work done by network resources in completing the call.

- 13. What should be the criteria to estimate the traffic minutes for the fixed line network as actual traffic minutes for the fixed network are not available with TRAI? Please provide justification in support of your answer.**

The average call duration of the fixed line operators in terms of minutes multiplied by average number of calls could help estimate the fixed line traffic minutes.

- 14. Do you agree with the policy that origination charge should be under forbearance? Please provide justification in support of your view.**

Yes, forbearance in origination charges gives operators the flexibility in designing their tariff plans to provide innovative options to the consumers

But, the authority should look at the on-net retail tariffs being provided by dominant operators which are lower than the wholesale termination charge. This is a clear instance of cross-subsidizing on-net retail prices through wholesale off-net charges.

Termination charges calculated on the basis of the pure LRIC model will result in termination rates which are close to marginal cost and the opportunity for cross-subsidization, predatory pricing and anti-competitive behavior will be removed.

- 15. Which of the following is the best option for International Termination Charge?**

- (a) Left for mutual negotiation between access providers and ILDO**
- (b) Reciprocal arrangements with other countries**
- (c) Higher than the domestic termination charge**
- (d) Same as domestic termination charge**

International call termination charge should be closer to domestic termination charge to prevent arbitrage and emergence of a grey market.

- 16. Is there a need to specify separate ceilings for carriage charges for remote and hilly areas? If yes, how should the costs corresponding to remote/ hilly areas be segregated for carriage charges to/ from remote/ hilly areas, as the Accounting Separation Reports of the NLD operators provide only a consolidated cost for pan India operations?**

In view of the accounting difficulties this is not necessary. However, infrastructure development in remote/hilly areas and its sharing should be incentivized through the USO fund.

- 17. Do you feel that TRAI should intervene in the matter of International Settlement Rates? If so, what should be the basis to determine International Settlement Rates?**

International settlement rates are a complex exercise covering both commercial and technical aspects – which vary according to the time and situation. Factors include route wise demand / quality / termination-type /

time zones / peak and non-peak hours / routing, etc. There are a large number of time dependant arbitrage opportunities. Hence, a market based mechanism is best suited for determining the international settlement rates.

**18. How can the cost of providing transit carriage be segregated from the cost data in the ASR? Please provide a method and costing details to separately calculate this charge.**

Cost of providing transit should be based on the LRIC model and not based on the cost data in ASR.

**19. If the cost of all relevant network elements are taken into account in the calculation of the fixed line termination charge, is there any further justification to have a separate transit carriage charge? Please give reasons for your answer.**

There is no justification to have a separate transit carriage charge.

**20. Is there a need to regulate the TAX transit charges or should it be left for mutual negotiations? In the event transit charge is to be regulated, please provide complete data and methodology to calculate TAX transit charges.**

Tax transit charge applies to routing of overflow traffic between two mobile networks using L1-Tax of BSNL. Currently, these charges are regulated with a ceiling of 15 paisa, which should be reviewed to reflect the fall in the network equipment cost.

In addition, TRAI should intervene in cases of lack of augmentation of the 'interconnects' by operators, and the defaulting mobile operators should be penalized. The relevant data is provided to TRAI every month by all mobile operators

**21. Is there any need to prescribe separate termination charges/ carriage charges for video calls? If yes, how should this charge be calculated in the absence of cost data? Please provide the methodology and data to be used.**

No Comments

**22. Do you agree that a deterrent termination charge should be imposed for commercial SMS? In your view, what would be the most appropriate level of termination charge for commercial SMS?**

The signaling paths of the recipient networks are relatively more loaded because of flow of commercial SMS. Therefore, a deterrent termination charge will on one hand discourage the flow, and on the other hand will compensate the operator for the required upgrade of the network resources.

**23. Do you agree that Bill and Keep regime should be put in place for other types of SMS (non-commercial SMS)? Please provide justification for your response.**

We favor a finite, cost-based, regulated termination charge for non-commercial and P2P SMS. This would act as an additional safeguard against spam messages, whereas a Bill-and-Keep mechanism would not encourage the receiver network to provide assured QoS.

In addition, the SMS termination charge should only be applicable on successful delivery. This issue is unique to SMS and does not arise in the case of voice calls.

SMS is growing into a powerful and quick means of communication with government and service agencies for various kinds of transactional messages. A finite, non-discriminatory cost based charge will ensure both QoS and also encourage usage.

**24. Is there any need to prescribe SMS carriage charges or should it be left for mutual negotiation? If SMS carriage charges are to be calculated, what methodology should be used to calculate these charges? Please provide all cost details and methodology.**

Yes, there is a need to prescribe SMS carriage charges which the NLDO/ILDO will charge as there are many routing possibilities. It should be cost based for the most optimum route. At which point signaling messages are to be exchanged, also needs to be defined.

**25. Do you agree that with the inclusion of all costs in the calculation of Interconnection Usage Charges, the item “incremental cost for roaming services” should be excluded from the computation of tariff ceiling for national roaming? If not, please give reasons.**

As per the avoidable costs concept, only the relevant marginal cost for providing interconnection should be included in estimating IUC charges.

Roaming is a separate product and cost of providing that product can be calculated independently of IUC calculation using the same principles.

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COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 7.5.2009  
C(2009) 3359 final

**COMMISSION RECOMMENDATION**

**of 7.5.2009**

**on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU**

## COMMISSION RECOMMENDATION

of 7.5.2009

### on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)<sup>1</sup> and in particular Article 19(1) thereof,

After consulting the Communications Committee,

Whereas:

- (1) According to Article 8(3) of Directive 2002/21/EC, National Regulatory Authorities (NRAs) shall contribute to the development of the internal market *inter alia* by cooperating with each other and with the Commission in a transparent manner to ensure the development of consistent regulatory practice. However, during the assessment of more than 850 draft measures notified under Article 7 of Directive 2002/21/EC it appeared that inconsistencies in the regulation of voice call termination rates still exist.
- (2) Although some form of cost orientation is generally provided for in most Member States, a divergence between price control measures prevails across the Member States. In addition to a significant variety in the chosen costing tools, there are also different practices in implementing those tools. This widens the spread between wholesale termination rates applied across the European Union, which can only be partly explained by national specificities. The European Regulators Group (ERG) established by Commission Decision 2002/627/EC<sup>2</sup> recognised this in its Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates. NRAs have also, in a number of cases, authorised higher termination rates for smaller fixed or mobile operators on the grounds that these operators are new entrants into the market and have not benefited from economies of scale and/or are subject to differing cost conditions. These asymmetries exist both within and across national boundaries, although they are slowly decreasing. The ERG recognised in its Common Position that termination rates should normally be symmetric and asymmetry requires an adequate justification.

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<sup>1</sup> OJ L 108, 24.4.2002, p. 33. Directive as amended by Regulation (EC) No 717/2007 (OJ L 171, 29.6.2007, p. 32).

<sup>2</sup> OJ L 200, 30.7.2002. Decision as last amended by Decision 2007/804/EC. (OJ L 323, 8.12.2007, p. 43).

- (3) Significant divergences in the regulatory treatment of fixed and mobile termination rates create fundamental competitive distortions. Termination markets represent a situation of two-way access where both interconnecting operators are presumed to benefit from the arrangement but, as these operators are also in competition with each other for subscribers, termination rates can have important strategic and competitive implications. Where termination rates are set above efficient costs, this creates substantial transfers between fixed and mobile markets and consumers. In addition, in markets where operators have asymmetric market shares, this can result in significant payments from smaller to larger competitors. Furthermore, the absolute level of mobile termination rates remains high in a number of Member States compared to those applied in a number of countries outside of the European Union, and also compared to fixed termination rates generally, thus continuing to translate into high, albeit decreasing, prices for end-consumers. High termination rates tend to lead to high retail prices for originating calls and correspondingly lower usage rates, thus decreasing consumer welfare.
- (4) The lack of harmonisation in the application of cost-accounting principles to termination markets to-date demonstrates a need for a common approach which will provide greater legal certainty and the right incentives for potential investors, and reduce the regulatory burden on existing operators that are currently active in several Member States. The objective of coherent regulation in termination markets is clear and recognised by the NRAs and has been repeatedly expressed by the Commission in the context of its assessment of draft measures under Article 7 of Directive 2002/21/EC.
- (5) Certain provisions of the regulatory framework for electronic communications networks and services require necessary and appropriate cost-accounting mechanisms and price control obligations to be implemented, namely Articles 9, 11 and 13 in conjunction with Recital 20 of Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)<sup>3</sup>.
- (6) Commission Recommendation 2005/698/EC of 19 September 2005 on accounting separation and cost accounting under the regulatory framework for electronic communications<sup>4</sup> has provided a framework for the consistent application of the specific provisions concerning cost accounting and accounting separation, with a view to improving the transparency of regulatory accounting systems, methodologies, auditing and reporting processes to the benefit of all parties involved.
- (7) Wholesale voice call termination is the service required in order to terminate calls to called locations (in fixed networks) or subscribers (in mobile networks). The charging system in the EU is based on Calling Party Network Pays, which means that the termination charge is set by the called network and paid by the calling network. The called party is not billed for this service and generally has no incentive to respond to the termination price set by its network provider. In this context, excessive pricing is the main competition concern of regulatory authorities. High termination prices are ultimately recovered through higher call charges for end users. Taking into account the

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<sup>3</sup> OJ L 108, 24.4.2002, p. 7.

<sup>4</sup> OJ L 266, 11.1.2005, p. 64.

two-way access nature of termination markets, further potential competition problems include cross-subsidisation between operators. These potential competition problems are common to both fixed and mobile termination markets. Therefore, in the light of the ability and incentives of terminating operators to raise prices substantially above cost, cost orientation is considered the most appropriate intervention to address this concern over the medium term. Recital 20 of Directive 2002/19/EC notes that the method of cost recovery should be appropriate to the particular circumstances. In view of the specific characteristics of call termination markets and the associated competitive and distributional concerns, the Commission has for a long time recognised that setting a common approach based on an efficient cost standard and the application of symmetrical termination rates would promote efficiency, sustainable competition and maximise consumer benefits in terms of price and service offerings.

- (8) According to Article 8(1) of Directive 2002/21/EC, Member States shall ensure that when carrying out the regulatory tasks specified in that Directive and the specific directives, in particular those designed to ensure effective competition, NRAs take the utmost account of the desirability of making regulations technologically neutral. Article 8(2) of Directive 2002/21/EC further requires NRAs to promote competition by, amongst other things, ensuring that all users derive maximum benefit in terms of choice, price and quality of service and that there is no distortion or restriction of competition. In order to achieve these objectives and a consistent application in all Member States, the regulated termination rates should be brought down to the costs of an efficient operator as soon as possible.
- (9) In a competitive environment, operators would compete on the basis of current costs and would not be compensated for costs which have been incurred through inefficiencies. Historic cost figures therefore need to be adjusted into current cost figures to reflect the costs of an efficient operator employing modern technology.
- (10) Operators which are compensated for actual costs incurred for termination have few incentives to increase efficiency. The implementation of a bottom-up model is consistent with the concept of developing a network for an efficient operator whereby an economic/engineering model of an efficient network is constructed using current costs. It reflects the equipment quantity needed rather than that actually provided and it ignores legacy costs.
- (11) Given the fact that a bottom-up model is based largely on derived data, e.g. network costs are computed using information from equipment vendors, regulators may wish to reconcile the results of a bottom-up model with the results of a top-down model in order to produce as robust results as possible and to avoid large discrepancies in operating cost, capital cost and cost allocation between a hypothetical and a real operator. In order to identify and improve possible shortcomings of the bottom-up model, such as information asymmetry, the NRA may compare the results of the bottom-up modelling approach with those resulting from a corresponding top-down model which uses audited data.
- (12) The cost model should be based on the efficient technological choices available in the timeframe considered by the model, to the extent that they can be identified. Hence, a bottom-up model built today could in principle assume that the core network for fixed networks is Next-Generation-Network (NGN)-based. The bottom-up model for mobile networks should be based on a combination of 2G and 3G employed in the access part



of the network, reflecting the anticipated situation, while the core part could be assumed to be NGN-based.

- (13) Taking account of the particular characteristics of call termination markets, the costs of termination services should be calculated on the basis of forward-looking long-run incremental costs (LRIC). In a LRIC model, all costs become variable, and since it is assumed that all assets are replaced in the long run, setting charges based on LRIC allows efficient recovery of costs. LRIC models include only those costs which are caused by the provision of a defined increment. An incremental cost approach which allocates only efficiently incurred costs that would not be sustained if the service included in the increment was no longer produced (i.e. avoidable costs) promotes efficient production and consumption and minimises potential competitive distortions. The further termination rates move away from incremental cost, the greater the competitive distortions between fixed and mobile markets and/or between operators with asymmetric market shares and traffic flows. Therefore, it is justified to apply a pure LRIC approach whereby the relevant increment is the wholesale call termination service and which includes only avoidable costs. A LRIC approach would also allow the recovery of all fixed and variable costs (as the fixed costs are assumed to become variable over the long run) which are incremental to the provision of the wholesale call termination service and would thereby facilitate efficient cost recovery.
- (14) Avoidable costs are the difference between the identified total long-run costs of an operator providing its full range of services and the identified total long-run costs of that operator providing its full range of services except for the wholesale call termination service supplied to third parties (i.e. stand-alone cost of an operator not offering termination to third parties). To ensure an appropriate attribution of the costs, a distinction needs to be made between those costs that are traffic-related, i.e. all those fixed and variable costs which rise with increased levels of traffic, and those costs that are non-traffic-related, i.e. all those costs which do not rise with increased levels of traffic. To identify the avoidable costs relevant for wholesale call termination, non-traffic-related costs should be disregarded. Then, it may be appropriate to attribute traffic-related costs firstly to other services (e.g. call origination, SMS, MMS, broadband, leased lines, etc.) with wholesale voice call termination being the final service to be taken into account. The cost allocated to the wholesale call termination service should thus be equal only to the additional cost incurred to provide the service. As a consequence, cost accounting based on a LRIC approach for wholesale call termination services in fixed and mobile markets should allow the recovery only of costs which would be avoided if a wholesale call termination service was no longer provided to third parties.
- (15) It can be seen that call termination is a service which generates benefits to both calling and called parties (if the receiver did not receive a benefit it would not accept the call), which in turn suggests that both parties have a part in the creation of costs. The use of cost causation principles to set cost-orientated prices would suggest that the creator of the costs should bear those costs. Recognising the two-sided nature of call termination markets with costs being driven by two sides, not all related costs need to be recovered via the regulated wholesale termination charge. However, for the purposes of this Recommendation, all of the avoidable costs of providing the wholesale call termination service can be recovered via the wholesale charge, i.e. all of those costs which increase in response to an increase in wholesale termination traffic.

- (16) In setting termination rates, any deviation from a single efficient cost level should be based on objective cost differences outside the control of operators. In fixed networks, no such objective cost differences outside the control of the operator have been identified. In mobile networks, *uneven spectrum assignment* may be considered an exogenous factor which results in per-unit-cost differences between mobile operators. Exogenous cost differences may arise where spectrum assignments have not taken place using market-based mechanisms but on the basis of a sequential licensing process. Where the spectrum assignment takes place through a market-based mechanism such as an auction or where there is a secondary market in place, frequency-induced cost differences become more endogenously determined and are likely to be significantly reduced or eliminated.
- (17) New entrants in mobile markets may also be subject to higher unit costs for a transitional period before having reached the minimum efficient scale. In such situations, NRAs may allow them, after having determined that there are impediments on the retail market to market entry and expansion, to recoup their higher incremental costs compared to those of a modelled operator for a transitional period of up to four years after market entry. Drawing upon the ERG Common Position, it is reasonable to envisage a timeframe of four years for phasing out asymmetries based on the estimation that in the mobile market it can be expected to take three to four years after entry to reach a market share of between 15 and 20%, thereby approaching the level of the minimum efficient scale. This is distinct to the situation for new entrants in fixed markets which have the opportunity to achieve low unit costs by focusing their networks on high-density routes in particular geographic areas and/or by renting relevant network inputs from the incumbents.
- (18) A depreciation method that reflects the economic value of an asset is the preferred approach. If, however, the development of a robust economic depreciation model is not feasible, other approaches are possible including straight-line depreciation, annuities and tilted annuities. The criterion for choosing among the alternative approaches is how closely they are likely to approximate an economic measure of depreciation. Thus, if the development of a robust economic depreciation model is not feasible, the depreciation profile of each major asset in the bottom-up model should be examined separately, and the approach which generates a depreciation profile similar to that of economic depreciation should be chosen.
- (19) With regard to efficient scale, different considerations apply in fixed and in mobile markets. The minimum efficient scale may be reached at different levels in the fixed and mobile sectors as this depends on the different regulatory and commercial environments applicable to each.
- (20) When regulating wholesale termination charges, NRAs should neither preclude nor inhibit operators from moving to alternative arrangements for the exchange of terminating traffic in the future to the extent that these arrangements are consistent with a competitive market.
- (21) A period of transition until 31 December 2012 should be considered long enough to allow NRAs to put the cost model in place and for operators to adapt their business plans accordingly while, on the other hand, recognising the pressing need to ensure that consumers derive maximum benefits in terms of efficient cost-based termination rates.

- (22) For NRAs with limited resources, an additional transitional period may exceptionally be needed in order to prepare the recommended cost model. In such circumstances, if an NRA is able to demonstrate that a methodology (e.g. benchmarking) other than a bottom-up LRIC model based on current costs results in outcomes consistent with this Recommendation and generates efficient outcomes consistent with those in a competitive market, it could consider setting interim prices based on an alternative approach until 01 July 2014. Where it would be objectively disproportionate for those NRAs with limited resources to apply the recommended cost methodology after this date, such NRAs may continue to apply an alternative methodology up to the date for review of this Recommendation, unless the body established for cooperation among NRAs and the Commission, including its related working groups, provides sufficient practical support and guidance to overcome this limitation of resources and, in particular, the cost of implementing the recommended methodology. Any such outcome resulting from alternative methodologies should not exceed the average of the termination rates set by NRAs implementing the recommended cost methodology.
- (23) This Recommendation has been subject to a public consultation,

HEREBY RECOMMENDS:

- (1) When imposing price control and cost-accounting obligations in accordance with Article 13 of Directive 2002/19/EC on the operators designated by National Regulatory Authorities (NRAs) as having significant market power on the markets for wholesale voice call termination on individual public telephone networks (hereinafter referred to as “fixed and mobile termination markets”) as a result of a market analysis carried out in accordance with Article 16 of Directive 2002/21/EC, NRAs should set termination rates based on the costs incurred by an efficient operator. This implies that they would also be symmetric. In doing so, NRAs should proceed in the way set out below.
- (2) It is recommended that the evaluation of efficient costs is based on current cost and the use of a bottom-up modelling approach using long-run incremental costs (LRIC) as the relevant cost methodology.
- (3) NRAs may compare the results of the bottom-up modelling approach with those of a top-down model which uses audited data with a view to verifying and improving the robustness of the results and may make adjustments accordingly.
- (4) The cost model should be based on efficient technologies available in the timeframe considered by the model. Therefore the core part of both fixed and mobile networks could in principle be Next-Generation-Network (NGN)-based. The access part of mobile networks should also be based on a combination of 2G and 3G telephony.
- (5) The different cost categories referred to herein should be defined as follows:
- (a) “Incremental costs” are those costs that can be avoided if a specific increment is no longer provided (also known as avoidable costs);
  - (b) “Traffic-related costs” are all those fixed and variable costs which rise with increased levels of traffic.

- (6) Within the LRIC model, the relevant increment should be defined as the wholesale voice call termination service provided to third parties. This implies that in evaluating the incremental costs NRAs should establish the difference between the total long-run cost of an operator providing its full range of services and the total long-run costs of this operator in the absence of the wholesale call termination service being provided to third parties. A distinction needs to be made between traffic-related costs and non-traffic-related costs, whereby the latter costs should be disregarded for the purpose of calculating wholesale termination rates. The recommended approach to identifying the relevant incremental cost would be to attribute traffic-related costs firstly to services other than wholesale voice call termination, with finally only the residual traffic-related costs being allocated to the wholesale voice call termination service. This implies that only those costs which would be avoided if a wholesale voice call termination service were no longer provided to third parties should be allocated to the regulated voice call termination services. Principles for calculating the wholesale voice call termination service increment in fixed and mobile termination networks respectively are further elaborated in the Annex.
- (7) The recommended approach for asset depreciation is economic depreciation wherever feasible.
- (8) When deciding on the appropriate efficient scale of the modelled operator, NRAs should take into account the principles for defining the appropriate efficient scale in fixed and mobile termination networks as set out in the Annex.
- (9) Any determination of efficient cost levels which deviates from the principles set out above should be justified by objective cost differences which are outside the control of the operators concerned. Such objective cost differences may emerge in mobile termination markets due to uneven spectrum assignments. To the extent that additional spectrum acquired to provide wholesale call termination is included in the cost model, NRAs should review any objective cost differences regularly, taking into account *inter alia* whether on a forward-looking basis additional spectrum is likely to be made available through market-based assignment processes which might erode any cost differences arising from existing assignments or whether this relative cost disadvantage decreases over time as the volumes of the later entrants increase.
- (10) In case it can be demonstrated that a new mobile entrant operating below the minimum efficient scale incurs higher per-unit incremental costs than the modelled operator, after having determined that there are impediments on the retail market to market entry and expansion, the NRAs may allow these higher costs to be recouped during a transitional period via regulated termination rates. Any such period should not exceed four years after market entry.
- (11) This Recommendation is without prejudice to previous regulatory decisions taken by NRAs in respect of the matters raised herein. Notwithstanding this, NRAs should ensure that termination rates are implemented at a cost-efficient, symmetric level by 31 December 2012, subject to any objective cost differences identified in accordance with points (9) and (10).
- (12) In exceptional circumstances where an NRA is not in a position, in particular due to limited resources, to finalise the recommended cost model in a timely manner and where it is able to demonstrate that a methodology other than a bottom-up LRIC

model based on current costs results in outcomes consistent with this Recommendation and generates efficient outcomes consistent with those in a competitive market, it could consider setting interim prices based on an alternative approach until 01 July 2014. Where it would be objectively disproportionate for those NRAs with limited resources to apply the recommended cost methodology after this date, such NRAs may continue to apply an alternative methodology up to the date for review of this Recommendation, unless the body established for cooperation among NRAs and the Commission, including its related working groups, provides sufficient practical support and guidance to overcome this limitation of resources and, in particular, the cost of implementing the recommended methodology. Any such outcome resulting from alternative methodologies should not exceed the average of the termination rates set by NRAs implementing the recommended cost methodology.

- (13) This Recommendation will be reviewed not later than four years after the date of application.
- (14) This Recommendation is addressed to the Member States.

Done at Brussels, 7.5.2009.

*For the Commission*  
*Viviane REDING*  
*Member of the Commission*

**CERTIFIED COPY**  
**For the Secretary - General**

**Jordi AYET PUIGARNAU**  
**Director of the Registry**

## ANNEX

### **Principles for the calculation of wholesale termination rates in fixed networks**

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 that operator not providing a wholesale call termination service to third parties.

A distinction needs to be made between traffic-related costs and non-traffic-related costs to ensure the appropriate attribution of those costs. The non-traffic-related costs should be disregarded for the purpose of calculating wholesale termination rates. From the traffic-related costs only those costs which would be avoided in the absence of a wholesale call termination service being provided should be allocated to the relevant termination increment. These avoidable costs may be calculated by allocating traffic-related costs first to services other than wholesale call termination (e.g. call origination, data services, IPTV, etc.) with only the residual traffic-related costs being allocated to the wholesale voice call termination service.

The default demarcation point between traffic- and non-traffic-related costs is typically where the first point of traffic concentration occurs. In a PSTN network this is normally deemed to be the upstream side of the line card in the (remote) concentrator. The broadband NGN equivalent is the line card in the DSLAM/MSAN<sup>5</sup>. Where the DSLAM/MSAN is located in a street cabinet, then it needs to be considered whether the former loop between the cabinet and the exchange/MDF is a shared medium and should be treated as part of the traffic-sensitive cost category, in which case the traffic-/non-traffic-related demarcation point will be located in the street cabinet. If dedicated capacity is allocated to the voice call termination service irrespective of the technology deployed, then the demarcation point remains at the level of the (remote) concentrator.

Following the approach outlined above, examples of costs which would be included in the termination service increment would include additional network capacity needed to transport additional wholesale termination traffic (e.g. additional network infrastructure to the extent that it is driven by the need to increase capacity for the purposes of carrying the additional wholesale termination traffic) as well as additional wholesale commercial costs directly related to the provision of the wholesale termination service to third parties.

To determine the efficient scale of an operator for the purposes of the cost model, NRAs should take into account that in fixed networks operators have the opportunity to build their networks in particular geographic areas and to focus on high-density routes and/or to rent relevant network inputs from the incumbents. When defining the single efficient scale for the modelled operator, NRAs should therefore take into account the need to promote efficient entry while also recognising that under certain conditions smaller operators can produce at low unit costs in smaller geographic areas. Furthermore, smaller operators that cannot match the largest operators' scale advantages over broader geographic areas can be assumed to purchase wholesale inputs rather than self-provide termination services.

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<sup>5</sup> Digital Subscriber Line Access Multiplexer/Multi-Service Access Node.

## **Principles for the calculation of wholesale termination rates in mobile networks**

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 service to third parties.

A distinction needs to be made between traffic-related costs and non-traffic-related costs to ensure the appropriate attribution of those costs. The non-traffic-related costs should be disregarded for the purpose of calculating wholesale termination rates. From the traffic-related costs only those costs which would be avoided in the absence of a wholesale call termination service being provided should be allocated to the relevant termination increment. These avoidable costs may be calculated by allocating traffic-related costs first to services other than wholesale call termination (e.g. call origination, SMS, MMS, etc.) with only the residual traffic-related costs being allocated to the wholesale voice call termination service.

The costs of the handset and the SIM card are not traffic-related and should be excluded from any costing model for wholesale voice call termination services.

Coverage can be best described as the capability or option to make a single call from any point in the network at a point in time, and capacity represents the additional network costs which are necessary to carry increasing levels of traffic. The need to provide such coverage to subscribers will cause non-traffic-related costs to be incurred which should not be attributed to the wholesale call termination increment. Investments in mature mobile markets are more driven by capacity increases and by the development of new services and this should be reflected in the cost model. The incremental cost of wholesale voice call termination services should therefore exclude coverage costs but should include additional capacity costs to the extent that they are caused by the provision of wholesale voice call termination services.

The costs of spectrum usage (the authorisation to retain and use spectrum frequencies) incurred in providing retail services to network subscribers are initially driven by the number of subscribers and thus are not traffic-driven and should not be calculated as part of the wholesale call termination service increment. The costs of acquiring additional spectrum to increase capacity (above the minimum necessary to provide retail services to subscribers) for the purposes of carrying additional traffic resulting from the provision of a wholesale voice call termination service should be included on the basis of forward-looking opportunity costs, where possible.

Following the approach outlined above, examples of costs which would be included in the termination service increment would include additional network capacity needed to transport additional wholesale traffic (e.g. additional network infrastructure to the extent that it is driven by the need to increase capacity for the purposes of carrying the additional wholesale traffic). Such network-related costs could include additional Mobile Switching Centres (MSCs) or backbone infrastructure directly required to carry the terminating traffic for third parties. Furthermore, where certain network elements are shared for the purposes of supplying origination and termination services, such as cell sites or Base Transceiver Stations (BTS), these network elements will be included in the termination cost model to the extent that they are needed because of the additional capacity necessary to carry terminating traffic by third parties. In addition, the additional spectrum costs and wholesale commercial costs directly related to the provision of the wholesale termination service to third parties would also be taken into account. This implies that coverage costs, unavoidable business overhead costs and retail commercial costs are not included.

To determine the minimum efficient scale for the purposes of the cost model, and taking account of market share developments in a number of EU Member States, the recommended approach is to set that scale at 20% market share. It may be expected that mobile operators, having entered the market, would strive to maximise efficiency and revenues and thus be in a position to achieve a minimum market share of 20%. In case an NRA can prove that the market conditions in the territory of that Member State would imply a different minimum efficient scale, it could deviate from the recommended approach.