

**Consultation Paper No. 3/2005**



**TELECOM REGULATORY AUTHORITY OF INDIA**

**Consultation Paper  
on  
Billing Issues**

**NEW DELHI  
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## **Preface**

TRAI has been regularly receiving many billing related complaints, particularly from the mobile customers. It is seen that most of these complaints emerge from likely lapses/ flaws in billing programme and lack of information/ clarity about the tariff scheme. While the issue of lack of information/ clarity about the tariff scheme is being addressed separately by the Authority, the Authority felt that a special regulatory initiative is needed to assure the customers that Service Providers provide an acceptable level of overall accuracy in the calculation of call charges. The Authority had, therefore, engaged an international consultant to audit the billing systems of mobile operators.

The auditing of the billing systems of mobile operators revealed that while the billing systems being used by various operators are comparable to other systems being deployed by major international players, some of the process/ procedure being followed by the mobile operators leads to customer complaints and the attendant customer dissatisfaction. The Authority has looked into these problem areas such as synchronization of clock, charging for SMS, publishing of tariffs, charging for value added services, premium rate services, short duration calls, credit limit and bill payment period and necessary action is being taken to address these issues. On issues of charging for SMS and short duration calls the Authority felt that public consultation may be undertaken and this Paper analyse these issues in Chapter 2 and 3 respectively.

In order to bring standardization and transparency in the procedures being followed by various operators, the Authority has also developed a Code of Practice for Billing Accuracy in India, which has

benchmarks for metering and billing system. This paper in Chapter 4 discusses these benchmarks, Code of Practice for Billing Accuracy in India, the international practices and regime for regulating Code of Practice.

The consultation paper has been placed on TRAI's website ([www.trai.gov.in](http://www.trai.gov.in)). All stakeholders are requested to send their written comments on the issues raised in this paper on or before 31.5.2005. For any clarification on the matter, Advisor (QOS) may be contacted on Phone No. 26160404 or email [sgupta03@bol.net.in](mailto:sgupta03@bol.net.in).

(Pradip Baijal)  
Chairman, TRAI

## **Chapter 1**

### **Introduction**

#### **1.1 Background:**

1.1.1 TRAI had been receiving complaints on billing related matters. These complaints cover areas such as inability to verify the bills, not having clarity about the tariff scheme on which they are being billed, inability to select the tariff most suited for their needs, etc. TRAI undertook a study of practices prevailing worldwide and the possibility of developing software which could help the customer select a suitable tariff. Two different programs were undertaken. In one program, "The Energy Research Institute" (TERI) was assigned the task of development of a software which help a customer to determine the total outgo for a given usage pattern for any tariff scheme. The efforts made so far and the results obtained for the two metros of Delhi and Mumbai have been put up on the TRAI website.

1.1.2 In regard to building the confidence of the subscribers in the Billing and Call charging systems of Telecom Operators, an international consultant had been engaged to help carryout an audit of the metering and billing system of different service providers. The objective of the exercise was to help TRAI define the parameters with benchmarks for fair and reliable metering and billing system.

1.1.3 From this exercise it has become clear that while the metering and billing systems being used by various operators are in line with those being used by major international operators, there were several detailed areas with significant problems pointing to aspects which needed standardization to build the necessary confidence to the minds of the customer.

1.1.4 The problem areas and the issues associated with the metering and billing systems as deployed in India are briefly described in the following paragraphs.

## **1.2 Synchronization of clock:**

1.2.1 The clock of different operators is not synchronized with a reference national clock. . In most of the cases the accuracy of the clock is not checked frequently. This may result in wrong billing in case of tariff plans where rates are based on the time of the day.

1.2.2 Synchronization has two aspects. First aspect is the basic pulse repetition rate within the switch, which is usually synchronized between different operators' networks, and is driven by one atomic clock. The purpose of this is to ensure that Pulse Code Modulation sampling is robust, and calls handed over from one network to another do not suffer transmission degradation due to "slip", where incoming digital samples do not match the data rate in the switch itself. Secondly, and quite independently, the "Time of Day Clock" in each switch needs to be maintained in step with a trusted time source. The "Time Stamps" on CDRs come from the Time of Day Clock. These determine when discounted rates etc. begin and end. However, the duration of a call can be measured from either of the time sources, depending on the design of the switch. In some cases the CDR contains the actual duration. In other cases, it is calculated during rating from times of answer and clearance of call. This situation means that a call that spans or borders on the discounted rate time may be incorrectly billed. In order to minimize justifiable complaints about billing accuracy, and to meet the recommended Code of Practice, both aspects of synchronization need to be addressed. In UK and many other countries, switch Time of Day clocks are locked to one of the national or international time signals. The usual method is to

use the GPS system. Other methods are available, but would require to be demonstrated to be accurate and reliable at the sites in question. The clock of different operators is not synchronized with a reference national clock. . In most of the cases the accuracy of the clock is not checked frequently. This may result in wrong billing in case of tariff plans where rates are based on the time of the day, for example lower tariff offered by some of the operators at night/ happy hours.

1.2.3 It is proposed to discuss this issue with the service providers and Telecom Engineering Centre, so that a common standard clock is identified for everyone.

### **1.3 Charging for SMS:**

1.3.1 Most of the operators are charging SMS on the basis of the SMS being received at their server. Thus, the SMS undelivered or SMS sent to invalid numbers /landline numbers are also getting charged. Considering the huge volume of SMS sent daily, the loss to the customer and the gain to the operator can be substantial, taking into account the fact that approximately 6% of the total revenue is generated from SMS and the percentage of successfully delivered SMS is around 80-85.

1.3.2 This issue is proposed for consultation in this paper.

### **1.4 Publishing of tariffs:**

1.4.1 The Report notes that in a number of cases the customer had some difficulty in ascertaining the tariff that was being applied to his usage. The Report recommends that where operators opt to retain an old tariff for existing customers, whilst applying a new tariff of similar nature for new customers, the complete set of the tariffs needs to be published, with sufficient information to resolve questions as to what is applicable to any specific customer. It is also noted that most of the

operators are not giving International roaming charges on their website.

1.4.2 It is proposed to issue suitable direction in this regard.

### **1.5 Charging for value added services:**

1.5.1 The Report points out that a number of instances have been noticed where provisioning of charged value added service has been done without specific acceptance of the customer. A typical example is that at the time of launch of any new VAS, the customer is given the service free during a certain trial period. Subsequently, after the expiry of the trial period, they are informed usually by SMS, that if they do not want at the service, they should “unsubscribe” by sending a SMS to the company. This way, the burden of informing the company, if that charged service is not required, is put on the customer. In case, he misses the SMS for any reason, then he starts getting charged without his knowledge and concurrence.

1.5.2 It is proposed to issue suitable direction in this regard.

### **1.6 Premium Rate Services:**

1.6.1 Certain premium rate services are made available to the customer in the SIM itself and these are automatically stored in the phonebook of the handset, when the SIM is activated. For these services, there is no provision for the connection being cut off, in case of no response from the customer. This problem is usually encountered when a customer accidentally dials these numbers. Although these premium rate services are offered on IVR platform, the call is not disconnected even if the customer gives no response to the IVR prompt. Sometimes, this leads to the generation of heavy bills.

1.6.2 The Report also observed that in most of the networks the customers are informed about a number of value added premium rate services through SMS. But in this communication, the cost implication of the service is not intimated. Messages are only followed by wordings ""T&C apply"". The terms and conditions for these premium services could be a lengthy one and may not be possible to be covered in the SMS. However, the customer is most interested in the pulse rate/cost for these services which can be easily intimated through the SMS. It is proposed to issue suitable direction in this regard.

### **1.7 Short Duration Calls:**

1.7.1 The report mentions that due to congestion or any other shortcoming in the network, a number of times, the call gets dropped, as soon as it is established. During CDR analysis, a significant level of short-duration calls was seen in the case of a number of operators. The number of these short duration calls was as high as 3% of the CDR's. As the billing is on per minute basis, the customers were charged for these short duration calls for no fault on their part as this happened only because of the inefficiency of the network.

1.7.2 This issue is proposed for consultation with the stakeholders in this paper.

### **1.8 Credit Limit and bill payment period:**

1.8.1 It is reported that most of the operators have a system of assigning credit limits to their customers. In case the bill of the customer exceeds the credit limit, the connection is barred after giving a short notice (usually by SMS), even prior to pay by date. Some of the operators do not intimate the customer about his credit limit. TRAI has also received complaints in this regard. The customer is given a very short time to make the payment. There is a strong possibility that the customer may not have received the message and hence

misses the payment which could lead to disconnection of service, though he is within the period prior to pay by date. There could also be a possibility that he might not be in a position to make immediate payment, for example he may be roaming outside the service area.

1.8.2 Suitable instructions will be issued by TRAI in this regard.

## **1.9 Issues for Consultation:**

1.9.1 The Authority has considered these problem areas and has decided to seek comments of stakeholders on two issues viz. method of charging for SMS and charging of short duration calls. The issues relating to charging of SMS are discussed in Chapter-2 and the issues relating to short duration calls are discussed in Chapter-3. On other issues, the Authority proposes to issue suitable instructions/ directives within a fortnight.

1.9.2 The Authority has studied the International practices in regard to steps needed to generate customer confidence in the Billing and Metering systems of various operators. Based on the data available mainly from UK, Australia and Hong Kong, it is felt that a code of practice is needed which has benchmarking for billing and metering accuracy and rules for billing related issues for various operators. A proposed code of practice has been prepared keeping in mind the objective of defining benchmark for a fair and reliable metering and billing system. Various details in this regard are presented in Chapter-4. In this consultation process comments are invited from all stakeholders on this proposed code of practice to enable the Authority to firm up the same and issue it as a formal document.

## **Chapter 2**

### **Charging for SMS:**

2.1 Short Message Service, abbreviated as SMS, is the transmission of short text messages to and from a mobile phone or any other device capable of generating the SMS. Once a message is sent, it is received by a Short Message Service Center (SMSC) of the calling subscriber's network, which must then deliver it to the appropriate destination mobile device. To do this, the SMSC sends a request to the home location register (HLR) to find the status of the customer. Once the HLR receives the request, it will respond to the SMSC with the subscriber's status: 1) inactive or active 2) location where subscriber is roaming.

2.2 If the response is "inactive", then the SMSC will hold onto the message for a period of time. When the subscriber accesses his device, the HLR sends a SMS Notification to the SMSC, and the SMSC will attempt delivery.

2.3 In case the destination number of the SMS belongs to another network the SMSC delivers the message to the other network and the same process is followed in that network.

2.4 The SMSC transfers the message in a Short Message Delivery Point to Point format to the serving system. The system pages the device, and if it responds, the message gets delivered. The SMSC receives verification that the message was received by the end user, then categorizes the message as "sent" and will not attempt to send again. Thus SMS is a store and forward way of transmitting messages to and from mobiles.

2.5 Since SMS uses signaling channel as opposed to dedicated channels, these messages can be sent/received simultaneously with

the voice/data/fax service over a GSM network. SMS supports national and international roaming. This means that short messages can be sent to any other mobile user around the world. With the PCS networks based on all the three technologies, GSM, CDMA and TDMA supporting SMS, SMS is more or less a universal mobile data service.

## **2.6 Issue:**

2.6.1 The findings of the Authority in regard to SMS charging based on the findings of the independent Billing Auditing Agency appointed by it show that most of the operators are charging SMS on the basis of the SMS being received at their server. Thus, the SMS undelivered or SMS sent to invalid numbers /landline numbers are also getting charged. Though the Authority does not have any data relating to the volume of undelivered SMS, however considering the huge volume of SMS sent daily, (as per the information/data available with the Authority the all India average is about 30 SMS/month per subscriber), and also taking into account the fact that approximate 6% of the total revenue is generated from SMS, the loss to the customer in terms of payment for undelivered SMS and the gain to the operator by way of charging for undelivered SMS can be an issue of concern.

2.6.2 During the audit, some of the operators had informed that according to them, the message is complete once the user sends the message from his handset and the message is stored in their server for forwarding to the end customer. However, for the customer there is no utility in such a message unless it is delivered to the intended recipient. In such cases the action is not complete until the message is delivered. In the case of voice calls also, the customer is not charged for the calls which the operator is unable to deliver, even though the operator does some work on such calls.

2.6.3 Thus, the issue is whether the data calls should also be treated in the same way as voice calls and charged accordingly or that the operators may charge for the SMS as soon as the same is successfully sent by the subscriber. In the UK, pre pay customers are charged for non-delivered SMS messages, but post pay customers are not. The tariffs in the public domain reflect this.

2.6.4 During the last one year, more and more subscribers have started relying on SMS as a means of communication and the same is reflected in the rising share of revenues of the operators from this service. Therefore, it is justifiable that the subscriber pays the prescribed charges for this service only after the message is delivered. Further the service providers should also build a mechanism in their switch so as to reject any SMS sent to an invalid number. This will also reduce the incidence of non-delivery of SMS and more importantly, the subscriber will not be charged for a non-availed service.

**Question:**

- 1. Should there be a charge for undelivered SMS?**
- 2. If yes, should the SMS be charged in two parts –**
  - (i) Some amount when it is sent successfully; and**
  - (ii) Some amount when it is received successfully?**
- 3. If so, how such an arrangement be technically implemented and on what basis these amounts may be determined?**

## Chapter 3

### **Short Duration Calls:**

3.1 During the audit of CDRs of various service providers, it has been reported that due to congestion or any other shortcoming in the network, a number of times, the call gets dropped, as soon as it is established. During CDR analysis, a significant level of short-duration calls was seen in the case of a number of operators. The number of these short duration calls is as high as 3% of the CDR's. As the billing is on per minute basis, the customers were charged for these short duration calls for no fault on their part as this happened only because of the inefficiency of the network.

3.2 As per our study of International practices especially for countries where comparable circumstances have existed or still exist in other parts of the world, it is seen that the operators and their regulators have sought pragmatic solutions. These "Best Practice" are detailed below.

### **3.3 Per-second billing and innovative tariffs**

3.3.1 In a number of countries, the operators charge on the basis of peaking time with a granularity of each second or part thereof. There is no regulatory restriction on their doing so, nor any prohibition of the imposition of a minimum charge if the operator so desires. However, mandating a uniform pulse rate of one second may affect revenues of the operators on one hand and on the other hand, flexibility of the operators will be restricted to devise usage based tariff plans.

### **3.4 Threshold for charging**

3.4.1 One option would be not to charge calls of small duration, may be less than 5 seconds. It can be assumed that majority of such

calls would be due to network problems and no fruitful conversation can take place within this short duration.

3.4.2 A third option as a variant of the above, could be that for these short duration calls, if at all to be charged, a nominal charge may be imposed. This may cover the cost of setting up the call, however as the call has been cut off due to the problems in the network, hence, there seem to be no justification for the operator to recover its cost of setting the call.

### **3.5 Allowance of time on "Reconnected Calls"**

3.5.1 Another option could be that if a call is cut off and the same number is dialled as the next call within a few minutes, the operator may refund up to a minute of chargeable time. This is very good for customer relations, and perhaps has less effect on revenue than some alternative approaches.

3.5.2 In India, considering the present network conditions the scope for dropped calls immediately after call matures is higher. In view of the above discussion, it seems that a practical alternative would be that calls up to 3-5 seconds duration may not be charged. This duration could be lowered later after reviewing the situation.

#### **Question:**

- 1. Should short duration calls of 3-5 seconds be charged?**
- 2. If no, what should be the duration of such calls?**

## Chapter 4

### **Benchmarking**

4.1 In a competitive telecom market, operators offer various tariff packages, introducing new ones periodically. It is not easy for the subscribers to verify whether billing under these tariff plans is being properly implemented. In fact, TRAI has been regularly receiving many billing related complaints particularly from the mobile customers. It is seen that most of these complaints emerge from likely lapses/ flaws in billing program. The Quality of Service (QOS) Survey, which TRAI is conducting quarterly through a specialist Agency, has also reported that “the billing parameter is far below the QOS norms and the operators need to focus on this to improve”. In this background the Authority felt that a special regulatory initiative is needed to assure the customers that Service Providers provide an acceptable level of overall accuracy in the calculation of call charges. The international practice also points to approval of the billing system by competent Authority and industry code for checking the accuracy of the call charging and billing standard. It is necessary to develop appropriate standards to judge the billing accuracy performance of the operators. This requires defining parameters and determining their benchmark values based in international best practices.

#### **4.2 Comparison of different approaches to Billing Accuracy**

4.2.1 There are two fundamentally different approaches for measuring the Billing Accuracy. The first is complaint-based; the other uses system assessment and performance measurement. TRAI already compiles quarterly Quality of Service statistics, which include a complaints-based measure of billing accuracy. The statistics collected

are very similar to those specified in parts of Europe, Malaysia and Brazil. What is measured is the proportion of bills in dispute.

4.2.2 While analysis of upheld billing complaints to find root causes is useful in preventing further occurrences of a problem, and is to be encouraged, it is a reactive process. System assessment and performance measurement, if done frequently, has the advantage, of identifying problems and rectifying them before the subscriber becomes aware of them. This reduces the incidence of complaints, benefiting the operator through the reduction of costs of complaint handling, and reducing the burden of complaints referred to the regulator. Internationally, it is observed that those operators implementing performance measurement as part of their Approval had on average only half the billing-related complaints of the other operators.

### **4.3 International Practices**

#### **4.3.1 Australia**

4.3.1.1 In Australia, the Billing Standard is administered by an Industry Forum of Operators, rather than by the Regulator and Appointed Approval Bodies.

4.3.1.2 Australia requires its Carriers or Carriage Service Providers ("operators") to undertake a regular programme of test calls for "Digital Originating Calls". The requirements are contained in a Code of Practice issued by the Australian Communications Industry Forum (ACIF). It applies to fixed and mobile carriers, but is restricted to circuit-switched telephone calls. The test calls are intended to check the overall accuracy of the input into the call charging and billing process and the overall accuracy of that process itself. The basic

concept of the measurement is a Billing Accuracy Parameter, which can be any one of the following:

- (a) Time of Day/Date
- (b) Call Duration
- (c) Called Number
- (d) Rating
- (e) Additional Call
- (f) Missing Call

4.3.1.3 A test call is in error if any one of the parameters applying to it is in error. For parameters (c), (e) and (f), the error is clear-cut. A tolerance of +8.5 -5.5 seconds is allowed for Time of Day/Date and +1.5 -2.5 seconds for Call Duration. Rating must be correct to  $\pm 1$  cent (or 0.01 A\$) but only for timed calls.

4.3.1.4 Overall the number of test calls in error must not exceed 76 per 100,000 (or 0.076%). However, those in error on Call Duration have a tighter limit of 0.06% and Additional Calls must not exceed 0.0005%.

4.3.1.5 The programme of test calls must be carried out annually and span a period of between one and three months. The sample size is 18,000 calls in each of the categories: Local, Long Distance and Mobile. Testing can be done internally by the operator, or by an external testing body. Certain accuracy requirements are given for the test equipment.

#### **4.3.2 Hong Kong**

4.3.2.1 In Hong Kong, OFTA has laid down technical standards for Billing and Metering Integrity Scheme (BMIS). It requires its service providers (or "operators") to comply with the billing and metering integrity standards and also fulfill the requirements specified in a Quality Assurance Manual (HK3104) issued by the Authority. The

results of these tests must be certified by a Certified Public Accountant. A self-declaration of the results has to be filed quarterly with OFTA.

4.3.2.2 The scope of services required to be tested is specified as:

- Fixed Telecommunications Network Services
- Mobile Network Services (including services provided by Public Mobile Radiotelephone Services Licensees, Personal Communications Services Licensees and Mobile Carrier Licensees)
- Public Non-exclusive Telecommunications Services (for example, External Telecommunications Services, International Calling Card Services, Virtual Private Network Services, International Simple Resale for Facsimile and Data, International Value-Added Network Services and Internet Service Providers, Mobile Virtual Network Operators (MVNO) etc.).

4.3.2.3 The approach to measurement is based on statistical samples using the methods of ISO-2859-1: 1999. The requirement is for two measurements:

- The number of inaccurately metered calls (< 1 in 10,000 of total calls)
- The absolute summation error value of the inaccurately billed calls in a bill (< 1 in 10,000 of the value of total billed sum in that bill).

4.3.2.4 For metering, the number of test calls (or samples of live calls) to be made each month by each mobile operator (irrespective of the number of licences held) is 1250 (500 with reduced inspection; 2000 with tightened inspection). Switching from normal to reduced inspection occurs when the target is met for fifteen consecutive months and returns to normal if the target is not met in a single

month. Switching from normal to tightened inspection occurs when the target is not met in five consecutive months and returns to normal when the target is met for five consecutive months. If the tightened target is not met for five consecutive months then testing is stopped while the operator improves his system.

4.3.2.5 A test call is successful if there are no errors in calling-party, called-party and charged-party numbers, and the time stamp of the start or end of call (if relevant) is correct to  $\pm 8.5$ ,  $-5.5$  seconds. Various allowances are made to take into account the delay between a stimulus at the mobile and the measurement point at the switch, the result of which is that the duration of a mobile voice call can have a tolerance up to  $\pm 6.98$  seconds for contract customers and  $\pm 7.64$  seconds for pre-pay.

4.3.2.6 For billing, a similar statistical approach is taken by the operator undertaking monthly samples of bills, the sample size being 50 (32 reduced; 80 tightened). Using the information on a CDR and the tariff appropriate to the subscriber, the charge for each item of usage is calculated independently of the bill to four decimal places of a Hong Kong Dollar. This is compared with the same item on the bill and the absolute error ratio calculated. All the absolute error ratios on all the sampled bills are summed and the result compared to the requirement.

### **4.3.3 United Kingdom**

4.3.3.1 All "Communications Providers" (CPs) in the UK are required to not render any bill to an "End-User" (i.e. subscriber) unless every amount stated on the bill represents and does not exceed the true value of the service provided. Furthermore, any CP with an annual turnover related to communications exceeding £40 million, and providing "Publicly Available Telephone Services" (PATs) must have

their “Total Metering and Billing System” (TMBS) approved by one of three appointed Approvals Bodies.

4.3.3.2 The requirements are contained in the Ofcom Metering and Billing “Direction”. The Direction comprises numerical performance requirements and other provisions. To avoid being too service-centric, the element of measurement for numerical performance is the “chargeable event”. This covers service usage (e.g. phone calls, value-added services), recurring charges (e.g. rentals) and non-recurring charges (e.g. installation) and discounts (e.g. “bundles”). The numerical requirements cover undercharging (or not charging) and overcharging of events, both by number of occurrences and by value of their effect. The numerical requirements are contained in the following table:

Table 1: **TMBS Reliability Performance Requirements**

<b>Chargeable Events</b>	<b>1 Logging / Metering</b>	<b>2 Billing</b>	<b>3 End to End (1 + 2)</b>
Number under or not charged	0.01% (1:10K)	0.09% <sup>a</sup> (1:1.1K)	0.1% (1:1K)
Number Overcharged	0.002% (1:50K)	0.002% (1:50K)	0.004% (1:25K)
Value under or not charged	Not Applicable	0.05% (1:2K)	0.05% (1:2K)
Value Overcharged	Not Applicable	0.002% <sup>b</sup> (1:50K)	0.002% <sup>b</sup> (1:50K)
a. Determined from end to end and logging requirements.			
b. This requirement shall be deemed to have been met if the value overcharged does not exceed £500 per calendar month.			

4.3.3.3 A correctly charged event is one which complies with one or more of the following (simplified) criteria as applicable:

- Recorded duration to be measured to within +0.5, -1.0 seconds

- Time of day to be recorded to within  $\pm 1.0$  seconds, traceable to an appropriate time reference
- Count of a number of events (such as SMS messages) to within +0.004% and -0.100%.

4.3.3.4 There is a non-numerical requirement for Individual Bill Accuracy which requires the CP to employ safeguards to prevent gross errors on individual bills. It also provides for the handling of billing complaints, their upholding, root-cause analysis and rectification.

4.3.3.5 There is a timeliness requirement whereby an event which, for monthly bills, does not appear on the first, second, third or fourth bill following the event is counted as an undercharge for the purposes of Table 1. Furthermore, that charge cannot be levied on the End-user. This does not apply to late delivery of charge records from CPs outside the "Total Metering and Billing System" (TMBS).

#### **4.3.4 Germany**

4.3.4.1 In Germany, companies offering telecoms services to the public are required under Section 5 of the **TKV** to submit once a year to the Regulatory Authority for **Telecommunications** and Posts ("RegTP") a certificate from an accredited certification body or a report from an expert. Customers are unable particularly in the case of billing to review companies' internal business processes in order to check that their calls are metered and billed accurately and in accordance with contractual rules. Hence in the interest of **customer protection**, particularly stringent requirements have been laid down on the process for proving compliance as required by Section 5(3) of the Telecommunications Customer Protection Ordinance (TKV).

#### **4.3.5 Other Countries studied**

4.3.5.1 The UK Oftel Metering & Billing Direction, dated 22nd July 2003 is the current Standard for Metering and Billing Accuracy in a number of other countries, including Turkey and the Isle of Man. Hungary, Latvia and France have also had assessments carried out to the UK Standard in the past. In the remaining countries studied, there were only rudimentary schemes for managing Metering and Billing Accuracy. In some cases, Performance Indicators exist, which are intended to show which operators have the greatest number of Billing Accuracy Complaints. However, in practice the publication of Performance Indicators is less than fully effective at improving the performance of those operators who are not subject to formal assessment.

#### **4.4 Proposal for Benchmarking**

4.4.1 After studying the practices in various countries, it is seen that in the UK, the tolerances for duration and time of day are substantially more stringent than for Australia and Hong Kong. However, they are achievable, especially when timing is taken automatically from a radio time signal.

4.4.2 In terms of reliability limits, neither the Australian nor Hong Kong régimes distinguish between undercharging and overcharging, although Australia has very tight requirement for additional calls. Apart from this last exception, the UK's requirements are more stringent than Australia's and there are some similarities with Hong Kong. Again the UK requirements are achievable for a competent operator in the absence of severe incidents. The UK limits for undercharging are 25 times less stringent than for overcharging and

recognises that operators are more likely to lose CDRs than mis-charge them.

4.4.3 Considering the above, it is felt that the benchmarks being followed in UK are more suitable for Indian conditions. Based on the observations reported by the Audit Agency hired by TRAI, it is felt that in terms of the other UK requirements those for Individual bill accuracy and Timeliness of post-pay billing are very relevant to India.

#### **4.5 Code of Practice for Billing Accuracy in India:**

4.5.1 TRAI, in consultation with the independent Auditing Agency, has developed a Code of Practice for Billing Accuracy in India. This Code of Practice is based on the benchmarks being followed in UK. Apart from standards relating to accuracy of measurement, reliability of billing, the Code of Practice contains provisions relating to information on tariffs, applying credit to accounts, timeliness of post pay billing, warning of excessive use of services, complaint handling etc. The Authority had received a number of complaints from consumers on these issues. The Authority has noted that different service providers are following different procedures in respect of these issues and there is a lack of transparency in their procedures. These issues have, therefore, been included in the Code of Practice so that there would be uniformity of procedures.

## **4.6 Code of Practice for Billing Accuracy in India**

### **1 Information relating to Tariffs**

- 1.1** Before a customer commits to using any telecommunication service, he shall be provided in advance with information defining the tariff for using that service. Such information shall be in the format prescribed in TRAI Guideline 301-26//2004-TRAI (Econ.). Additionally, the following information should be included, but not be limited to:

Quantity related charges (e.g. the charge for each SMS message, or kilobyte of data transmitted)

Accuracy of measurement of time, duration and of quantity, and also the resolution and rounding rules, including the underlying units, used when calculating the charges for an individual event or an aggregation of events

Note that if a mobile call is held available for immediate reconnection after a temporary loss of signal, if this time is charged for the maximum time that the call will remain open before the network releases, shall be published.

Contractual Terms and Conditions for Supply, Restriction and Cessation of Service

- 1.2** The information required in clause 1.1 shall appear on the Service Provider's web site, as prescribed in TRAI Guideline 301-26//2004-TRAI (Econ.).
- 1.3** Where a value-added service (e.g. download of content, such as a film clip or ring tone) or entry to an interactive service (such as a game) can be selected through a choice of the service user (e.g. by dialling a specific number) then the charge for the service must be provided to him before he commits to using the service.

### **2 Provision of Service**

The services provided, or changes to those already provided, to the Customer shall be those agreed with him in writing prior to providing the service or changing its provisions.

### **3 Accuracy of Measurement**

- 3.1** All charges must be consistent with the Published Tariff applicable to the End-user charged.
- 3.2** Unless otherwise specified in the Published Tariff or Previously Agreed Tariff, a charge shall be determined in accordance with all of the following limits that apply to it:

(a) Where the charge is dependent upon duration, the recorded duration shall be measured to within:

(i) Between +500 milliseconds and -1,000 milliseconds; or

(ii) Between +0.01% (1:10,000) to -0.02% (1:5,000)

whichever is less stringent; and

(b) where the charge is dependent upon the time of day, the time of day shall be recorded to within  $\pm 1$  second, traceable to an appropriate time reference; and

(c) where the charges are dependent upon the counting of occurrences of a particular type, the count shall be accurate to no more than plus 1/25,000 (0.004%) or minus 1/1,000 (0.1%).

**3.3** Where measurement under clauses 4.2 (a), (b) & (c) reveals systematic errors in timing or counting that result in Overcharged Events which are not stated in Published Tariffs then correction should take place to ensure accurate Bills.

## **4 Reliability of Billing**

**4.1** The performance of a Total Metering and Billing System shall be such that, subject to the tolerances specified in clause 4.2:

(a) the numbers of items of Service Usage that are Overcharged Events or Undercharged Events shall not exceed as a proportion of the total number of Chargeable Events the limits shown in Table 1; and

(b) the sum of the values of the errors in the Overcharged Events or Undercharged Events shall not exceed as a proportion of the total value of the total number of Chargeable Events the limits shown in Table 1.

Note: Measurement results can be presented as a ratio or percentage.

**Table 1 – Total Metering and Billing System reliability performance requirements**

Chargeable Events	Performance
Number under or not charged	0.1% (1 in 1000)
Number overcharged	0.004% (1 in 25,000)
Value under or not charged	0.05% (1 in 2000)
Value overcharged	0.002% (1 in 50,000)

**4.2** Where implementation of an order for a service, feature or discount which depends on the number or duration of

Chargeable Events is applied at variance with Published Tariffs, each Chargeable Event within the scope of the incorrectly applied order shall be an Undercharged Event or an Overcharged Event, as appropriate, for the purposes of clause 4.1.

- 4.3** Where an item of Service Usage is completed other than intended, but the charge applied is correct for the service as delivered, this shall not be regarded as either an Undercharged Event or an Overcharged Event.

Note: Examples include such events as wrong numbers.

- 4.4** The increase in duration or number of items of Service Usage resulting from degraded transmission performance shall not be taken into account when computing the performance of the system.

Note: Such degradation may result in the repetition of voice or data messages.

## **5 Applying Credit to Accounts**

- 5.1** For post-pay accounts, payments by a customer shall be credited to his account within one working day of receipt of the credit. Where credit is given by the Service Provider, this shall be applied within one working day of its agreement.

- 5.2** For pre-pay accounts, top-up credit shall be applied to a customer's account within 15 minutes of its application. Where credit is given by the Service Provider, this shall be applied within 1 hour of its agreement.

## **6 Timeliness of Post Pay Billing**

- 6.1** The timeliness of Bill Issue or Bill data file issue shall be subject to systematic processes.

- 6.2** Any chargeable events the details of which are not to hand when the Bill is prepared shall be included in a Bill no later than the fourth monthly Bill after the Chargeable Events occurred. Any details not so presented shall be written off and if significant be counted against the performance for undercharged Events in clause 4.1. Exceptionally, event details from a separate Service Provider may be billed up to three months after receipt.

Note that this exception does not apply to roaming events details where the home circle Service Provider and the roaming circle Service Provider are the same.

- 6.3** Agreement to extend the timescales described in clause 6.2 may be sought from the TRAI. An extension will only be

available on an irregular basis. Decisions will be made on application for an extension concerning:

- (a) how Customers will be informed of a protracted delay in rendering call records onto a subsequent bill; and
- (b) the integrity of the billing process audit arrangements.

Note: all such decisions made by TRAI will be published on the TRAI web site.

- 6.4** The Service Provider shall contract with its delivery agent to ensure that an effectual Bill or Bill data file delivery schedule is in place. The existence of such a contract shall be subject to audit.

Note: For the avoidance of doubt, the Service Provider does not need to establish when the Bill is actually delivered, only that it has issued the Bill with sufficient time for normal delivery services to deliver the Bill.

## **7 Warning of excessive use of services**

Where as a condition of service the Service Provider places a limit on the Customer's usage of its service, a warning shall be provided to the Customer in advance of the limit being reached so that the Customer has reasonable time to take preventive action to avoid cessation of service.

Note: If the preventive action includes the Customer making a payment, the time of the advance warning shall allow time for the Customer to receive the warning, for the Customer to make payment, and for the Service Provider to receive payment.

## **8 Restriction and Removal of Service**

Where the Service Provider unilaterally intends to restrict or cease service to the Customer, a warning shall be provided to the Customer in advance of such action so that the Customer has reasonable time to take preventive action to avoid restriction or cessation of service.

Note: If the preventive action includes the Customer making a payment, the time of the advance warning shall allow time for the Customer to receive the warning, for the Customer to make payment, and for the Service Provider to receive payment.

## **9 Complaint Handling**

- 9.1** The Service Provider shall have a documented process for identifying, investigating and dealing with billing Complaints and creating appropriate records thereof.

- 9.2** The Service Provider shall carry out a root cause analysis for each upheld billing Complaint, categorise the cause and establish proportionate remedial action to correct it.
- 9.3** Where the root cause affects multiple Customer accounts, then all affected Bills shall, if practicable, be included in a recovery programme.
- 9.4** Where remedial action has not been completed and the cause is likely to affect other Bills when Issued, then the Service Provider shall take reasonable steps to ensure that they are checked and, if necessary, corrected, before being sent to the Customer. If not checked and corrected such Bills shall be included in a recovery programme (clause 10.3).

## **10 Materiality**

Compliance with the requirements contained in this [document] shall need to be demonstrated only in relation to products and services that have a material impact on the Customer's Bill. This materiality is deemed to be:

(a) where the Service Provider's turnover from a product or service comprises 5% or more of its total turnover with the Customers targeted for that product or service; or

(b) where the number of Customers subscribing to a product or service offered by the Service Provider comprises 5% or more of the Customers targeted for that product or service; or

(c) at the specific direction of the TRAI.

Note: Such a direction may, for example, be given in the event of a product or service raising a disproportionate level of Complaints.

## **11 Demonstration of Compliance [with this document]**

This will encompass the following:

Ability to operate current system  
Management of Change, including prior impact assessment  
Measurement of Accuracy and Reliability]

### **4.7 Regime for regulating Code of Practice**

4.7.1 As per the international practices for supervising the Metering and Billing Reliability regime, basically two different practices are being followed. One regime, like the one being followed in Hong Kong

provides for test calls and reporting to the regulatory body by the service providers. The drawback of this scheme which relies just upon the reporting of measurements to a supervisory or regulatory body is that it does not tend to lead to speedy responses to identified problems. The other model uses certification by specified approval bodies. This model, being used in UK, is effective in reducing complaints and commands the respect of operators and regulator alike. There could be a single approval body or there could be multiple approval bodies. Ofcom, the regulator in U.K. has approved three approval bodies. With a single body the regulator's administrative burden is reduced, but the operators may feel aggrieved with the lack of choice.

#### **4.8 International practice regarding funding for the Audit:**

4.8.1 As per our study of the International practice in countries viz. UK, Hong Kong, Australia, Germany etc., it is seen that in all the countries, the onus of getting the Billing and Metering System audited lies with the service provider and the funding for the same is also provided by them only. The same arrangement is proposed in India also.

##### **Question:**

- 1. Do you agree with the proposed benchmarks and Code of Practice for metering and billing? If not, what changes are proposed? Give detailed reasons.**
- 2. Give your comments regarding whether we should have the regime based on self testing and reporting to the regulator or we should follow the model using approval bodies.**
- 3. It is proposed that Billing Audit on the lines reported in this Consultation Paper should be continued as a regular practice. What should be the funding mechanism for such an audit?**