



Telecom Regulatory Authority of India

Consultation Paper

on

Review of

The Quality of Service (Code of Practice for Metering and
Billing Accuracy) Regulations, 2006

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CHAPTER 1

INTRODUCTION

- 1.1 Accurate metering of the usage of telecom services and minimizing the incidents of billing complaints have always been important issues for TRAI to protect the interests of the customers. In this regard, TRAI had notified the Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulation, 2006, on 21st March 2006. These regulations contain a Code of Practice for Metering and Billing Accuracy, which every Basic Service Provider and Cellular Mobile Service Provider has to comply with. The purpose of the code of practice of metering and billing was to:
- a) Bring uniformity and transparency in the procedures being followed by the service providers with regard to metering and billing.
 - b) Prescribe standards relating to accuracy of measurement and reliability of billing.
 - c) Measure the accuracy of billing provided by the service providers from time to time, and to compare them with the norms so as to assess the level of performance.
 - d) Minimize the incidences of billing complaints.
 - e) Protect the interest of consumers of telecommunication services.
- 1.2 These regulations also provide for TRAI to notify a panel of auditors to audit the Metering and Billing System of service providers to see that the service providers comply with the Code. The audit of the metering and billing system, in pursuance of these regulations, has been continuing since 2006–07.
- 1.3 The service providers have to appoint any one of the Auditors from the notified panel by TRAI and have to submit an audit report every year by the 31st of July. The service providers shall take corrective action

on the inadequacies, if any, pointed out by the Audit Agency in the Certificate, and an Action Taken Report thereon shall be filed with TRAI not later than the 15th November of every year. The charges for such auditing of the billing system shall be borne by the service providers.

1.4 The metering and billing regulations were last reviewed in 2012–13, and TRAI notified the Quality of Service (Code of Practice for Metering and Billing Accuracy) (Amendment) Regulations, 2013, (4 of 2013) on 25th March 2013. This amendment has changed the periodicity of the Audit of CDRs to check the correctness of charging from yearly to quarterly. It requires one-month CDRs of selected plans on sample basis for a quarterly audit.

1.5 Since 2013, telecom networks have undergone significant changes, and many new services have been offered by the telecom service providers. Usage patterns of the services have also changed significantly. New tariff plans have been offered by the TSPs, and, in a number of scenarios, billing has shifted from itemized billing to unlimited plans, till the expiry of validity of the tariff package.

The focus has shifted from voice to data. With the increasing penetration of the LTE technology-based networks, mobile data usage has increased significantly. Voice, now a days, is being bundled free with the mobile data packs. Earlier, mobile data tariff was being offered in terms of the volume of data which may be used during the validity of the tariff pack, e.g., 1GB for a period of 28 days. Now-a-days offers have changed to 2GB per day, so it is not the total volume of data for the entire period of the tariff pack's validity. With the new data tariff package, unlimited voice minutes are offered with some restrictions on the maximum voice minutes for a day, which many would not exceed. The focus has now shifted more to data than voice.

Users have got many alternatives to communicate via text, voice, and video over data connectivity. It has changed service usage profile of

the customers who earlier were mainly limited to traditional voice and SMS.

- 1.6 In recent years, TRAI undertook a special audit of the metering and billing system of few operators. From the special audit, it has emerged that some changes might be required to be made to the Code of Practice for preservation and archival of data that may have a bearing on the availability of audit trail available to the auditor, to enable the auditor to verify the correctness of the data or facts audited.
- 1.7 There is always a trade-off between the effectiveness of the audit and the resources in terms of manpower and the time needed to conduct the audit. Introduction of new activities and more exhaustive processes may lead to increased demand of the resources. At the time of the review of the audit process, it may be required to consider the changed scenarios which impact the volume of work, and also to consider the technology-driven solutions, which may help to do audit in an efficient and effective manner.
- 1.8 Besides the postpaid and prepaid charging and billing system, Telecom service providers use host of other systems like Revenue Assurance, Fraud and management control, Business intelligence system among others which takes feed from the charging and billing system and keep the data in summarized and concise form. Information which may be made available by these systems might helpful in conducting audit in more effective manner.
- 1.9 In the last few years, the number of mobile service providers have reduced from 8–10 to 4 per LSA. In the wireline, the user base is very low in comparison to the user base of the wireless. However, new services are being offered after the introduction of FTTH-based broadband connections. To run the processes which are computationally intensive, cloud infrastructure offers opportunity to make it available on demand.

- 1.10 Based on the selection of tariff plans, service providers provide the rated CDRs to the auditor along with the post mediated CDRs. Auditors devise rating algorithms to rate post-mediated CDRs and match the amount, such derived, against the rate calculated by service provider. Such tools may also be standardized across all auditors with the same being shared with TRAI. Various software tools may also be available, which may offer off-the-shelf solutions to carry out some of the functions, an auditor is doing it currently after getting developed a program for his own purpose.
- 1.11 Chapter 2 of this Consultation Paper discusses the key elements and interfaces of the typical billing and charging system deployed in a TSP's network. Chapter 3 discusses the various issues emerging from the changes in the technology, network and services. It also provides an analysis of the issues from an audit perspective and the ways to deal with it. Chapter 4 summarizes the issues for consultation.

CHAPTER 2

BILLING AND CHARGING SYSTEM

- 2.1 Telecom users are either prepaid or post-paid type. For metering and billing of prepaid or post-paid users, in addition to the core Billing System, various other network elements are also involved. There is a mediation system that connects core Billing system to the other network elements from where the usage records are collected. Billing system is also connected with various systems such as the Customer Relationship Module (CRM), Business Intelligence Systems, Inventory Management System, Financial Management System, etc. This chapter describes, from the perspective of metering and billing, the typical roles and functions of the various elements usually deployed in a TSP's network and the processes involved in the application of tariffs.
- 2.2 Process of post-paid billing involves collection of the usage details from the network elements and then mediation of this information, which might be in different formats and requires to be converted into a specific format by the upstream applications. Rating engine is an upstream application that receives usage records from the mediation device and then rates these records based on an applicable tariff plan.
- 2.3 Invoice to the post-paid customer is generated based on all CDRs rated during a billing cycle, while considering rental charges, discounts, etc., as per the applicable tariff plan. Customer is supposed to make the payment against the raised bill within a given time period, and in case he/she fails to do so, then a late fee may be levied, or in case of long delay in the payments, services might also be disconnected, depending upon the service provider's prevalent policies, rules and regulations. As and when the bills are paid by the customer, the information is updated in the billing system.
- 2.4 Post-paid tariff may include:

- a) **Activation charge:** This is applied as an advance and is a one-time charge on the customer while enrolling the services.
- b) **Rental:** This is levied if the services remain active for a duration. It spans for a month, but longer duration plans are offered to corporate customers. Rentals are to be computed for the duration of billing cycle.
- c) **Usage charge:** In the case of itemized CDR billing, call usage charge is specified as the amount per pulse. The pulse duration varies; it may be a second and can also go up to minutes. Call usage charge is further based on the call type, i.e., whether the call has been made intra-operator, local inter-operator, national long distance (NLD), and international long distance (ILD); SMS charge is based on per SMS and is further classified as local, national, or international SMS. Data usage charges are generally specified in per KB. In the recent few years, almost all operators have launched new tariff plans with hundreds of voice call minutes, hundreds of SMS, and one or more GBs for every day as the limit, which is packaged as an Unlimited Plan considering the usage of a typical customer. This is a big shift from the earlier practice of itemized CDR billing.
- d) **Roaming:** Charges are to be applied in accordance with the TTOs issued by TRAI from time to time that deals with the National roaming, voice, and SMS charges. International roaming is as per the bilateral arrangement between the two operators, and the rates of which are under forbearance as of now. The annexes in AA14 agreement prescribes the rate that is charged to respective In-roamers. To increase the roaming revenue, service providers enter into discount agreements and offer reduced rates to customers on visiting specific countries, if they opt to use preferred service providers network.

e) **Discounts:** Based on the usage, TSPs may offer billing discounts to some subscribers, either in terms of amount, minutes, count of SMS, or KBs for data.

2.5 Process for charging of a prepaid user involves Intelligent Network (IN) systems, online charging gateways, and other charging applications depending upon the type of networks and services. Prepaid user is charged online and in near real time, unlike the post-paid user who is billed at the end of a billing cycle. Even before establishing the call connection, the system needs to check the available balance amount in the account of the user. User's account balance is updated regularly during the usage and at the end of the usage. There may be scenarios where multiple services might be used by the user at the same time, and the charging system of prepaid user must take care of all such services. CDRs of the prepaid users, generated by the IN system, are not required to be sent to the billing system for rating as charges get deducted from the user's account at the time of using the services. Applicable rates depend on the applicable tariff plan in the case of a user.

2.6 Tariff Recharge Systems (Voucher Systems) are also connected with IN system. As and when new tariff plans are launched, Tariff tables are updated in the IN system and are used to charge the subscriber. Account of the subscriber is also maintained in the IN system, and it is updated at the time of any successful recharge activity such as opting of a new tariff plan, or topping up of the balance, and extension of the validity of the plan.

2.7 Customer opts to recharge the account by recharging coupons either of special tariff vouchers (STVs), combo vouchers, top-up, etc. Both offline and online mechanisms are used by the service providers for the same. In the offline mode, paper coupons are printed, and through a chain of distributor-retailer, service providers make these accessible to the customers. The terms and conditions are printed on the paper coupon, or relevant information is provided on an enclosed

piece of paper with the coupon. At the time of a successful recharge, the subscriber is informed via SMS, and it may also contain other relevant information.

- 2.8 In the online mode, service providers deploy gateways (E-top-up systems) in the core, which interacts with the Voucher system in IN to affect recharging. Such gateways maintain trees of distributors and retailers. Distributors buy the e-coupons from the service providers, which are further allotted to retailers. Once the customer approaches the retailer for recharging, using the USSD menus/web portals the coupon is recharged. E-top-up system is also integrated with all the online recharge coupon providers such as Paytm, MobiKwik, etc. The online recharge coupon providers carry the note to refer to the service providers website for details on the coupon being charged.
- 2.9 Prepaid tariff plan format is similar to the post-paid tariff plan format but with different rates for charging the usage. However, online real-time charging may impose some technical constraints on offering all kinds of plans to the prepaid customers which are offered to the post-paid customers. Discounts, which are usually offered on a billing cycle, might not be offered in the case of prepaid users. Charges may also be applied to the user when adding or deleting the number to/from the list of Friends and Family. In cases, when there is no usage of the services for a long time, the minimum charges might be deducted on a periodical basis. For NLD and ILD calls, rates may differ if special vouchers are offered by the TSPs, which are opted by the user. Special vouchers may also include vouchers that offer a reduced rate than the rate of a plan already in use, and this reduced rate, although applicable, is limited to a certain time.
- 2.10 Account of the prepaid user gets activated in the IN system at the time of making the first voice call or sending the first message. Business Intelligence System, as in the case of the post-paid users, may provide usage-related information and insights to launch new tariff plans or new offers to the customer.

- 2.11 TSPs inform users about the tariff plan via multiple channels such as advertisements, their website, IVRS, Customer Care, web self-care, mobile apps, distributors, retailers, etc. Configuration of the tariff table in the IN and the billing system need to be consistent across the information channel. Similarly, to respond to the query of customer regarding the usage charging or billing, through any of these channels, the usage records for post-paid and prepaid users are to be made available at all of these systems and are to be kept in sync. Any inconsistency may lead to metering and billing complaints. A user may have multiple plans at a time, and to determine applicable rates, all such plans are to be seen in a combined form. Whenever a new tariff plan is launched, it should be tested for different use-case scenarios and remove inconsistencies, if any. For this, the tariff plan configuration is carried out at test instances before bringing it into the production stage. Sample usage records are processed in the billing system, and the rate applied is verified against the tariff configured. Once the testing is completed, a test-bill run is carried out to test the plan in an end-to-end manner. Processing of the usage records in the production is also observed to verify against the configuration.
- 2.12 In case of prepaid users, a new tariff plan is tested using the test numbers for combination of test scenarios including different vouchers/coupons and recharging modes.
- 2.13 Any error which results in rejection or suspended usage records is required to be analysed and acted upon. Accumulation of the usage records with errors and late processing in the rating/charging or billing system may sometimes reflect as a sudden jump in the usage, which is required to be dealt appropriately by the billing system, and proper alerts/notifications may be required to be sent to the user.
- 2.14 The life cycle of a subscriber starting from its provisioning into the system and the records of the Customer Acquisition Form (CAF) along with the Tariff Enrolment Form (TEF) is maintained by the TSP. In case any information or clarification is required by the user, then the

Customer Relationship Management (CRM) is the interactive system from where one may find it easy to get the answer(s). Details of the tariff plan opted by the user are also fed in the CRM systems. In case a request is made by the user for provisioning of new services, then the CRM system may command the provisioning and billing system. To carry out the audit service, providers fetch information from CRM systems like the service provisioning records, complaints data, etc.

2.15 To link up the records across different elements, important identifiers are MSISDN and IMSI. At the time of the provisioning, these identifiers are assigned to the subscriber. During the life cycle of a subscription, in some cases, these identifiers might get changed, but records of such changes are available in the CRM and billing system. Inventory of such identifiers that are spare or have already been assigned may be found from the Inventory Management System, which maintains all the network identifiers like IMSI/ICCID, MSISDN, Devices, IP addresses, etc.

2.16 The license refers to the different periods of retention of various kinds of records viz for billing, and account records the retention period of three years from the date of publishing of duly audited and approved accounts of the company and all commercial records with regard to the communications exchanged on the network are to be preserved for one year. Call Detail Records (CDRs) generated by the network elements in raw form are coded in binary as per the Original Equipment Manufacturer (OEM) specifications. Adapters at mediation systems decode the raw CDRs collected from the network elements upon discussion with the OEM. The CDRs thus decoded are reformatted pertaining to the usage of post-paid customers, and selective information elements may only be kept, which are useful for a specific application. Such decoding, conversion, filtration, segregation, etc., is done by a mediation system. Mediation system delivers an output stream to the billing applications like rating systems and other modules like roaming module, interconnect billing

systems, etc. During the processing of CDRs, the mediation system may encounter some errors in it, which may be due to several reasons. Such CDRs are usually segregated and investigated further before being processed and rated or rejected. Mediation systems are also configured to deal with such CDRs. In the Mediation system formats are configured, which are delivered to applications, such formats identify the fields provided to the upstream applications, which are shared with the auditors.

2.17 The TSP's subscriber base is in several hundred million, and the usage records are in multiples of it, as many usage records are being generated per user on a daily basis. It is increasingly becoming difficult or impossible for a TSP to store all these records and fetch any of these records immediately as and when required. Most of the TSPs are deploying an intelligent system, which stores relevant data in a format to help analyse the pattern and in providing insights. For this, it collects the data in aggregated forms from rating engines, interconnect systems, financial systems, and loads after using ETL (Extract, Transform, and Load) tools. Such data is used for mining telecom operational data such as CDR, CRM data, subscriber master data, etc., which have huge potential in predicting the customer behaviour, customer mobility, and many other business applications such as the market-share analysis of different mobile brands, telecom pricing strategy analysis, churn prediction, social-network analysis, etc. Based on it, TSP may strategize for sales, tariff planning, etc.

2.18 Financial management system provides modules to handle Financials, Human Resources, and Supply Chain Management, etc. Billing system interface with this system is used to post all the financial transactions such as invoices, payments, and adjustments. This system works like a general ledger for the finance department and provides the complete revenue information at any point in time it is required. Service providers provide billing-related information like the

payment, credit-control data, customer base, etc., from billing system and Financial Management System.

- 2.19 Payment Gateway is a module which is accommodated in between the billing system and different payment channels like banks, credit-card gateway, shops, and retailers, etc. Usually, payment gateway exposes Application Programming Interface (API) to the outside world to post the payments to the Billing System. The API can be used by any external resource to post the payment with which the service providers have agreements.
- 2.20 In addition to the above modules and features of the Billing and customer care systems of the telecom Service Providers (TSPs), to minimise the instances of under billing and revenue leakages the TSPs also employ independent Revenue Assurance and Fraud Management solutions. IT capabilities of such systems might be harnessed by the billing and metering Auditors for audit purposes.

CHAPTER 3

THE NEED TO REVIEW METHODOLOGY

- 3.1 As mentioned in Chapter 1, TRAI had notified the Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulation 2006 on 21st March, 2006 (for details refer to <https://traigov.in/telecom/qos>). Regulations 3 to 6 are more of interest from the perspective of discussion on the need to review the methodology, and key points of these regulations are deliberated in the following paras. In addition to this, the following paras also discusses the key points of the amendments made to these regulations in 2013, and directions, orders, etc., issued in this regard along with the issues that may require any changes in methodology or approach.
- 3.2 Regulation 3 of these regulations defines the purpose of the Code of Practice (CoP) of Metering and Billing as to bring uniformity and transparency, prescribe standards for accuracy and reliability, do regular assessments of the level of performance, minimize the incidences of billing complaints, and overall protect the interests of the consumers.
- 3.3 Regulation 4 of these regulations requires that the service provider has to comply with the Code of Practice for metering and billing accuracy as laid down in Annexure-1 of these regulations. Code of Practice (CoP) for Metering & Billing Accuracy has 10 items pertaining to the following:
- 3.3.1 **Item 1:** Information relating to tariff,
 - 3.3.2 **Item 2:** Provision of service,
 - 3.3.3 **Item 3:** Accuracy of measurement,
 - 3.3.4 **Item 4:** Reliability of billing,
 - 3.3.5 **Item 5:** Applying credit to accounts,
 - 3.3.6 **Item 6:** Timeliness of post-pay billing,

- 3.3.7 **Item 7:** Restriction and removal of service,
 - 3.3.8 **Item 8:** Complaint handling,
 - 3.3.9 **Item 9:** Materiality and
 - 3.3.10 **Item 10:** submission of compliance.
- 3.4 Regulation 5 provides that the Authority may review and modify these regulations for good and sufficient reasons.
- 3.5 Regulation 6 has provisions related to the auditing of Metering and Billing System of the service providers. It provides that the Authority may notify the panel of auditors to certify the Metering and Billing System of the service providers, and the service providers would be required to arrange the audit of their Metering and Billing Systems in compliance with this regulation on an annual basis through any one of the auditors.
- 3.6 In June 2012, Directions were issued to the service providers to maintain a Master Table, service area wise, to record the steps taken to configure the new number series and configure new tariff plans. These directions were issued when it was revealed that there were several instances of overcharging of the customers on account of wrong configuration of new number series, wrong configuration of tariff plans, and incorrect dialling of numbers. The Master Table was required to contain details related to the date of configuration of numbering series or tariff plans/Special Tariff Vouchers (STVs), rectification of problem, refund, and related details. This Master Table was also required to be provided to the auditor for audit purposes.
- 3.7 The regulation 6 was amended in 2013, and this amendment specified details for the notification of the panel of auditors, and also included timelines for the service providers to appoint an auditor from the panel. It also included the provision to issue of guidelines and checklist by TRAI.

3.8 In 2013, regulations 6A to 6E were also inserted in the main regulations of 2006; the key points included in these regulations were as following:

3.8.1 **Regulations 6A:** Procedure for auditing of call data records describing the total number of tariff plans are to be selected for audit, and which tariff plans should be selected. It also defines how the audit observations are to be dealt, audit and action reports are to be submitted to TRAI. This regulation also defines the timeline for the service provider to provide CDRs to the auditor.

3.8.2 **Regulations 6B:** Obligations on the auditor to follow the guidelines and checklist issued by TRAI, and to conduct the audit in a fair and transparent manner. It also requires for the auditor to examine the reasons for the non-acceptance of audit observations, and report such cases in the audit report, verify the actions taken by the service provider on instances of overcharging, prepare Action Taken Report (ATR) on the basis of his/her assessment containing specific points.

3.8.3 **Regulations 6C:** Consequence for failure of the service providers to submit audit report and the action taken report.

3.8.4 **Regulations 6D:** Consequence for failure of the service providers to refund overcharged amounts to the customers.

3.8.5 **Regulations 6E:** Consequence for failure to provide comments on audit observations in the Action taken report, respectively.

3.9 In 2013, certain clarifications were also issued, some of the key clarified were related to:

3.9.1 Clarification about Tariff Plan matrix for CDR audit, and providing details to choose tariff plans for audit.

3.9.2 Issuing of Checklist of audit by TRAI.

- 3.9.3 Provision to give a copy of the Customer Acquisition Form (CAF) to the customer at the time of enrolment, even though the DoT guidelines mandates to give the counterfoil of CAF.
 - 3.9.4 Provision to give information relating to tariff, terms and conditions of the service, etc., to the customers within one week of the activation of service. Such information may be provided either at the time of connection or as a part of the Start-Up-Kit (SUK).
- 3.10 In 2013, TRAI also issued Guidelines and Checklist for Audit of the metering and billing under the regulation 6.
- 3.10.1 Inter alia many requirements specified in the guidelines, included the evaluation of correctness of CDR and charging of SMS, VAS, and top-up vouchers. It also included the guidelines for verification of rating and billing. It also includes the additional details about sampling and selection of period for which CDRs should be checked. Guidelines also describes the process to be followed for analysis of discrepancies noticed by the auditor, categorization of such discrepancies. For verification, some of the specific directions or TTOs issued by TRAI have also been referred under these guidelines.
 - 3.10.2 Checklist provides the points about the information to be obtained by the auditor from the service providers and also specifies the contacts or chain of reporting to be established with the service provider.
 - 3.10.3 Two tables, Table-A for Process Review with regard to compliance of CoP for Metering and Billing Accuracy Review, and Table-B for Billing and Metering System Review (Transaction Review) are also prescribed as a part of the guidelines and checklist. These tables require details of audit area, test to be performed, observation, and observation category.

- 3.11 In 2013, one order for the implementation of the amendment of CoP for Metering and Billing Regulations of 2013 was also issued by TRAI. It specified two formats one for submitting the audit report and the second one for submitting the Action Taken Report (ATR).
- 3.12 At present, the periodic audits of each TSP are conducted to assess whether adequate measures have been taken by TSPs and if due processes are being followed by them. For this purpose, the auditors are empanelled, and TSPs are required to get the audit done from one of these auditors. TSPs have to get an audit done on a quarterly basis for each LSA in which they are operating. TSPs have to pay the Auditor for conducting audit of their metering and billing systems.
- 3.13 CoP provides the checklist for the auditor to do the assessment of each of the purpose mentioned as a purpose of the CoP. And the auditor has to record its observations about any issue related to metering and billing such as due process not followed, found cases of wrong charging, or charging done for the service which was never demanded by the user, etc. TSPs have to take action on the observations made by the auditor, and submit the Action Taken Report (ATR) to TRAI on a regular basis.
- 3.14 In cases of wrong billing or errors in charging, TSP has to refund the amount for all the customers who might have been charged wrongly. There are provisions to impose Financial Disincentives (FD) in case TSP delays in submitting the audit reports and Action Taken Reports within the prescribed time limits. FD may also be imposed in case TSP has not refunded the overcharged amounts to the affected customers within two months of the audit observation — FD equivalent to the amount overcharged which was not refunded; and also in case of the TSP's failure to provide details of the action taken on the audit observations, or if it has submitted details of action taken which it knows or believes to be false, or does not believe to be true — FD not exceeding rupees ten lakhs per action taken report.

3.15 As discussed in the previous chapters, various issues were raised, which requires to review the Metering and Billing Accuracy regulations. Following paras deliberate more such issues, which requires consideration from the perspective of changes in the present regulations or might require introduction of new provisions.

3.16 Current provisions in the Regulation 6A and related issues:

3.16.1 Current provisions require the auditor to cover different post-paid and prepaid plans and requires to consider one-month CDRs for every quarter. The sample selection of plans is to be based on the maximum number of customers in the respective voice or data plans in post-paid and prepaid segment at the beginning or during the course of the quarter. From the point of materiality, CoP covers all products and services comprising 5% or more of TSPs total turnover with the customers targeted for that product or service; or 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 at the specific direction of TRAI. For audit purposes, it prescribes a methodology of sampling to assess the compliance of CoP, and consider whether the observations made are material. For post-paid users, the number of plans which are to be picked for the purpose of audit have also been mentioned, and the plans are required to be considered on the basis of their popularity. Under the current regulations, popularity of a post-paid plan is considered only at the beginning or end of the quarter while it might vary within a quarter. Similar issues might be in the case of prepaid plans or of STVs.

3.16.2 Under the current methodology, sample plans selected in the case of post-paid and in the case of prepaid for audit purposes are equal in numbers, while the number of users in post-paid and prepaid segments are highly skewed. This may

not be an appropriate representation, as in India, more than 95% of customers are prepaid. Number of plans offered by the service provider for prepaid users may outnumber the plans offered for the post-paid users. This may require the review of the methodology to select plans and consider other ways which might make it more representative.

3.16.3 Present sampling methodology requires selection of a plan based on its popularity at the beginning or end or during the course of the quarter. In case, the new tariff plan was launched in the mid of the quarter but didn't become popular enough by the end of quarter, to come within top few ones, then such a plan would not be considered for audit in that quarter. These plans may also not be covered even during the next quarter if many new plans are being launched within a quarter, and people have a tendency to switch tariff plans. What may be the better ways to identify and select plans for audit purposes need to be considered while revising the methodology. In addition to considering popular plans, corporate plans might also be required to be included for the purpose of audit.

3.16.4 Selection methodology for prepaid plans and STVs have similar issues as in case of post-paid, which have been discussed in the previous paras. Selecting tariff plans and STVs in equal numbers for the purpose of audit may not be appropriate as a number of tariff plans may be outnumbered by the STVs. Reason of a greater number of STVs than the number of prepaid tariffs is due to the advantage STVs offer in terms of reduction in rates. In addition to the aspect of selection of plans which are representative in terms of the number of users, another aspect which may be important from the audit's perspective is the chances of errors in configurations leading to wrong charging. STVs have more

chances of errors or wrong charging as scenarios are more complex in case of STVs, and it demands more rigorous testing to cover all types of scenarios. Practically, all types of scenarios might have not been taken care of during the testing phase. When validity of a STV expires, then the reduced rates won't be applicable, rather the default rates of base plan would become applicable, which may be much higher. Such situations may result in more incidences of billing complaints. Audit methodology may be required to give due weightage to cover such scenarios.

3.16.5 Sampling methodology for plans which might be required to considered for audit purposes may also have to consider plans which are targeted to subscribers with higher tariff plans. Such tariff plans may not be popular in terms of numbers of subscribers who opted for it but may be important from the perspective of audit to conform whether the offered services are available in reality.

3.16.6 Data packs may require different considerations than the voice packs as these may be designed in a bit different way. In the case of data packs, incidences of putting a user under Fair Usage Policy (FUP) are more likely to happen, and FUP might be applied in different ways by different service providers. Audit of these tariff plans may require consideration of various other aspects than charging, such as the validity of the pack, monitoring of consumption of services, and to know when one has exceeded the daily limits of the tariff plan. One would also like to know the impact of add-on data packs on currently available usage limits or validity. With the increased use of data, tariff plans related to data packs may be required to be considered separately. Under the data tariff, voice services are being offered as free,

along with some riders, this may also be required to be considered duly at the time of audit.

3.16.7 Regarding data services, TRAI has issued Eighth Amendment to the Telecom Consumer Protection Regulation, 2015, wherein the process for activation/deactivation of data services, intimation to customers based on threshold achieved upon using the data, and action to be taken while the customer is on roaming have been specified. Timely intimation to the customer avoids bill shocks or provisioning of additional data packs. Usage related to alerts are dependent upon the timely processing of usage-related records. Any usage records which were not processed in a timely manner, and due to this, the alerts or notifications were not sent to the user may lead to billing complaints. Audit of data packs may require considerations of such scenarios in a more comprehensive manner.

3.16.8 Service providers may adopt preventive or pro-active ways to reduce the incidences of errors in charging or wrong charging due to some configuration issues. In addition to adopting IT-enabled mechanisms to ensure consistency across the multiple modes, rigorous testing under all possible scenarios need to be adopted. Developing test cases from the scratch, every time new tariff plan is required to be tested, may make task humungous and challenging within the given time constraints. IT tools and cloud-based approach may help in developing test tools in an evolutionary manner and using collaborative approaches. Complexity of use cases may be learned by such tools through complaints, observations, and inputs received over a period of time. There may be off-the-shelf IT tools which may provide framework to develop use-case scenarios in easier and quicker way than in case of traditional approaches. The learning of complex scenarios,

and utilising it to develop an IT tool to conduct rigorous testing may also be helpful for audit purposes.

3.16.9 Revenue assurance and fraud management systems are widely in use by telecom service providers to check revenue leakage and detect host of other anomalies in the billing and charging systems of post-paid and pre-paid. Capabilities of such systems might help auditors to handle voluminous data in comprehensive and exhaustive manner.

Q.1: What changes are suggested in the sampling methodology in order to make it more representative of the post-paid and prepaid user segments or different types of tariff plans? Should the full spectrum of tariff plans be subject to audit? What considerations are required to be taken to address the issues or concerns related to the incidences of wrong charging specially in case of data packs, STVs, multiple tariff packs at a time, etc.? Please give your views with detailed justification.

Q.2: How IT tools and new technologies can be used to adopt preventive and proactive ways to avoid occurrences of error in charging or wrong configurations leading to charging? Whether the IT capabilities of other systems available with the service provider may be made available to the auditor for audit purposes? How such tools developed for rigorous testing before launch of new tariff plans can also be used for audit purposes? Please give your views with detailed justification.

3.17 Current provisions in Code of Practice about providing information to the customers relating to tariff and related issues:

3.17.1 Many billing complaints emanate from improper or inadequate provision of information or provision of misleading information relating to tariff both at the time of provisioning of service or while offering new tariff plan or vouchers to an existing customer. The current provisions in the regulations

requires that before a customer is enrolled for any telecommunication service, he/she shall be provided the detailed information relating to the tariff applicable for that service. Also, the customer shall also be informed in writing, in accordance with the regulations, directions, and orders issued by the Authority, not later than one week after the activation of service, about the tariff plan subscribed by him/her, quantity-related charges such as the charge for each SMS message, or kilobyte of data, etc., 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 event.

3.17.2 Another provision in the regulations is that whenever a customer dials a specific number to get instant 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), the charge for the service must be provided to him/her before he/she commits to use the service. The regulations also require provision of information about the tariff plans, Plan Vouchers, Top-Up Vouchers, Special Tariff Vouchers, and Combo Vouchers on offer available on the website of the service provider in accordance with the regulations, directions, and orders issued by the Authority, from time to time.

3.17.3 To minimize the number of complaints and ensure transparency, TSPs are required to make the users aware by providing adequate information to them in an unambiguous manner, relating to tariff both at the time of provisioning of service and while offering a new tariff plan or vouchers to the existing customers. Currently, a customer is required to be informed at the time of enrollment for any telecommunication

service, within a given timeline, about the tariff plan subscribed by him/her and other requisite details. Customer is also required to provide consent at the time of the subscription of a new service before he/she commits to the use of the service or at the time of subsequent changes.

3.17.4 In most of the cases, the terms and conditions of the service are given to the subscriber as a part of the Start-up-Kit (SUK) in the case of prepaid connections. General terms and conditions are provided on the reverse of Customer Acquisition Form (CAF) for prepaid and post-paid mobile connections. The service providers also use to send 'Welcome Letters' to all new post-paid customers containing the details of the tariff plan subscribed by them, and the terms and conditions of the service. In the case of prepaid customers, the terms and conditions of service and details of the tariff plan is conveyed to the customer through SUK, and a copy of the CAF. Also, as an industry practice, the customers are being given a 'Tariff Enrolment Form' or TEF giving details of the tariff plan he/she has been subscribed to. Many billing complaints arise due to inconsistencies in the information across multiple modes through which customer is provided details of tariff plans, and applicable terms and conditions.

3.17.5 Recently, to acquire new subscribers, service providers are adopting more and more e-KYC forms than using the hard copy of CAF. This change is impacting, the conventional ways of providing tariff information to the customers as hard copies of CAF or TEF are not provided. It has been observed that even when e-KYC forms are not being used, sometimes customers are not given a copy of the terms and conditions of service. Impact is not same in case of prepaid and post-paid, as post-paid customer get these details via the 'Welcome Letter,' and the prepaid customer has to rely on the SUK for

these details. It is observed that the details provided with SUK are in very small font, which is very difficult to read, and this practice has been adopted by the service providers in order to reduce the cost and to accommodate lot of information such as the terms and conditions of the service, the grievance redressal mechanism, etc., in a small envelope. TRAI has intervened earlier and the service providers have rectified this issue whenever pointed out. However, the readability of the terms and conditions of the service and tariff details provided to the customer needs to be addressed in a more general manner. Use of the digital medium to provide such information is also required to be considered to the extent it is possible.

3.17.6 With the increase of data connectivity and more penetration of smartphones, there may be newer ways to inform the users such as Voice assistants, chatbots, interactive videos on different aspects of the usage, intuitive apps, web self-care, that can improve the way information is disseminated to the subscribers. There may be ways to provide such information at any point in time the customer needs to access it. Customers get such information via call centers or web portals or USSD menus for details of the tariff plans they have opted in. From the service provider's side, periodic updates might be provided via account statement, physical bill or e-bill, which may carry the tariff details of the plans, add-on plans opted by the customer.

Q.3: With the evolution of new technologies and mediums to provide information related to terms and conditions, tariff details to the customers at the time of subscriptions or making it available as and when required by the customers, what changes are required to

assess the delivery of information in timely and appropriate manner to the customer? Please give your views with detailed justification.

3.18 Current provisions in Code of Practice regarding reliability of billing and related issues:

3.18.1 To maintain the accuracy of measurement, CoP prescribes the standards for accuracy of the metering and billing system, and all charges levied for telecommunication services on the customer should be consistent with the tariff applicable to the customer.

3.18.2 During the implementation of the metering and billing audit, several instances of overcharging were observed due to wrong configuration/delay in configuration of new codes and wrong configuration of tariff plans and vouchers. To have a check on this issue, TRAI issued a direction on 12th June 2012, mandating the service providers to ensure that a Master Table is maintained service area wise, to record the steps taken to configure the new tariff plans, and such Master Table was required to contain the name of the tariff plan or STV, the date of launch, the date of configuration of the tariff plan or STV in the billing system, the date of detection of mistakes or problems in the configuration, the date of rectification of the problem, the number of customers affected, the number of customers who were refunded excess amount collected, the amount refunded, the number of customers who were not refunded and the amount that could not be refunded. Further, each entry in the Master Table is authenticated by the official of the service provider, who shall after verification sign with date, and the Master Table shall be provided to the auditors appointed for auditing the metering and billing system of the service providers for the auditing purposes. As this Master Table is a manual process, and may not essentially be linked with the workflow of launch of the new

tariff, there are chances of this to be not in sync with the actual plans. There may be a requirement to devise a mechanism that ensures that all elements dealing with the tariff plan are in sync.

- 3.18.3 During the initial years of audit, the common problems observed by the auditors were delay in configuration of new codes, wrong configuration of new codes, configuration of local codes as long-distance codes and vice versa, wrong configuration of tariff plans in the system, wrong charging due to incorrect dialing, etc. Issues relating to the configuration of codes and issues relating to wrong dialing are no longer observed by the auditors. Wrong charging due to wrong configuration of tariff continues to be observed by the auditor.
- 3.18.4 In case of the prepaid-rating system, unless the rules for rating of the called-party prefix are not defined, the calls do not mature. If TSPs have not configured to deal such codes in the tariff table, there might be cases of wrong charging.
- 3.18.5 There is a requirement to adopt measures that ensure consistency in the information across multiple channels. Instances have come into notice during the audit process where the tariff offered and charged to the customer is different from the tariff reported to TRAI, or the tariff published on the website, or the tariff charged is different from both the tariff reported to TRAI and the tariff published on the website. Any correction of wrong charging due to inconsistency of information by the TSP across multiple channels is required to be done, keeping the customer in the advantageous position always.
- 3.18.6 Workflows which ensures consistency across the multiple nodes or applications at the time of creation, modification or deletion of tariff plans may be a better way than an offline process such as the currently adopted Master-Table

approach. If due to some reason, the process executed at one node is not successfully executed at the other node, it might be rolled-back to ensure consistency. IT-enabled workflows and rules would not only ensure consistency across the different mediums but also avoid unnecessary calls on call centers or requirement of resolution of complaints.

Q.4: What IT-enabled measures need to be considered to ensure consistency of the tariff information across the different channels or mediums? Please give your views with detailed justification.

3.19 Complaint Handling Current provisions in Code of Practice and related issues:

3.19.1 Complaint handling requires documentation of the processes for identifying, investigating, and dealing with the billing complaints, and creating appropriate records thereof. It further requires the service provider to carry out a root-cause analysis for each upheld billing complaint, categorise the cause and establish proportionate remedial action to correct it. Where the root-cause affects multiple the customer accounts, then all affected bills need to, if practicable, be included in a recovery programme.

3.19.2 To timely apply credit to the accounts of the customer, CoP has prescribed time limits within which payments made by the customer should reflect in his/her account. Modes of receipt of payment may be different such as cash/cheque, top-up, etc. CoP also prescribes time limits for cases when credit is to be given by the service provider to the customer, and reference time for such limits is the date of such an agreement. There may be inconsistency of data being shared between third-party payment collectors and billing system, while updating the payments in the billing system the customer account is not credited with the payment and payment may remain unaccounted. This results in complaints

regarding non-accounting of payment from the customer. The money gets deducted from the customer's bank account, while the billing account at service providers end does not get settled.

- 3.19.3 In case of restriction and removal of a service by the TSP unilaterally, a notice is required to be served 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. If notice is not sent by the service provider in a timely manner and in an appropriate way then such an action may lead to billing complaints.
- 3.19.4 For timeliness of post-pay billing, CoP subjects to systematic processes, it requires that in case an item is not charged consecutively in four-monthly bills by the TSP, then it cannot be charged in a later bill and would be written off, unless, any extension of time is granted by TRAI. TSPs have to make appropriate arrangements to ensure that an effectual bill or bill data file delivery schedule is in place.
- 3.19.5 Subscribers can book complaints, through various modes such as on call centres, via web self-care, etc. TSPs deploy complaint management systems or Trouble Ticketing solutions to handle the complaints. Telecom consumers complaint redressal regulations (TCCRR) 2012 prescribe the process and redressal mechanism of complaints. The complaints may pertain to Billing-Related Complaints, Customer-Service-Related Complaints, MNP-Related Complaints, UCC-Related Complaints, Internet-/Data-Related Complaints and VAS-Related Complaints. Commonly observed billing complaints are non-delivery of bills, charging not as per the plan, change of billing address, non-updating of the payment, etc.

3.19.6 It seems that the current guidelines are not comprehensive enough to deal with various kinds of scenarios related to billing complaints, as described in above paras and might be required to be reviewed. Defining what constitutes billing complaint may also bring uniformity across the service providers. Examination of complaints at more frequent intervals, and doing it concurrently could help in effective redressal of billing complaints. Inclusion of major issues observed during such examination, as a part of the auditor's report could also help in timely interventions if the situation so warrants. Apart from the audit of CDRs in every quarter, if the auditor also checks workflow of the complete billing complaint, then it might help in improving complaint handling process.

Q.5: What changes are suggested in handling of billing complaints? Whether defining what constitutes billing complaint may help in bringing uniformity? Whether higher frequency of audit of complaint handling would help in improving effectiveness of complaint redressal mechanism? Please give your views with detailed justification.

3.20 Special/Peer Audit to make audit more effective:

3.20.1 Special or peer audit may help in gaining insights into service providers' procedures and also help in improving the audit procedures better. Quality of audit might be improved by undertaking special audit/peer audit.

3.20.2 For conducting audits of a period which is not of past few quarters, requires access to details, which might have been archived and not available as fast as in normal audit process. It is observed that auditors face lot of difficulties seeking CDRs of an old period required for the audit purposes. TSPs argue that retrieval of old records is cumbersome and resource-intensive exercise as records are not archived to get records of selective numbers.

- 3.20.3 It also makes difficult to complete the audit in a timely manner. For facilitating such audits, it may be required that the empanelled auditor, who has conducted audit earlier, may also be required to share the information in a timely manner.
- 3.20.4 Audit of old records from Business Intelligence tools, and not having adequate information required to carry-out audit also makes it difficult to verify billing/charging if audit trail is not available. For example, if bill's PDF does not contain the summary usage and free quota offered to the customer, and the required additional details are of a very old period then the TSPs might say that the records were purged.
- 3.20.5 To conduct peer/special audit, there may be a requirement to specify the period for which records should be maintained and made accessible to the auditor in a timely manner for the purpose of such audits.

Q.6: To conduct special or peer audit, where old records might be required to carry out the audit, what may be prescribed to ensure that the relevant details are maintained for a sufficiently long period, and made available to the auditor in a timely manner for conducting the audit? Please give your views with detailed justification.

- 3.21 Regulation 6C, Regulation 6D and Regulation 6E of the regulations dealing with consequence for failure of the service providers to submit audit report and action taken report, consequence for failure of the service providers to refund overcharged amounts to customers and consequence for failure to provide comments on audit observations in the Action taken report respectively were framed long ago. There may be a need to revisit at their relevance and efficacy considering the changes described in the previous chapters.

Q.7: Should the Regulation 6C, Regulation 6D and Regulation 6E of the regulations dealing with consequence for failure of the service providers to submit audit report and action taken report, consequence for failure of the service providers to refund overcharged amounts to customers and consequence for failure to provide comments on audit observations in the Action taken report respectively be retained as it is or they need to be altered/strengthened. Please support your views with rationale.

CHAPTER 4

ISSUES FOR CONSULTATION

Q.1: What changes are suggested in the sampling methodology in order to make it more representative of the post-paid and prepaid user segments or different types of tariff plans? Should the full spectrum of tariff plans be subject to audit? What considerations are required to be taken to address the issues or concerns related to the incidences of wrong charging specially in case of data packs, STVs, multiple tariff packs at a time, etc.? Please give your views with detailed justification.

Q.2: How IT tools and new technologies can be used to adopt preventive and proactive ways to avoid occurrences of error in charging or wrong configurations leading to charging? Whether the IT capabilities of other systems available with the service provider may be made available to the auditor for audit purposes? How such tools developed for rigorous testing before launch of new tariff plans can also be used for audit purposes? Please give your views with detailed justification.

Q.3: With the evolution of new technologies and mediums to provide information related to terms and conditions, tariff details to the customers at the time of subscriptions or making it available as and when required by the customers, what changes are required to assess delivery of information in timely and appropriate manner? Please give your views with detailed justification.

Q.4: What IT-enabled measures need to be considered to ensure consistency of the tariff information across the different channels or mediums? Please give your views with detailed justification.

Q.5: What changes are suggested in handling of billing complaints? Whether defining what constitutes billing complaint may help in bringing uniformity? Whether higher frequency of audit of

complaint handling would help in improving effectiveness of complaint redressal mechanism? Please give your views with detailed justification.

Q.6: To conduct special or peer audit, where old records might be required to carry out the audit, what may be prescribed to ensure that the relevant details are maintained for sufficiently long period and made available to the auditor in a timely manner for conducting the audit? Please give your views with detailed justification.

Q.7: Should the Regulation 6C, Regulation 6D and Regulation 6E of the regulations dealing with consequence for failure of the service providers to submit audit report and action taken report, consequence for failure of the service providers to refund overcharged amounts to customers and consequence for failure to provide comments on audit observations in the Action taken report respectively be retained as it is or they need to be altered/strengthened. Pl support your views with rationale.

Q.8: Any other issues which are relevant to this subject.